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NATIONAL HOUSEHOLD HEALTH SURVEY IN TURKEY **PREVALENCE OF NONCOMMUNICABLE DISEASE RISK FACTORS** 2017





NATIONAL HOUSEHOLD HEALTH
SURVEY IN TURKEY:
**PREVALENCE OF NONCOMMUNICABLE
DISEASE RISK FACTORS, 2017**

This publication reports the results of the National Household Health Survey – Prevalence of Noncommunicable Disease Risk Factors in Turkey, conducted in 2017 using the WHO-approved STEPwise survey method. The main objectives of the survey were: to determine the prevalence of the most common behavioural and biological risk factors for noncommunicable diseases (NCDs) in the general population aged ≥ 15 years; and to determine differences in the prevalence of risk factors between the sexes, across five age groups and across 12 regions described by level-1 Nomenclature of Territorial Units for Statistics. The risk conditions were grouped into behavioural factors understood as modifiable (tobacco use, harmful alcohol consumption, low consumption of fruits and vegetables, and physical inactivity etc.) and biological factors considered controllable (hypertension, overweight and obesity, high blood sugar and increased total cholesterol etc.). The results obtained in the study show the current prevalence of NCD risk factors among the Turkish population.

In addition to obtaining valuable information on NCD risk factors for people of five different age groups, both sexes and 12 regions, the results of the survey provide a significant input for policy-makers.

Keywords

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ABBREVIATIONS

BMI	body mass index
CEDSTC	cancer early diagnosis screening and training centres (in Turkey)
CHD	coronary heart disease
CI	confidence interval
COPD	chronic obstructive pulmonary disease
CVD	cardiovascular diseases
DALYs	disability-adjusted life-years
DBP	diastolic blood pressure
FAO	Food and Agriculture Organization of the United Nations
FHC	family health centres (in Turkey)
GP	general practitioner
HbA1c test	haemoglobin A1c or glycated haemoglobin test
HDL cholesterol	high-density lipoprotein cholesterol
HPV	human papillomavirus
MET	metabolic equivalents
NCDs	noncommunicable diseases
NHHST	National Household Health Survey in Turkey – Prevalence of Noncommunicable Disease Risk Factors
NUTS-1	level-1 Nomenclature of Territorial Units for Statistics
PCs	personal computers
PSUs	primary sampling units
SBP	systolic blood pressure
SSUs	secondary sampling units
STEPS	(WHO) STEPwise approach to surveillance
TL	Turkish Lira
TURKSTAT	Turkish Statistical Institute
WHR	waist-hip ratio



FOREWORD

The prevalence of, and mortality from, noncommunicable diseases (NCDs) have increased in Turkey, as they have around the world, even though life expectancy is rising and the burden of disease is changing. NCDs are the leading cause of death globally and account for a significant share of disability-adjusted life-years; they therefore place a substantial burden on health systems, as well as negatively affecting one's quality of life.

The majority of NCDs are considered preventable as they are predominantly caused by modifiable risk factors. Current information and experience show that appropriate intervention programmes for societies or individuals can prevent NCDs. Feasible and evidence-based policies, suitable for each country's infrastructure, are needed for the planning and implementation of intervention programmes.

Leading risks to health, based on one's lifestyle, such as tobacco use, insufficient physical activity, raised cholesterol, raised blood pressure and alcohol consumption – increase the risk of NCDs. Reducing NCDs requires focusing on reducing their risk factors. Evidence-based public health intervention programmes should be developed at a national level on the basis of the most prevalent risk factors identified. Community-wide representative data is required to plan the activities to be implemented within this framework and to evaluate their effects.

In cooperation with WHO, the Ministry of Health of Turkey therefore conducted the National Household Health Survey – Prevalence of Noncommunicable Disease Risk Factors in Turkey to collect data on prevalent NCDs and respective risk factors based on individual statements and physical and biological measurements. This survey is important because it is countrywide and representative, and provides an opportunity for international comparisons and highlighting needs in the country.

I would like to use this opportunity to extend my gratitude to all who have contributed to this survey, which will provide valuable information for programmes to prevent and control NCDs in our country.

Dr Fahrettin Koca

Minister of Health, Republic of Turkey




FOREWORD

Noncommunicable diseases (NCDs) are the leading cause of death globally. The growing number of people living with one or more NCDs, as well as the increasing number of premature deaths resulting from them, places a heavy strain on health systems and negatively impacts both economic development and well-being. We can see that efforts to control NCDs do yield results: in the WHO European Region, premature deaths from NCDs clearly declined in 2000–2010. Nonetheless, these conditions still account for nearly 80% of all deaths in the Region. Globally, NCDs represent one of the most pressing challenges to sustainable development in the 21st century. Action to mitigate, prevent and control them will be vital – across all sectors and settings – if the world hopes to achieve the ambitious targets of the Sustainable Development Goals (SDGs).

In accordance with the political declaration on NCD prevention and control adopted by the United Nations General Assembly in 2011, WHO developed its global action plan for NCD prevention and control for 2013–2020. To assess the actions taken to implement this plan, WHO also established a global monitoring framework, which includes nine voluntary targets and 25 indicators on health status, risk factors and health systems' capacity and response. The action plan and monitoring framework provide a solid basis for all activities to prevent and control NCDs, and it is important for all countries to actively participate in these efforts.

After all, no country is left untouched by the epidemic of chronic diseases, including Turkey. The impact of NCDs in the coming year will be defined by whether and how countries respond to this growing threat to the health and well-being of their people and societies. Turkey is a country that has taken major steps to prevent and control NCDs, to reduce the additional burden on health systems and to provide comprehensive health care for the sick. In 2017, the Ministry of Health endorsed the country's multisectoral action plan on NCDs for 2017–2025, to improve the health sector's response to NCDs, to facilitate multisectoral cooperation, to ensure that all institutions implement health policy and to develop a common perspective on the subject. WHO's nine voluntary global targets for NCD prevention and control were reviewed and adapted to the country context, with the participation of representatives of civil society organizations, academia and the WHO Country Office in Turkey. An additional 25 country-specific indicators were identified and target-specific priority areas were discussed.



Turkey also hosted the United Nations Interagency Task Force on NCDs in April 2016 and has hosted several missions to assess health systems barriers for better NCDs outcomes. The country implemented a comprehensive analysis of NCDs and their risk factors, using the WHO STEPwise approach to surveillance (STEPS), which focuses on obtaining core data on the established risk factors that determine the major disease burden. I would like to extend my gratitude to the Minister of Health of Turkey, Dr Fahrettin Koca, for the Ministry's remarkable leadership of and support for these achievements. These actions, along with future activities, will play a pivotal role in helping Turkey face the NCDs epidemic.

The WHO Regional Office for Europe aims to be a partner in fighting NCDs alongside countries of the Region. Establishing a process to monitor and assess the implementation of action to prevent and control NCDs in a country involves a number of challenges related to the availability, comparability and quality of data. Thus, the Regional Office aims to enhance the availability and quality of NCD-related information and to orient health policy in Europe to address the major challenges to health and development, in line with European Health 2020 policy framework and the SDGs.

This report is an important step in setting the baseline for the prevalence of NCDs and their risk factors in Turkey. I hope that this publication will be useful not only in helping decision-makers in Turkey to sustain their commitment but also in saving the lives of citizens at risk of premature mortality from NCDs.

Dr Zsuzsanna Jakab

WHO Regional Director for Europe



PREFACE

Noncommunicable diseases (NCDs) are the leading cause of death at the global, regional and national levels. NCDs kill 40 million people each year, equivalent to 70% of all deaths globally. Each year, 15 million people aged 30–69 years die from an NCD; over 80% of these premature deaths occur in low- and middle-income countries. NCDs threaten progress towards the 2030 Agenda for Sustainable Development, which includes a target of reducing premature deaths from NCDs by one third by 2030. Poverty is closely linked with NCDs. The rapid rise in NCDs is predicted to impede poverty reduction initiatives in low-income countries, particularly by increasing household costs associated with health care.

NCD death rates in Turkey are similar to those in the rest of the WHO European Region. NCDs are responsible for 87.5% of all deaths in the country. The probability of premature death from one of the four major NCDs for a person living in Turkey was around one in six (16.8%) in 2015. The NCD burden is undermining the social and economic development of the country. NCDs have significant and growing health and financial costs to individuals, families, the health system and the economy. Without adequate prevention of the common risk factors and early identification of NCDs, the costs for Turkish society will increase.

To respond to the growing burden of NCDs, heads of state and government endorsed the United Nations' Political Declaration of the High-level Meeting of the General Assembly on the Prevention and Control of Non-communicable Diseases in May 2011, and the World Health Assembly endorsed the WHO global action plan for NCD prevention and control 2013–2020.

The Government of Turkey recognized the impact of NCDs and reaffirmed its commitment to tackling them and their risk factors. To realize these commitments, Turkey published a multisectoral action plan for NCDs covering the period 2017–2025. In addition, Turkey developed an investment case for NCD prevention and control, with contributions from WHO, to provide evidence that NCDs reduce economic output and to discuss potential options for response, in order to determine a set of interventions that are most suited to the country.

The development and implementation of health policies require high-quality and disaggregated data at the national level to understand the problems, to inform the need for interventions, to develop appropriate interventions

to reduce the burden of disease and address health inequalities, and to monitor progress in achieving the targets set.

The primary objective of the survey in Turkey, using a WHO approach to surveillance, was to evaluate the baseline situation of the main NCD risk factors, both behavioural and metabolic/physiological, and to inform all national and international stakeholders of the situation.

The survey data will serve as baseline information for new NCD policies and a starting point for monitoring the prevalence of risk factors. The effectiveness of interventions to reduce the burden of NCDs and their risk factors will also be analysed. The results of the survey will enable comparison of the prevalence and distribution of NCD risk factors over time and across countries.

This publication reports the results of the National Household Health Survey – Prevalence of Noncommunicable Disease Risk Factors in Turkey, conducted in 2017 using the WHO-approved STEPwise survey method (STEPS). The survey's main objectives were: to determine the prevalence of the most common behavioural and biological risk factors for NCDs in the general population aged ≥ 15 years; and to determine differences in the prevalence of risk factors between the sexes, across five age groups and across 12 regions described by level-1 Nomenclature of Territorial Units for Statistics. The risk conditions were grouped into modifiable behavioural factors (tobacco consumption, harmful alcohol consumption, low consumption of fruits and vegetables, and physical inactivity) and controllable biological factors (hypertension, overweight and obesity, high blood sugar and increased total cholesterol). The results obtained from the study show the current prevalence of NCD risk factors among the Turkish population.

WHO provides continuous policy advice, technical assistance and capacity building to the Government of Turkey, aiming to improve population health and to reduce health inequalities through whole-of-government and -society approaches. In this way, WHO offers support to the country in ensuring its engagement in the implementation at national level of the European strategy for health and well-being, Health 2020, and the WHO global and European action plans for NCD prevention and control.

Both the Government of Turkey and WHO are very grateful to their partners: especially the International Bank for Reconstruction and Development (World Bank), for the guidance provided under the "Health Systems Strengthening and Support Project", which was signed by the Government of Turkey and the World Bank, to provide financial support to implement the first STEPS survey in Turkey; and to other partners at the international and national levels who provided technical assistance in carrying out the survey.

The WHO Country Office, Turkey is grateful for the excellent collaboration with the Ministry of Health of Turkey and looks forward to continued joint work to disseminate Turkey's achievements in other countries.

Dr Pavel Ursu

WHO Representative in Turkey

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EXECUTIVE SUMMARY

The National Household Health Survey – Prevalence of Noncommunicable Disease Risk Factors in Turkey was organized with financial support provided by the Ministry of Health of the Republic of Turkey under the “Health Systems Strengthening and Support Project” loan agreement signed between the Government of the Turkish Republic and International Bank for Reconstruction and Development (World Bank). Technical assistance for the survey was provided by WHO to the Ministry of Health of the Republic of Turkey within the scope of the Agreement signed on 10 November 2016 between WHO and the Government of the Republic of Turkey. Field implementation of the National Household Health Survey was conducted by PGlobal Global Advisory and Training Services Inc. contracted by WHO Country Office, Turkey. The field survey teams were trained on 10–14 April 2017 in Ankara (see Annex 1). The requisite medical equipment was deployed to 14 logistical centres serving 79 provinces in Turkey, and the field survey teams were mobilized on 16–28 April 2017. The first stage of the field survey was conducted from 28 April to 26 May. After a postponement for Ramadan, the survey was resumed on 3 July 2017, and completed on 15 September 2017, owing to national and religious holidays, and unforeseen circumstances that hindered progress.

The general goal of the survey was to determine the prevalence of major risk factors for noncommunicable diseases using the WHO-approved STEPwise survey method, so as to enable more efficient planning of activities for the prevention and control of noncommunicable diseases.

The main objectives of the survey were:

- to determine the prevalence of the most common behavioural and biological risk factors for noncommunicable diseases in the general population aged ≥ 15 years; and
- to determine differences in the prevalence of risk factors between the sexes, across five age groups and across 12 regions described by level-1 Nomenclature of Territorial Units for Statistics.

Based on multistage cluster sampling methodology for surveillance of noncommunicable diseases, 8644 subjects were randomly selected, to ensure equal distribution of the participants according to age and sex, and including an estimated 20% non-response rate. A total of 6053 subjects aged ≥ 15 years participated in the survey and the response rate was 70.0%.

Of the total number of respondents ($N = 6053$), 31.5% reported being current smokers and 29.2% daily smokers. Men smoked more than women (43.4% versus 19.7%). The mean age of starting smoking was 18.1 years for both sexes (17.2 years for men and 20.2 years for women). Manufactured cigarettes were used by daily smokers in 97.3% of cases. The mean number of cigarettes smoked among daily smokers was 15.5.

More than four out of five respondents (83.6%) were lifetime abstainers from alcohol, and 4.3% had abstained for the previous 12 months. Only 8.0% of respondents reported drinking alcohol in the previous 30 days, and only one in every 20 respondents (5.2%) was an episodically heavy drinker, although the rates of episodic heavy drinking in men (8.7%) was four times that in women (1.8%).

Fruit and vegetable consumption was in general low: 87.8% of respondents reported consuming fewer than five servings of fruit and vegetables per day, and thus being at higher

risk for noncommunicable diseases. The proportions were similar for men (87.8%) and women (87.9%).

Almost half of the respondents (43.6%) did not meet WHO recommendations on physical activity for health, with a significant difference between men (33.1%) and women (53.9%). The total median time spent in physical activity was 30.0 minutes per day, although higher among men (51.4 minutes) than women (17.1 minutes). Further, 81.3% (70.1% of males and 92.2% of females) did not participate in any effective physical activity. More than two in five respondents reported receiving advice on a healthy lifestyle from a doctor or other health worker during the previous 12 months. In addition, 87.3% of respondents (89.1% of men and 85.5% of women) could state two or more negative health effects of any of the selected risk factors

One in four of respondents aged 50–70 years had had a faecal occult blood test. While more than half of women aged 30–65 years (54.2%) reported having been screened for cervical cancer, three in five of those aged 40–69 years had had a mammography.

As a result of physical measurements, the mean body mass index recorded was 26.6 kg/m² for men and 28.3 kg/m² for women. Two in every three respondents were overweight (body mass index \geq 25 kg/m²). Three in 10 of respondents (28.8%) were obese (body mass index \geq 30 kg/m²), and the proportion of obese women (35.9%) was 1.6 times that of men (21.6%). Mean waist circumference was 87.9 cm and hip circumference was 102.5 for women, and 91.3 cm and 98.7 cm for men, respectively.

Mean systolic and diastolic blood pressure (including in people taking medication for hypertension) was 123.0 mmHg and 78.4 mmHg, respectively, with no substantial difference between men and women. Three out of 10 respondents had hypertension and without significant differences between the sexes.

Mean fasting blood glucose was 97.8 mg/dl (96.2 mg/dl for men and 99.3 mg/dl for women). According to the results of the survey, the proportion of respondents with impaired fasting blood glycaemia (\geq 110 mg/dl and $<$ 126 mg/dl) was 7.9% and this proportion was higher among men (8.1%) than women (7.7%). One in 10 respondents (11.1%) had diabetes or reduced tolerance to glucose (fasting blood glucose \geq 126 mg/dl or taking antidiabetic medication), without significant differences between men and women. The proportions of respondents with haemoglobin A1c or glycated haemoglobin \geq 6.5% was similar for men (11.9%) and women (12.2%) and increased with age.

Further, one in four respondents (24.7%) had a raised total cholesterol level (\geq 190 mg/dl or taking medication for hypercholesterolemia), with the proportion being higher in women (28.5%) than men (20.9%). Suboptimal levels of high-density lipoprotein cholesterol were found in 55.6% of men ($<$ 40 mg/dl) and 49.1% of women ($<$ 50 mg/dl). Mean salt intake per day was high: 9.9 g per day (11.0 g per day for men and 8.7 g per day for women).

The survey showed that half of the respondents (51.2%) had three or more risk factors for noncommunicable diseases, and this figure increased proportionally with age. Only 1.3% of the population studied had none of the five risk factors. A fact sheet describing the results of the survey comprises Annex 2 of this report. Annex 3 presents the survey instrument.

1

**BACKGROUND
OF THE SURVEY**

1. BACKGROUND OF THE SURVEY

1.1. Noncommunicable diseases

Chronic conditions that are not caused by an infectious process, are nontransmissible, have prolonged courses, are not resolved readily and for which a complete cure is mostly not available are called noncommunicable diseases. According to Allen and Feigl, the use of the term noncommunicable for the world's biggest killer might cause confusion (1) and they proposed the term socially transmitted to replace it (2). Despite several attempts to rename noncommunicable diseases (NCDs), however, a widely accepted alternative term is not yet available (1).

NCDs usually have complex etiology. Several risk factors have been implicated in them. They usually have a noncommunicable origin and a long latency period. A prolonged course of the illness is frequently followed by functional impairment or disability. NCDs are one of the most important health problems today, since they are the leading causes of death and disease burden all around the world (3). The global trend in NCDs closely resembles pandemics of infectious diseases (4). NCDs have very dramatic consequences: they affect both human beings and the socioeconomic parameters of societies. Their impact is more prominent for low- and middle-income countries and will evidently continue to grow. Mortality due to cardiovascular diseases (CVD), stomach and cervical cancer seems to have declined between 1980 and 2012, while mortality due to diabetes, liver cancer and (in females) chronic respiratory disease and lung cancer increased on average. In addition, high- and low-income countries show important differences in NCDs. For instance, CVD and cancer mortality declined in high-income countries. In many low- and middle-income countries, deaths from CVD and chronic respiratory disease were relatively flat, while mortality from breast and colon cancer increased (5). Nevertheless, NCDs seem to be the most significant public health issue of the 21st century worldwide (6).

The umbrella of NCDs covers CVD (48% of the total), cancer (21%), chronic respiratory diseases (12%) and diabetes (3.5%). These diseases are considered to be among the biggest killers in the world. More than 36 million people died from NCDs (63% of global deaths) in 2008. Approximately 14 million people die young (at 30–70 years of age) due to NCDs. Middle- and low-income countries carry the largest share of the burden of these premature deaths. As result, NCDs have been claimed to cause a total economic loss of US\$ 7 trillion in fifteen years (7). Targeting several behavioural risk factors for NCDs – including tobacco use, unhealthy diet, physical inactivity and the harmful use of alcohol – could prevent many deaths. The annual cost of implementing effective interventions to decrease the burden of NCDs is estimated to be about US\$ 11.2 billion (7). In low-income countries, the stronger concentration on communicable diseases, maternal/child health and other traditional health concerns overshadows funding for NCDs (8).

NCDs were estimated to account for over 36 million deaths in 2008: 63% of the 57 million deaths that occurred worldwide (9). About 80% of all deaths from NCDs (29 million) occurred in middle- and low-income countries. Even though morbidity and mortality from NCDs mostly occur in adulthood, exposure to risk factors begins early in life. In line with research demonstrating that proper action can vastly decrease the burden of NCDs, WHO adopted a new health goal in 2012: to reduce avoidable mortality from NCDs by 25% by 2025 (the 25 by 25 goal) (10).

During 2012, 56 million deaths occurred worldwide, of which 38 million were due to NCDs (11). About 28 million of these NCD deaths occurred in middle- and low-income countries (12). Deaths due to NCDs have increased worldwide since 2000. While the deaths from infectious diseases are estimated to decrease, the annual total number of deaths due to NCDs is estimated to increase to 52 million by 2030 (13). Mortality due to CVD is

projected to rise from 17.5 million in 2012 to 22.2 million by 2030, and deaths due to cancer, from 8.2 million to 12.6 million. The four major NCDs account for about 82% of NCD deaths (13).

Premature death is one of the biggest concerns in evaluating the importance of NCDs in a society. Approximately 42% of the people who died from NCD deaths in 2012 were less than 70 years old. Most premature deaths (82%) occur in low- and middle-income countries. CVD (37%), cancer (27%), chronic respiratory diseases (8%) and diabetes (4%) were responsible for the majority of premature NCD deaths.

1.2. Risk factors

Alcohol is implicated in increased risk of cancer of the mouth, oropharynx, nasopharynx, larynx, oesophagus, colon, rectum, liver and female breast (14), as well as of liver cirrhosis and pancreatitis (15,16). In addition, alcohol consumption is associated with hypertensive disease, atrial fibrillation and haemorrhagic stroke. According to WHO, 48% of the global adult population has never consumed alcoholic beverages, although middle- and high-income countries have the highest alcohol consumption (17).

Physical inactivity is one of the most important risk factors for mortality worldwide and is associated with 3.2 million deaths and 69.3 million DALYs annually (18). Regular physical activity decreases the risk of ischaemic heart disease, stroke, breast and colon cancer, and diabetes. It also aids weight control and the prevention of obesity (19).

Excess dietary consumption of sodium may cause a higher risk of hypertension and CVD (20,21). The source of salt in the diet varies among countries. Salt may be used more often in ready-made meals or processed foods in some countries, and in food preparation or consumption at home in others. As expected, higher sodium intake (over 3.5 g per day) may cause CVD (22,23).

Tobacco use is thought to kill approximately 6 million people each year, and second-hand smoke, 600 000 (170 000 of whom are children) (24,25). In addition, tobacco use causes a major economic burden, since it results in higher medical costs and loss of productivity. The definition of tobacco use includes the current use of tobacco in both smoked and smokeless forms (26).

Among adults, the worldwide prevalence of current tobacco smoking was approximately 22% in 2012, although it differs between countries and is higher in men (37%) than women (7%) (7).

High blood pressure is thought to be responsible for approximately 9.4 million deaths and 7% of the disease burden in terms of DALYs in 2010 (18). Hypertension may cause renal failure, dementia, stroke, myocardial infarction, cardiac failure and blindness, which have a huge impact on health systems (27,28). Several modifiable factors are implicated in hypertension, such as socioeconomic determinants, high fat and salt consumption, psychological stress, physical inactivity, overweight or obesity, reduced vegetable or fruit consumption, alcohol and inadequate access to health care. Both ageing and genetic factors are associated with hypertension.

Law, Morris & Wald (29) reported that decreasing systolic blood pressure by 10 mmHg is related to reductions of 22% in coronary heart diseases (CHD) and 41% in stroke. Similarly, Di Cesare et al. (30) showed that it is also associated with a 41–46% reduction in cardiometabolic mortality. Hypertension, CHD, stroke, diabetes, certain types of cancer, obstructive sleep apnoea and osteoarthritis are associated with obesity. The ideal median body mass index (BMI) for adults is accepted as 21–23 kg/m² and the targeted BMI range is 18.5–24.9 kg/m². Overweight is defined as having a BMI \geq 25 kg/m², while obesity is considered as having a BMI \geq 30 kg/m². Both of these conditions may result in an increased risk for several conditions (31). Combined, they cause about 3.4 million deaths and 93.6 million DALYs each year (18). Obesity is well known to result in worse health outcomes and higher mortality.

Global obesity prevalence has increased dramatically over the last 30 years. Women usually have a greater tendency towards obesity than men: 11% of men and 15% of women (≥ 18 years) were reported to be obese in 2014, while the general prevalence was about 9%. More than 5 million adults in the world are obese. In addition, 38% of men and 40% of women (≥ 18) were reported to be overweight in 2014. Overweight is also an important problem for children aged under 5 years, affecting approximately 42 million of them. Both overweight and obesity are associated with income, since their prevalence is higher in both sexes in high- and upper-middle-income countries. In the Netherlands and Switzerland, however, obesity prevalence in children seems to have been stabilized (32,33).

Diabetes is also a very important cause of premature mortality, with a prevalence of approximately 9% in 2014 and diabetes causes about 1.5 million deaths and 89 million DALYs each year (7). CVD, kidney failure, blindness and lower-limb amputation are associated with diabetes (34), and impaired glucose tolerance and fasting glycaemia are clearly known to carry a higher risk of diabetes and CVD. As with obesity, diabetes has shown in increased global prevalence over recent years, especially in low- and middle-income countries. Unhealthy diet, physical inactivity, obesity/overweight, increased blood pressure, high cholesterol are among the major modifiable risk factors of diabetes. Diabetes as a risk factor for NCD was assessed by means of blood glucose measurement. Both obesity and diabetes can be prevented by several types of interventions related to the food sector and the promotion of physical activity in both individuals and populations. Similarly, weight loss and routine physical activity can decrease the risk of diabetes.

1.3. NCDs and risk factors in Turkey

The issue of NCDs is very important for Turkey, as well as the rest of the WHO European Region. The WHO Regional Office for Europe estimated that the cumulative percentage of NCD-related deaths in the Region was 86% (35). Of 430 459 deaths in Turkey in 2000, 305 467 were due to NCDs, and CVD accounted for 205 457 of the latter. The three most common causes of death from disease in Turkey are ischaemic heart disease (22%), cerebrovascular diseases (15%) and chronic obstructive pulmonary disease (6%). The sixth and tenth most common causes of death in Turkey are hypertensive heart disease and inflammatory heart diseases, respectively (36).

NCDs were estimated to be responsible for 86% of total deaths in Turkey (37). The probability of premature death from the four main NCDs was about 18%, and 42% of males and 13% of females were found to be current tobacco smokers (total: 27%) (38,39). Total alcohol consumption per capita was 1.4 L pure alcohol in 2015 (12).

Premature death from NCDs will continue to be among the most important obstacles to global development in this century, including in Turkey, and the premature death rate attributed to the four main NCDs was 303 per 100 000 in 2016 (40). WHO's *Noncommunicable diseases progress monitor 2017* reported that NCDs accounted for 88% of deaths (392 000) in Turkey (population: over 78 million) and 17% of the risk of premature death (41).

Turkey seems to have succeeded in setting national NCD targets and collecting mortality data, although risk-factor surveys have been only partially achieved. In addition, the national integrated NCD policy, strategy or action plan could still be improved. On the other hand, Turkey has been very successful in taking measures to reduce the demand for tobacco, including tax increases; large graphic health warnings on packaging; bans on advertising, promotion and sponsorship, campaigns with the mass media; and smoke-free policies. Turkey has also taken action against the harmful use of alcohol, including advertising bans or comprehensive restrictions, and increased excise taxes. Efforts to reduce unhealthy diets include the adoption of policies on salt/sodium and saturated and trans fats, and restrictions on food marketing. The country has also promoted public education and awareness campaigns on physical activity (41). The provision of drug therapy or counselling to prevent heart attacks and strokes, however, has not yet been achieved.

1.4. STEPwise approach

To address the global health problem of NCDs, in 2013, the World Health Assembly – WHO’s decision-making body – adopted a global monitoring framework for NCDs (42), with 25 key indicators to track progress in prevention and control, and a set of global voluntary targets, linked to the framework, for: the prevention and control of NCDs by 2025 (including a target to reduce premature mortality from the four main NCDs by 25%), the main behavioural and metabolic risk factors, and health systems. Further, the 2030 Agenda for Sustainable Development recognized the importance of addressing NCDs with the inclusion of a similarly ambitious target to reduce the number of premature deaths from NCDs by one third by 2030 (43).

Recognizing a global need for data on key NCD risk factors, WHO initiated the STEPwise approach to surveillance (STEPS) in 2002 (44). Its goals are to guide the establishment of risk-factor-surveillance systems in countries by providing a framework and approach:

- to strengthen the availability of data to help countries inform, monitor, and evaluate their policies and programmes;
- to facilitate the development of population profiles of exposure to NCD risk factors;
- to enable comparability across populations and time frames; and
- to build human and institutional capacity for NCD surveillance.

Since its inception, STEPS has argued that small amounts of good-quality data are more valuable than large amounts of poor-quality data. It supports monitoring a few modifiable risk factors that reflect a large part of the future NCD burden and that can indicate the impact of interventions considered to be effective in reducing the leading NCDs. Because STEPS also promotes the collection of data on a number of different risk factors, in contrast to surveys of single factors, it allows the creation of an understanding of how risk factors cluster in a population and offers an opportunity for countries to estimate the small proportion of the population with high overall risk of a cardiovascular event, for referral for possible treatment.

The surveillance of NCDs consists of a process of permanent monitoring of the population’s health situation, mainly risk factors for the development of disease and aspects of the social context, in such a way to ensure that interventions focus on and are adjusted to the characteristics of various population groups. The information obtained can be used in decision-making at the individual and collective levels, to reduce the risks of morbidity and mortality.

Against this backdrop, the study described in this publication provides valuable information on NCD risk factors in Turkey and should allow the different actors of the health system and the community in general, given the population representativeness of the results, clearly to identify the risk factors on which measures and strategies should be formulated to prevent the increase of new cases of CVD, diabetes and cancer. The study uses STEPS to gather information on NCD risk factors for the sample representing Turkey and its 12 regions, as described by level-1 Nomenclature of Territorial Units for Statistics (NUTS-1).

2

SURVEY GOAL AND OBJECTIVES

2. SURVEY GOAL AND OBJECTIVES

2.1. Survey goal

The general goal of the survey is to determine the prevalence of major risk factors for NCDs using the WHO-approved STEPS survey method (44) by using the National Household Health Survey in Turkey – Prevalence of Noncommunicable Disease Risk Factors (NHHST) to evaluate the baseline situation and enable more efficient planning of activities for the prevention and control of NCDs.

STEPS is a surveillance strategy that consists of a simple, standardized approach to collecting, analysing and distributing information on the risk factors that determine the most common NCDs. Its application seeks to help build and strengthen countries' capabilities to perform surveillance of these risk factors. This method is flexible, since it can be adapted to a country or territory's economic, logistical, human resources and infrastructure capacities and to its information needs for the construction of the baseline of risk factors for NCDs. At present, more than 104 WHO Member States have implemented this method.

The WHO established eight risk factors considered to be the most important for inclusion in surveillance strategies, as valid methodologies are available for their measurement and in view of the potential of their control to decrease premature death and disability. These risk conditions were grouped into behavioural factors understood as modifiable (tobacco use, harmful use of alcohol, low consumption of fruits and vegetables, and physical inactivity) and biological factors considered controllable (hypertension, overweight and obesity, high blood sugar and increased total cholesterol).

2.2. Survey objectives

The objectives of the NHHST are:

- to determine the prevalence of the most common behavioural risk factors for NCDs in the general population aged ≥ 15 years, representing both sexes;
- to determine the prevalence of the most common behavioural risk factors for NCDs in samples representing the populations in the 12 NUTS-1 regions;
- to determine the prevalence of biological risk factors for NCDs in the population aged ≥ 15 years; and
- to determine the differences in the prevalence of risk factors between the sexes, areas of residence and five age groups.

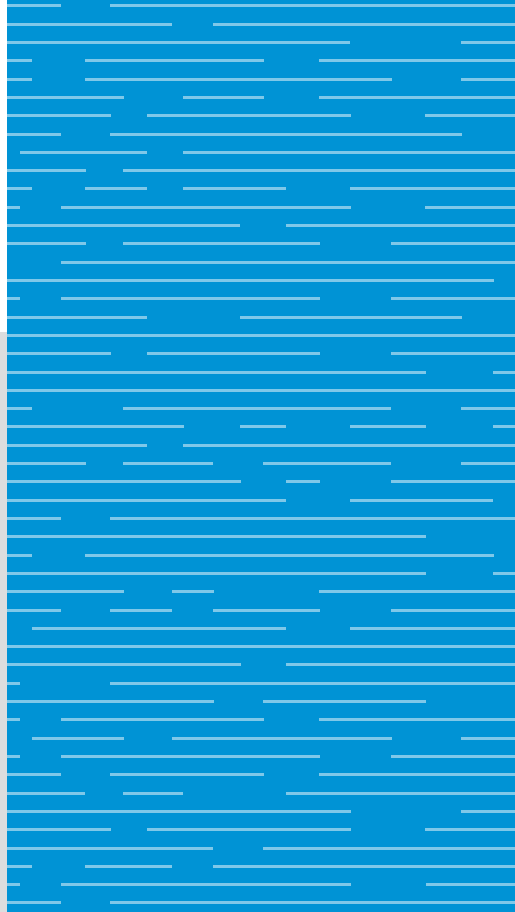
2.3. Rationale for the survey

Many NCDs may be reduced through measures targeting four or more risk factors, including tobacco use, physical inactivity, harmful use of alcohol and unhealthy diet. The Ministry of Health of Turkey worked to set national targets for 2025 based on the national situation (taking into account the nine global targets for NCDs and WHO's efforts to collect data on outcome and process indicators in 2015) and achieve these targets (taking account of the WHO Global NCD Action Plan 2013–2020). Further, the Ministry of Health launched the National Multisectoral Action Plan for Noncommunicable Diseases 2017–2025 (39).

The data on the prevalence of risk factors for NCDs available from previous surveys in Turkey, however, were limited and fragmented. Nationally representative, comprehensive, comparable and up-to-date data on NCD risk factors are needed to evaluate the effectiveness of current public health policies and to develop further interventions for NCD prevention and control. The WHO-assisted NHHST has been implemented to gather these data. The survey was planned to be carried out in two phases: a baseline study conducted in 2017 and a follow-up phase in 2019. This publication describes phase 1.

3

SURVEY METHODOLOGY



3. SURVEY METHODOLOGY

The STEPS method evaluates risk factors through the application of the STEPS instrument, which allows the collection of data through:

1. a questionnaire
2. physical measures
3. biochemical measures.

Each step can be deepened: they can be basic, extended and optional. In implementation, the Ministry of Health further extended the STEPS instruments for nation-specific measurements (see Annex 3).

Step 1 consists of evaluation based on a questionnaire that investigates exposure to four behavioural risk factors: tobacco consumption, harmful alcohol consumption, low consumption of fruits and vegetables, and physical inactivity.

Step 2 considers the physical measurement of variables such as blood pressure, height, weight, and waist and hip circumference to assess exposure to biological risk factors such as high blood pressure, overweight and obesity.

Step 3 adds biochemical measurements by taking blood and urine samples for the detection of high levels of glycaemia, hypercholesterolemia and sodium intake.

Data were collected in April–September 2017, using the instrument in Annex 3.

NHSST is a cross-sectional household survey that collects information through an established questionnaire. This information is obtained by interviewing, making a physical examination of and taking biological samples from subjects. The target population consists of a sample of people aged ≥ 15 years, living in households randomly selected according to the WHO protocol.

Biological measurements are made on whole-blood and urine samples. Fasting blood glucose, total cholesterol, high-density lipoprotein (HDL) cholesterol, triglycerides, haemoglobin A1c or glycated haemoglobin (HbA1c) test, urinary creatinine, and urinary sodium are measured for all respondents who agreed to participate in step 3 of the survey.

3.1. Inclusion criteria

Household members who met the following criteria were included in the survey. Subjects:

- were citizens of the Republic of Turkey aged ≥ 15 years;
- gave written informed consent to their participation, as demonstrated by the Directorate-General for Health Research of the Ministry of Health to the ethics committee that approved the study; and
- had no disability preventing them from answering the questions of the interview.

3.2. Exclusion criteria

Household members who met at least one of the following criteria were excluded from the study:

- an age of 0–14 years;
- residence in an institution, including motels, hotels, hospitals, student hostels, prisons, etc.;
- lack of status as a permanent resident of Turkey;
- status as visitors to the homes where the field survey was performed; and

- cognitive impairment at a level that would hinder the subject from understanding the questions of survey and giving clear and correct answers.

3.3. Sample size

For calculating the sample size, the prevalence of overweight and obesity ($P = 53.6\%$, rounded to $P = 0.50$), identified by the Turkish Statistical Institute (TURKSTAT) during the health survey of 2014, was used, assuming a 95% confidence interval (CI) ($Z = 1.96$), a 5% acceptable margin of error (e), a complex sampling design effect (D) coefficient of 1.50, and equal representation of the sexes in each age group (S) (five age groups for each sex or a total of 10 groups). The study also aims to obtain regional-level estimates for 12 NUTS-1 regions in Turkey. Thus, the maximum number of different groups in the sample size was 12. Calculations resulted in a sample size of 6915 individuals, which was further increased by a non-response factor of 20% ($i = 0.20$) to 8644, to account for non-response. A total of 8644 subjects aged ≥ 15 years was required following these assumptions.

3.4. Effective sample

Of the 8650 households visited,¹ 6053 people aged ≥ 15 years participated in the study, of whom 3352 also completed step 3 (2701 people out of the 6053 selected did not want to participate).

The overall non-response rate (including those households whose members were not home or rejected participation at the door) corresponds to 30% of the households visited for steps 1 and 2 and 61.22% for step 3.

3.5. Sampling frame

The survey of NCDs risk factors is conducted nationwide, so the sampling frame included all citizens in Turkey (2016 population: 79 814 871). Administratively, Turkey has 12 NUTS-1, 26 NUTS-2 and 81 NUTS-3 regions. The level-3 NUTS regions in Turkey correspond to 81 provinces. Turkey had 970 districts in November 2017. The multistage cluster sampling frame covers 865 clusters distributed over all NUTS-3 provinces. This publication presents NUTS-1 estimates, so the sampling strategy considered population concentrations at that level. The random selection of clusters may exclude some of the NUTS-3 provinces.

3.6. Sampling design

As per WHO STEPS recommendation, a multistage cluster sampling strategy was used. The national household address frame updated in February–August 2016 was taken as the basis of sampling.

(TURKSTAT determined the 100 primary sampling units (PSUs) using the probability-proportionate-to-size sampling method. Each PSU contained 10 secondary sampling units (SSUs). At step 3, at least 10 households were randomly selected from each selected SSU. Finally, one eligible respondent was selected from the list of all eligible respondents within a selected household, using the random selection method as described in the WHO STEPs manual (44). The sample size for each stage was:

1. selection of PSUs: 865 clusters were chosen, each containing approximately 100 household addresses;
2. selection of SSUs: 8644 households were chosen, with 10 households (addresses) within each selected cluster;
3. selection of individuals in the field: after all eligible adults in the selected household were documented, one individual was randomly selected by use of a computer program.

¹ The sample of the TURKSTAT included 8650 households, instead of 8644, owing to the indivisibility of clusters.

Table 1 presents all NUTS regions, and their constituent regions and provinces.

Table 1. NUTS regions in Turkey

NUTS-1 (regions)	NUTS-2 (subregions)	NUTS-3 (provinces)
Istanbul (TR1)	Istanbul (TR10)	Istanbul (TR100)
Western Marmara (TR2)	Tekirdağ (TR21)	Tekirdağ (TR211)
		Edirne (TR212)
		Kırklareli (TR213)
	Balıkesir (TR22)	Balıkesir (TR221)
		Çanakkale (TR222)
Aegean (TR3)	Izmir (TR31)	İzmir (TR310)
	Aydın (TR32)	Aydın (TR321)
		Denizli (TR322)
		Muğla (TR323)
	Manisa (TR33)	Manisa (TR331)
		Afyonkarahisar (TR332)
		Kütahya (TR333)
Uşak (TR334)		
Eastern Marmara (TR4)	Bursa (TR41)	Bursa (TR411)
		Eskişehir (TR412)
		Bilecik (TR413)
	Kocaeli (TR42)	Kocaeli (TR421)
		Sakarya (TR422)
		Düzce (TR423)
		Bolu (TR424)
		Yalova (TR425)
Western Anatolia (TR5)	Ankara (TR51)	Ankara (TR510)
	Konya (TR52)	Konya (TR521)
		Karaman (TR522)
Mediterranean (TR6)	Antalya (TR61)	Antalya (TR611)
		Isparta (TR612)
		Burdur (TR613)
	Adana (TR62)	Adana (TR621)
		Mersin (TR622)
	Hatay (TR63)	Hatay (TR631)
		Kahramanmaraş (TR632)
Osmaniye (TR633)		

Table 1 (contd)

NUTS-1 (regions)	NUTS-2 (subregions)	NUTS-3 (provinces)
Central Anatolia (TR7)	Kırıkkale (TR71)	Kırıkkale (TR711)
		Aksaray (TR712)
		Niğde (TR713)
		Nevşehir (TR714)
		Kırşehir (TR715)
	Kayseri (TR72)	Kayseri (TR721)
		Sivas (TR722)
		Yozgat (TR723)
Western Black Sea (TR8)	Zonguldak (TR81)	Zonguldak (TR811)
		Karabük (TR812)
		Bartın (TR813)
	Kastamonu (TR82)	Kastamonu (TR821)
		Çankırı (TR822)
		Sinop (TR823)
	Samsun (TR83)	Samsun (TR831)
		Tokat (TR832)
		Çorum (TR833)
		Amasya (TR834)
	Eastern Black Sea (TR9)	Trabzon (TR90)
Ordu (TR902)		
Giresun (TR903)		
Rize (TR904)		
Artvin (TR905)		
Gümüşhane (TR906)		
North-eastern Anatolia (TRA)	Erzurum (TRA1)	Erzurum (TRA11)
		Erzincan (TRA12)
		Bayburt (TRA13)
	Ağrı (TRA2)	Ağrı (TRA21)
		Kars (TRA22)
		Iğdır (TRA23)
		Ardahan (TRA24)

Table 1 (contd)

NUTS-1 (regions)	NUTS-2 (subregions)	NUTS-3 (provinces)
Central Eastern Anatolia (TRB)	Malatya (TRB1)	Malatya (TRB11)
		Elazığ (TRB12)
		Bingöl (TRB13)
		Tunceli (TRB14)
	Van (TRB2)	Van (TRB21)
		Muş (TRB22)
		Bitlis (TRB23)
		Hakkâri (TRB24)
South-eastern Anatolia (TRC)	Gaziantep (TRC1)	Gaziantep (TRC11)
		Adıyaman (TRC12)
		Kilis (TRC13)
	Şanlıurfa (TRC2)	Şanlıurfa (TRC21)
		Diyarbakır (TRC22)
	Mardin (TRC3)	Mardin (TRC31)
		Batman (TRC32)
		Şırnak (TRC33)
		Siirt (TRC34)

Fig. 1 displays the geographical borders of the NUTS-1 regions and the 81 provinces they cover.

Table 2 presents the number of clusters and number of households in each NUTS-1 regions, while Fig. 2 displays the number of household in the sample by NUTS-3 provinces. The 865 clusters are the PSUs of the study, which are displayed in Fig. 3 by their geographical coordinates.

Fig. 1. Geographical borders of NUTS-1 regions

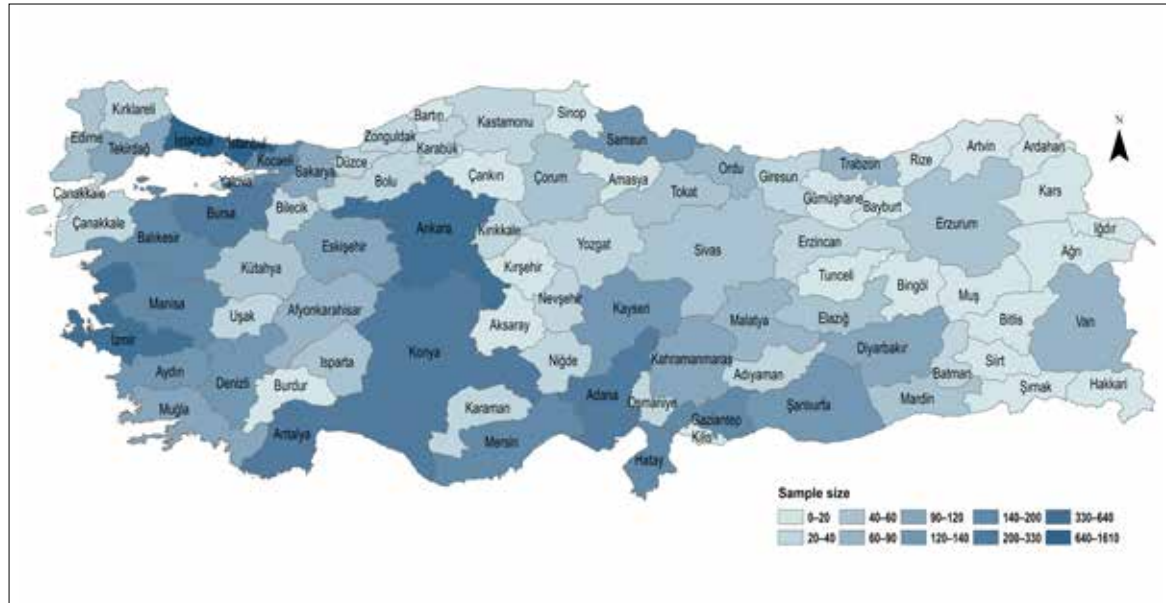


Source: Ministry of Environment and Urbanization, Republic of Turkey and TURKSTAT.

Table 2. Sample clusters and households by NUTS-1 regions

NUTS-1 regions	Number of clusters	Number of sample households
TR1	161	1610
TR2	43	430
TR3	129	1290
TR4	88	880
TR5	91	910
TR6	110	1100
TR7	44	440
TR8	53	530
TR9	31	310
TRA	19	190
TRB	32	320
TRC	64	640
Total	865	8650

Fig. 2. Sample sizes by NUTS-3 provinces



Source: Ministry of Environment and Urbanization, Republic of Turkey and TURKSTAT.

Fig. 3. Geographical location of sample clusters



Source: Ministry of Environment and Urbanization, Republic of Turkey and TURKSTAT.

3.7. Selection of individuals

Each household was visited up to three times. If household consent was obtained, a qualified household member was randomly selected for participation in the survey. An appointment was made with those selected household members who were not available during the initial visit but could be available in the following 10 days.

3.8. Survey design

The survey was carried out using three consecutive steps, as per WHO STEPS, and considering local necessities and resources.

Step 1 comprised the administration of a questionnaire adapted from NHHST, the WHO STEPS Instrument for Chronic Disease Risk Factor Surveillance, the European Health Examination Survey, and World Bank Health System Strengthening and Support Project Development indicators selected by the Ministry of Health and additional questions recommended by the Ministry's Directorate-General for Health Research. Face-to-face interviews were held, using the questionnaire to collect demographic and behavioural information in a household setting, including information on tobacco use, alcohol consumption, diet (including fruit and vegetable consumption, oil and fat consumption, meal consumption outside the home and dietary salt), physical activity, history of high blood pressure and/or raised cholesterol, history of diabetes and CVD, lifestyle counselling, cancer screening and access to health care.

Step 2 comprised a series of physical measurements of overweight and obesity using specific tests and devices (body weight and height, waist and hip circumference), blood pressure and heart rate. During the household visits, blood pressure and heart rate were measured on two separate occasions, on the joint request of WHO and the Directorate-General for Health Research of the Ministry of Health. The first measurement was made during step 2 and the second, during the subsequent visit to each household for step 3 (fasting measures).

Step 3 comprised a series of biochemical measurements in capillary blood, using dry chemical methods, and in urine. Measurements included blood glucose, total cholesterol, HDL cholesterol, triglycerides, HbA1C and urinary sodium and creatinine. Participants collected non-fasting urine samples in containers that they put into zip-closable plastic bags. Samples were sent for analysis to the Central Laboratory of the Hacettepe University Faculty of Medicine, Ankara, Turkey.

3.9. Weighting of the survey

Because the data covered a sample of the target population, they had to be weighted. Thus, sample weighting was carried out to correct differences in the age, sex, area of residence distribution (NUTS-1 region), education level of the sample versus the target population and probabilities of selection. The sample weight for each case in the survey sample accounted for the number of cases it represented in the sampling frame, based on the sample selection procedure. TURKSTAT provided the first-stage sample weights, based on the inclusion probabilities of the cluster-level PSUs, and the inclusion probabilities of the SSUs. The third component of the sampling weight was the inclusion probability of a household member, which was obtained from the household information records. The product of the three inclusion probabilities for PSUs, SSUs and household members was inverted to obtain the base weights.

The second weight was the non-response weight, which was obtained from the interview tracking forms. Investigators first adjusted inclusion probabilities at the cluster level for non-coverage, as some of the addresses included in the sample did not exist because of minor differences between actual addresses and the address-based population count of TURKSTAT. The non-responding households in each cluster were obtained from the interview tracking forms. Table 3 presents the number of clusters by number of non-responding households for each NUTS region. There was a total of 2422 non-responses in 865 clusters. There were an additional 175 non-covered addresses, leaving a total of 6053 responding households out of 8650 household addresses in the sample.² The noncoverage and nonresponse adjustments were available at the cluster level and, thus, investigators were able to calculate nonresponse weights and adjust them for noncoverage at the cluster level. The product of the sample weights and nonresponse gave the base weights, which were further adjusted with poststratification to account for differences in the sex-age, sex-education and NUTS-1 proportions from those in the actual population. The nonresponse rates varied across the steps of the study, so different nonresponse weights were calculated for steps 1 and 2, and step 3.

Table 3. Distribution of nonresponding household numbers by clusters and NUTS regions

NUTS-1 regions	Number of non-responding households in each cluster										
	0	1	2	3	4	5	6	7	8	9	10
TR1	12	15	22	27	19	20	10	15	9	7	5
TR2	8	8	8	7	5	6	1	0	0	0	0
TR3	22	19	24	19	16	13	8	6	2	0	0
TR4	23	18	26	14	5	1	0	1	0	0	0
TR5	15	21	15	16	16	5	0	1	2	0	0
TR6	19	11	16	18	14	9	10	11	1	0	1
TR7	13	10	5	6	2	2	1	3	1	1	0
TR8	13	15	6	7	5	1	3	2	0	0	1
TR9	16	7	2	0	2	0	1	1	0	1	1
TRA	9	3	2	0	2	3	0	0	0	0	0
TRB	12	5	7	2	2	1	1	1	0	0	1
TRC	22	3	3	7	7	3	5	2	2	2	8
Total	184	135	136	123	95	64	40	43	17	11	17
Total non-responses	0	135	272	369	380	320	240	301	136	99	170

² TURKSTAT provided 8650 households in the sample instead of the 8644 planned, because it could not adjust the number of households to be samples in each cluster.

The third weight (population weight, also known as poststratification) was used for any discrepancy that may exist between the sample and the population. By adjusting these weights, the survey sample was essentially forced to resemble the population, thus enabling inference to the entire population, not just the sample. To obtain the poststratification weights, the sex-age, sex-education and NUTS-1 distribution of the population was taken from the 2016 estimates based on TURKSTAT's 2015 address-based population count. As the response rates varied across steps 1 and 2, and step 3, poststratification needed to be done separately for them.

Table 4 presents the proportions used for two-way sex-age poststratification. It presents sample percentages for both steps 1 and 2, and step 3 by sex and age groups, as well as the population analogy taken from TURKSTAT. Analogously, Table 5 presents the sample and TURKSTAT proportions for two-way poststratification of sex-education level. Finally, Table 6 presents the NUTS-regions sample and population proportions used for poststratification to match the regional population distribution. To match the sample proportions, investigators used the raking (otherwise known as iterative proportional fitting, sample-balancing, or raking ratio estimation) method (45) for adjusting the sampling weights of the sample data based on known population characteristics given in Tables 4-6.

Table 4. Data for two-way sex-age poststratification

Age group (years)	Men			Women		
	Sample steps 1 and 2 (%)	Sample step 3 (%)	TURKSTAT (%)	Sample steps 1 and 2 (%)	Sample step 3 (%)	TURKSTAT (%)
15-29	8.21	7.43	16.12	11.12	9.46	15.47
30-44	10.77	9.87	15.28	17.35	15.72	15.00
45-59	10.61	10.44	10.92	16.09	16.71	10.79
60-69	6.29	6.77	4.55	7.65	8.56	4.90
≥ 70	4.56	5.61	2.93	7.35	9.43	4.03

Table 5. Data for two-way sex-education poststratification

Education level	Men			Women		
	Sample steps 1 and 2 (%)	Sample step 3 (%)	TURKSTAT (%)	Sample steps 1 and 2 (%)	Sample step 3 (%)	TURKSTAT (%)
Illiterate or literate but no formal schooling	3.92	5.16	2.18	22.88	22.08	13.92
Primary school completed	13.79	14.26	10.23	16.24	13.63	21.43
Secondary, vocational secondary or high school completed	15.96	14.77	28.43	5.86	5.16	7.36
College, faculty, master's or doctorate completed	6.77	5.94	9.00	22.88	22.08	13.92

Table 6. Data for NUTS-1 region poststratification

NUTS-1 regions	Sample steps 1 and 2 (%)	Sample step 3 (%)	TURKSTAT (%)
TR1	14.59	8.11	18.74
TR2	5.42	3.73	4.67
TR3	14.85	15.87	13.59
TR4	11.99	5.52	9.89
TR5	11.23	14.17	9.90
TR6	12.06	14.80	12.55
TR7	5.60	7.70	4.97
TR8	6.66	7.70	6.03
TR9	4.20	6.09	3.53
TRA	2.63	3.52	2.59
TRB	4.25	4.62	4.44
TRC	6.53	8.17	9.10

3.10. Data collection

Total of thirty teams, each of which comprising two-person, collected the survey data, using e-STEP tablet software, and the data were stored in a centralized server. The teams also recorded on the tablets the geographical coordinates of each household visited. Each survey team included a health specialist who performed physical and biochemical measurements. When they found nobody at home, teams visited households up to three times. They obtained the consent of the selected participant for all three steps of the survey. The teams were equipped with portable devices that allowed them to perform all physical and biochemical measurements, and they gave a copy of the results of the biochemical measurements to each participant. The data collection took place from April to September 2017. The field implementation of the survey used the medical equipment and supplies listed in Table 7.

Table 7. Equipment and supplies used for the field implementation

Equipment	Usage area	Pieces
Siemens DCA Vantage Instrument	HbA1C	33
CardioChek PA Analyzer	Glucose, triglycerides	33
Omron M7 Intelli IT	Blood pressure	33
SECA Stadiometer	Height	33
SECA electronic flat scale	Weight	813
SECA girth-measuring tape	Girth	201
Equipment Carrying Safety Case	Medical equipment and kits carrying case	66
Sample shipment bag	Shipment of urine to the laboratory for analysis (sodium and creatinine)	300
CDMVIT vacuum urine tube	Vacuum urine tube	10 000
CDMVIB sterile urine glass	Sterile urine glass	10 000

Equipment	Usage area	Pieces
Lancet	Blood sample/hygiene	10 000
Gloves	Blood sample/hygiene	10 000
Alcoholic wipes	Blood sample/hygiene	10 000
Capillary tube (40 ml)	Blood sample	10 000
Capillary tube (15 ml)	Blood sample	10 000
Cardioglucose kit	Blood sample (glucose)	10 000
Cardio triple panel	Blood sample (measurement of cholesterol, HDL cholesterol, triglyceride values)	10 000
Siemens DCA 2000 HbA1C Reagent Kit (ECCN;EAR99/AL:N)	HbA1C	10 000

For the supplementary requirements for the field survey, specially designed safety cases to transport the instruments for biochemical measurement was manufactured, as well as bags to transport the instruments and devices for physical measurement (see Table 7). Specially designed cases were used to transport the urine samples in cold chain, via special courier services from different points of the field survey to the Central Laboratory of Hacettepe University Faculty of Medicine.

3.11. Training of the field survey staff

The field teams received theoretical and practical training and carried out their functions following the guidelines of the STEPS manual (44) and the specifications of the manuals for the equipment used to measure glycaemia and cholesterol. The teams (78 field survey personnel from 15 regional logistic centres, representing 79 provinces in Turkey designated by TURKSTAT based on 12 NUTS-1 regions) received four days of training (10–14 April 2017) in Ankara to foster their skills in communication and their knowledge of techniques for the development of interviews, equipment management and physical and biochemical measurements. The trainees comprised 31 interviewers/data-collection specialists, 32 health professionals and 15 regional supervisors and coordinators to conduct the nationwide field surveys.

The training was conducted, under the supervision of the field team coordinator, by the programme leader, members of project team and representatives of the manufacturers of the equipment used to measure blood glucose, glycaemia, cholesterol and HbA1c. Representatives of the WHO Country Office, Turkey and the Directorate-General for Health Research of the Ministry of Health also took part.

The training programme for the first two days focused on two main groups: data-collection personnel and health professionals. Experts trained the first group in the comprehensive use of the tablets, with specially designed software, in administering the questionnaires during household visits, while doctors and trainers from supplier firms trained the second group in techniques for in taking anthropometric measurements. The groups were jointly familiarized with the procedure to be followed before and during the household visits.

The last two days of training were devoted to pilot field survey in three different regions in Ankara (Mamak, Altındağ and Keçiören): making visits to randomly selected households where the trainees both collected data and made physical and biochemical measurements under the close supervision of experts. An evaluation meeting was organized on the closing day of the training programme to elaborate on the results of the pilot field survey, the necessary clarifications were made and the precautions were taken.

3.12. Field work

After the training, the organization of the NHHST was finalized so that it could be conducted in 79 provinces, encompassing urban and rural areas, and coordinated, controlled and supervised from total of 15 logistical centres in Turkey. All necessary legal procedures and formalities were completed for the employment of total of 30 field survey teams and 15 regional supervisors and coordinators.

Each team was furnished with separate survey guides for the data collectors and the health staff, and all forms to be used during household visits and/or to be presented to the local authorities upon request. All necessary official correspondence and procedures, as well as the deployment of the majority of medical equipment and materials from the headquarters in Ankara, were completed and the field survey was initiated as of 21 April 2017.

The field and zone coordinators systematically supervised the field work, according to guidelines given in the STEPS manual (44), mainly to ensure the reliability of the data collected. To complete the field operation, the survey coordinators visited and surveyed the housing units, and subsequently focused on the final report of the field operation.

The work of control and supervision of the surveys carried out by the field coordinator and the zone coordinators was conducted systematically in order to ensure the reliability of the data collection.

3.13. Data management and consolidation

To facilitate the collection and management of data and reduce the time of application of the survey, eSTEPS software developed by WHO for the collection of the STEPS instrument was installed on tablet personal computers (PCs). The interviewers typed into the tablets all the information obtained from the participants, and the data were uploaded to a centralized database on a server, at the end of each collection day or after each survey was completed. The coordinators continuously monitored the uploading. The central database was consolidated and the quality of the data was validated according to criteria including inconsistency, jump errors, absence of data, surplus data and invalid data. The validated database for the analysis process was generated in this way.

3.14. Measurement and determination of risk factors

The measurement of the risk factors was carried out following all the guidelines and recommendations of the STEPS method (44).

3.14.1. Step 1

Through the application of the STEPS questionnaire, the field implementation teams investigated exposure to four behavioural risk factors: tobacco consumption, alcohol consumption, low consumption of fruits and vegetables, and physical inactivity.

3.14.1.1. Tobacco use

Current and daily consumption, the age of onset of daily consumption, time of cessation of daily consumption and exposure to second-hand smoke in the home and other spaces were investigated.

3.14.1.2. Consumption of alcohol

The consumption of alcohol is established according to periodicity (in the previous year and month) and the number of drinks consumed. The participants were classified as:

- non- or exdrinker: absence of alcoholic beverages during the previous 12 months;
- all respondents drinking at a high level: ≥ 60 g pure alcohol on average per occasion among men and ≥ 40 g among women;
- all respondents drinking at an intermediate level: 40–59.9 g pure alcohol on average per occasion among men and 20–39.9 g pure alcohol among women; and
- all respondents drinking at a lower level: < 40 g pure alcohol on average per occasion among men and < 20 g pure alcohol among women) (44).

3.14.1.3. Consumption of fruits and vegetables

Teams asked participants about their consumption of fruits and vegetables in a typical week (number of days of consumption and daily portions consumed). To establish risk behaviour, they took account of the current recommendation of daily consumption of at least five servings of fruits or vegetables (44).

3.14.1.4. Physical activity

The STEPS questions on physical activity were adapted from the WHO Global Physical Activity Questionnaire, version 2, which assesses behaviour in three domains: at work (which includes paid and unpaid work, in and outside the home), for transport and during leisure time. To establish the total and the level of physical activity of each participant, metabolic equivalents (METs) per minute were calculated for one week; for this, the weekly minutes of vigorous physical activity were multiplied by 8 METs and the minutes of moderate physical activity and displacements, by 4 METs. (By definition, the movements are considered as moderate-intensity physical activity.) The physical activity of the surveyed population was described using continuous indicators (MET-minutes per week and minutes per week) and category indicators using the following cut-off points to establish the level of physical activity (44).

Participants' physical activity was said to be high if they met one of the following criteria:

- vigorous-intensity activity for at least three days, reaching a minimum of 1500 MET-minutes per week; or
- ≥ 7 days of physical activity in any domain and intensity, reaching a minimum of 3000 MET-minutes per week.

Participants' physical activity was said to be moderate if they did not meet the criteria for the high level, but met any of the following three criteria:

- vigorous-intensity physical activity for ≥ 3 days for at least 20 minutes a day;
- moderate-intensity physical activity for ≥ 5 days for at least 30 minutes a day; or
- physical activity of any intensity and domain for ≥ 5 days, reaching a minimum of 600 MET-minutes per week.

Participants' physical activity was said to be low if they did not meet the criteria stated for the high or moderate levels.

3.14.2. Step 2

Physical measurements of blood pressure, height, weight, and waist and hip circumference were made to evaluate the exposure to biological risk factors: hypertension, overweight and obesity.

3.14.2.1. Blood pressure

Blood pressure (BP) was measured three times, with 15 minutes' rest after the first measurement and three minutes between the second and third. To establish the alteration of the BP, the following cut-off points were taken into account:

- high: systolic blood pressure (SBP) \geq 140 mmHg or diastolic blood pressure (DBP) \geq 90 mmHg; and
- very high: SBP \geq 160 mmHg or DBP \geq 100 mmHg.

Teams also inquired about any history of hypertension diagnosis made by a doctor or other health professional. To establish the total prevalence of hypertension, teams took account of the figure for high BP and the reported current use of drugs for the control of arterial hypertension (question asked to the participants with a background report of diagnosis). In addition, they determined the prevalence of high BP with and without antihypertensive treatment, and normal blood pressure with antihypertensive treatment.

3.14.2.2. BMI

The calculation of BMI is based on measurements of height and weight in the survey population. The height measurement is made with acrylic height 2 m long, fixed with adhesive tape on surfaces perpendicular to the floor, such as walls or doors, asking the participant to stand without shoes, with his or her body touching the stadiometer. For the measurement of weight, an electronic scale was used, placed on a flat, horizontal and firm surface such as the floor; the participants had to stand in front of the scale screen, at the centre of the scale surface, standing with the heels together, the arms at the sides and chin parallel to the floor. Before the measurement, the team verified that the participant was not wearing excess clothes, so as not to overestimate the weight.

With the height and weight averages, teams calculated participants' BMI, classifying them using the following categories (44):

Category	BMI (kg/m ²)
Underweight	< 18.5
Normal weight	18.5–24.9
Overweight	25–29.9
Obesity	> 30

3.14.2.3. Waist and hip circumference

For the measurement of the waist and hip circumference, the participant remained standing, with feet together and hands on each side of the body. A 6-mm wide fibreglass retractable tape measure, graduated in centimetres, was placed directly on the participant's skin at the midpoint between the last rib and the iliac crest to measure the circumference of the waist and in the most prominent part of the waist.

The cut-off points given in Table 8 were used in the measurement of waist circumference to establish the prevalence of waist obesity and to classify the risk of CVD and metabolic alterations related to obesity, according to waist measurement, by sex.

Table 8. WHO cut-off points and risk of metabolic complications

Indicator	Cut-off points (cm)		Risk of metabolic complications
	Men	Women	
Waist circumference	> 94	> 80	Increased
Waist circumference	> 102	> 88	Substantially increased
Waist-hip ratio	≥ 0.90	≥ 0.85	Substantially increased

3.14.3. Step 3

Step 3 of the STEPS survey included urine and blood testing. Due to fasting requirements for glucose and triglycerides measurements, blood testing was done in the morning of the day after steps 1 and 2 were done. Participants were asked to fast for 24 hours before blood samples were taken. Fasting venous capillary blood samples were taken to assess blood glucose, HbA1c, triglyceride and cholesterol levels and determine the presence of hyperglycaemia and hypercholesterolemia. These biochemical measurements were performed by dry method using the devices listed in Table 7, including automated instruments for the biochemical sampling by dry method recommended by WHO (44) for this study. The biochemical measurements in step 3 included the following:

- glucose
- cholesterol
- triglycerides
- HDL cholesterol
- HbA1c
- urinary sodium and urinary creatinine

During the STEPS 3 implementation, measurement of BP was repeated three times, with 15 minutes' rest after the first measurement and three minutes between the second and third.

3.14.3.1. Glycaemia

To determine the prevalence of raised blood glucose, the teams took into account the value of the fasting blood glucose or the current consumption of insulin or other medications to control diabetes (a question asked of participants who reported a history of diagnosis of diabetes by a health professional). In addition, the prevalence of high blood sugar with and without treatment, and normal glycaemia with treatment, was determined. The following cut-off points were used for detecting glycaemia (44):

- impaired fasting glycaemia: plasma venous value ≥ 110 mg/dl and < 126 mg/dl; and
- raised fasting blood glucose: plasma venous value ≥ 126 mg/dl or currently on medication for raised blood glucose.

3.14.3.2. HbA1c

The NHHST also included measurement of HbA1c in step 3 of the survey. The following cut-off point was used for diagnosing glycaemia:

- raised fasting blood glucose: HbA1c ≥ 6.5%.

The study also combined fasting blood glucose and HbA1c and used the following cut-off: raised fasting blood glucose:

- fasting plasma venous glucose ≥ 126 mg/dl or HbA1c $\geq 6.5\%$ or currently on medication for raised blood glucose.

3.14.3.3. Total cholesterol

To determine the prevalence of hypercholesterolemia, the total fasting cholesterol value or the current use of medications or special diet for control was considered, based on a question asked to participants who reported a diagnosis of hypercholesterolemia by a health professional. The cut-off points established in the STEPS manual (44) were used to classify total cholesterol levels, using the dry method:

- raised total cholesterol: ≥ 190 mg/dl or currently on medication for raised cholesterol.

3.14.3.4. Triglycerides

Fasting triglycerides were also measured following the recommended procedure in STEPS and using the cut-off recommended by WHO (44):

- raised triglycerides: fasting triglycerides ≥ 180 mg/dl.

3.14.3.5. HDL cholesterol

To examine low-cholesterol prevalence in the study population, the teams measured HDL cholesterol in STEPS 3 using the cut-off point recommended by WHO (44):

- suboptimal HDL cholesterol: HDL < 40 mg/dl for men and < 50 mg/dl for women.

3.14.3.6. Urinary sodium and creatinine

Urinary sodium and creatinine were measured to determine population levels of high salt intake, a risk factor mainly for hypertension and CVD. Urine samples were sent to the Central Laboratory of Hacettepe University Faculty of Medicine in Ankara in cold chain. The samples were analysed by laboratory technicians, who recorded the results on a tablet PC and uploaded them to the database on the server, to have each participant's data complete. The identification number of each participant played a crucial role here, since it was the variable used for matching the data.

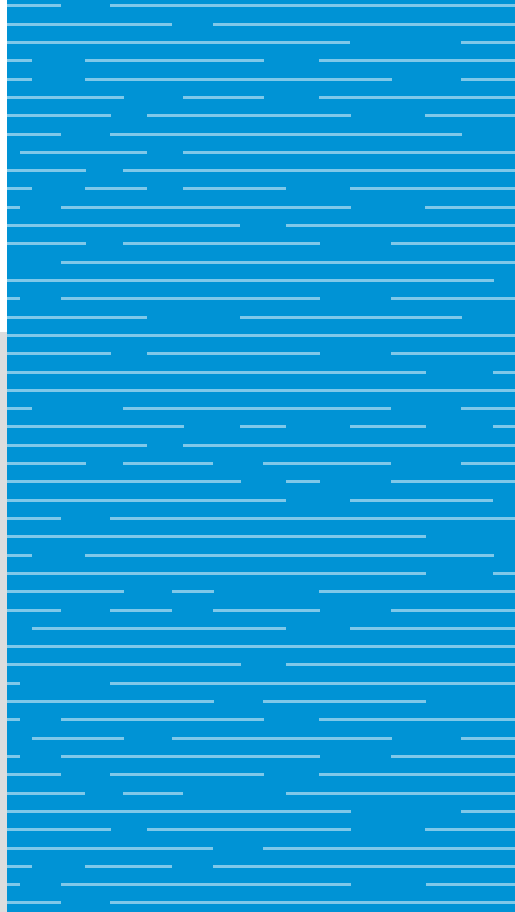
Levels of sodium and creatinine in spot urine samples are used in STEPS to estimate population 24-hour salt intake, using the following formulas (provided by the WHO Regional Office for Europe):

- estimated 24-hour sodium intake for males: $[39.58 + (0.45 \cdot \text{urinary sodium (mmol/L)}) - [3.09 \cdot \text{urinary creatinine (mmol/L)}] \cdot 88.4/1000) + (4.16 \cdot \text{BMI}) + (0.22 \cdot \text{age})$]; and
- estimated 24-hour sodium intake for females: $[17.02 + (0.33 \cdot \text{urinary sodium (mmol/L)}) - [2.44 \cdot \text{urinary creatinine (mmol/L)}] \cdot 88.4/1000) + (2.42 \cdot \text{BMI}) + (2.34 \cdot \text{age}) - (0.03 \cdot \text{age})$].

The 24-hour sodium values in mmol are divided by 17.1 in order to get grams of salt. As mentioned, WHO recommends an intake of < 5 g salt or < 2 g sodium per person per day.

4

SURVEY RESULTS



4. SURVEY RESULTS

The foremost objective of the study is to assess the risk factors for NCDs in the population of Turkey using the STEPS approach. In addition to information used to assess the risk factors and the prevalence of several health characteristics, the study also collected information on major demographic characteristics of the respondents, as there can be strong links between them. The earlier sections of this chapter present some information on the demographic characteristics of the study population in Turkey and the later sections present results on the respondents behavioural and biological risk factors for NCDs. All results presented in this report are based on weighted data, except some demographic sample information.

4.1. Sampling and participation

As mentioned, 8650 households were selected in 865 clusters (55 clusters with village status and 810 with non-village status) composed of 10 participants in each cluster, with a total of 6555 people eligible for selection as participants. Of these, 6053 (92.3%) were surveyed, with an average age of 46.8 years and margin of error of ± 0.45 . As Table 9 shows, out of 8650 households, 6053 selected household members participated in steps 1 and 2 of the study, while 3352 of these also participated in step 3. The overall participation rate was 70.0% for steps 1 and 2 and 38.6% for step 3. Out of 8650 households visited, household members were away from home or rejected participation at the door in 2095. The field teams were able to obtain information and select a member to participate in the study from 6555 households. After the successful selection of an eligible household member, 502 rejected participation in steps 1 and 2 and 3253 rejected participation in step 3 (see Table 9).

Table 9. Overall response proportions

Age group (years)	Men			Women			Both sexes		
	Eligible	Responded		Eligible	Responded		Eligible	Responded	
	N	N	%	N	N	%	N	N	%
15-29	539	497	92.2	730	673	92.2	1269	1170	92.2
30-44	729	652	89.4	1146	1050	91.6	1875	1702	90.8
45-59	703	642	91.3	1045	974	93.2	1748	1616	92.4
60-69	397	381	96.0	484	463	95.7	881	844	95.8
≥ 70	307	276	89.9	475	445	93.7	782	721	92.2
Total	2675	2448	91.5	3880	3605	92.9	6555	6053	92.3

4.2. Demographic indicators

The survey collected information on demographic indicators such as the age, sex, education, occupation, household income and marital status of respondents.

The 6053 respondents were aged ≥ 15 years and came from 79 provinces in Turkey collected into 12 NUTS-1 regions (see Table 1). This subsection presents some demographic indicators of the study population by age and sex. The NUTS-1 demographic indicators are also given in cases where the sample characteristics vary significantly across regions.

4.2.1. Age and sex characteristics

Table 10 gives the weighted and unweighted distributions of the 6053 sample respondents by age group and sex, indicating that men made up 40.4% and women, 59.6%.³ As the survey respondents were limited to people aged ≥ 15 years, the sample's age–sex distribution is not representative of the whole population of Turkey. The weighted age–sex distribution in Table 10 represents actual population distribution according to TURKSTAT's 2016 population estimates. Only the age and sex characteristics of the unweighted sample are discussed in this section, because weighted figures reported in Tables 10 and 11 exactly match TURKSTAT's 2016 population estimates, owing to the poststratification by two-way sex and age distribution.

From the results given in Table 10, the age distribution of the sample respondents for the five groups – 15–29, 30–44, 45–59, 60–69 and ≥ 70 years – are 19.3%, 28.1%, 26.7%, 13.9% and 11.9%, respectively. Based on this categorization, 47.4% of the respondents were in the group aged 15–44, and 40.6% in the group aged 45–69. Those in the oldest age group make up 11.9% of the respondents.

Table 11 shows the distribution of the respondents by NUTS-1 regions: 14.6% for TR1, 5.4% for TR2, 14.9% for TR3, 12.0% for TR4, 11.2% for TR5, 12.1% for TR6, 5.6% for TR7, 6.7% for TR8, 4.2% for TR9, 2.6% for TRA, 4.2% for TRB and 6.5% for TRC. According to the 2016 census count by TURKSTAT, the distribution of the Turkish population by NUTS-1 regions was 18.7% for TR1, 4.7% for TR2, 13.6% for TR3, 9.9% for TR4, 9.9% for TR5, 12.6% for TR6, 5.0% for TR7, 6.0% for TR8, 3.5% for TR9, 2.6% for TRA, 4.4% for TRB and 9.1% for TRC.

According to the results given in Table 10 and Table 11, women were oversampled and men undersampled. Similarly, there was minor over- and undersampling by NUTS-1 regions, which were accounted for by appropriate sample, population and non-response (cluster-level) weighting, applied using complex sample design.

Table 10. Age and sex distribution of respondents

Age group (years)	Men			Women			Both sexes		
	N	Weighted cases (%)	Unweighted cases (%)	N	Weighted cases (%)	Unweighted cases (%)	N	Weighted cases (%)	Unweighted cases (%)
15–29	497	51.0	42.5	673	49.0	57.5	1170	31.6	19.3
30–44	652	50.5	38.3	1050	49.5	61.7	1702	30.3	28.1
45–59	642	50.3	39.7	974	49.7	60.3	1616	21.7	26.7
60–69	381	48.1	45.1	463	51.9	54.9	844	9.5	13.9
≥ 70	276	42.2	38.3	445	57.8	61.7	721	7.0	11.9
Total	2448	49.8	40.4	3605	50.2	59.6	6053	100.0	100.0

Note. The weighted results exactly match TURKSTAT's 2016 population estimate, owing to post-stratification by two-way sex-age and NUTS-1 population distribution.

³ This section discusses only the age and sex characteristics of the unweighted sample, because the weighted results reported in Tables 10 and 11 exactly match TURKSTAT's 2016 population estimate, owing to post-stratification by two-way sex-age and NUTS-1 population distribution.

Table 11. NUTS-1 distribution of respondents

NUTS-1 regions	Respondents		
	N	Weighted cases (%)	Unweighted cases (%)
TR1	883	18.7	14.6
TR2	328	4.7	5.4
TR3	899	13.6	14.9
TR4	726	9.9	12.0
TR5	680	9.9	11.2
TR6	730	12.6	12.1
TR7	339	5.0	5.6
TR8	403	6.0	6.7
TR9	254	3.5	4.2
TRA	159	2.6	2.6
TRB	257	4.4	4.2
TRC	395	9.1	6.5
Total	6053	100.0	100.0

Note. The weighted results exactly match TURKSTAT's 2016 population estimate, owing to post-stratification by two-way sex-age and NUTS-1 population distribution.

4.2.2. Marital status

Table 12 presents the results for the marital status of respondents by age group and sex. More than half (65.9%) stated that they were currently married (65.9% of men and 66.0% of women); 27.0% were single; 1.8%, divorced; and the remaining 5.3%, widowed. Marital status varied with age, with the predominance of marriage to a partner starting from the age of 30 and the status of a single person, in those aged 15–29 years.

The percentage of single women (22.4%) was lower than that of single men (31.7%), and more people were widowed than divorced. The percentage of widows aged ≥ 70 years (39.2%) was almost 10 times that in the group aged 45–59 (4.0%), showing the feminization of old age or excess male mortality.

Table 12. Marital status of respondents by sex and age group

Sex	Age group (years)	N	Marital status			
			Single (%)	Currently married (%)	Divorced (%)	Widowed (%)
Men	15–29	497	83.2	16.7	-	0.1
	30–44	652	12.1	86.7	1.1	0.2
	45–59	642	3.6	93.5	1.9	1.1
	60–69	381	2.0	92.0	1.4	4.6
	≥ 70	276	0.8	84.2	0.3	14.8
	Total	2448	31.7	65.9	0.9	1.6

Table 12 (contd)

Sex	Age group (years)	N	Marital status			
			Single (%)	Currently married (%)	Divorced (%)	Widowed (%)
Women	15-29	673	62.3	36.4	1.2	0.1
	30-44	1050	6.6	88.8	3.7	0.9
	45-59	974	4.4	84.1	4.4	7.0
	60-69	463	1.9	69.5	2.5	26.1
	≥ 70	445	1.0	41.6	0.4	57.0
	Total	3605	22.4	66.0	2.7	8.9
Both sexes	15-29	1170	73.0	26.3	0.6	0.1
	30-44	1702	9.4	87.7	2.4	0.5
	45-59	1616	4.0	88.8	3.1	4.0
	60-69	844	1.9	80.3	2.0	15.7
	≥ 70	721	0.9	59.6	0.3	39.2
	Total	6053	27.0	65.9	1.8	5.3

Table 13 displays a significant variation across NUTS-1 regions for all classes of marital status. The proportion of those never married was lowest in TR3 (20.2%) and highest in TRC (38.4%). The percentage of currently married respondents was highest in TR8 (70.5%) and lowest in TRC (59.3%). The proportion of divorced respondents was highest in TR3 (3.8%) and lowest in TR9 and TRA (0.1%). The percentage of widowed respondents was lowest in TRC (1.7%) and highest in TRA (8.4%).

Table 13. Marital status of respondents by NUTS-1 regions

NUTS-1 regions	Both sexes				
	N	Single (%)	Currently married (%)	Divorced (%)	Widowed (%)
TR1	883	28.6	65.2	1.7	4.5
TR2	328	23.5	67.4	2.6	6.5
TR3	899	20.2	68.0	3.8	8.0
TR4	726	27.2	66.2	1.6	5.0
TR5	680	27.6	65.2	1.9	5.3
TR6	730	24.1	69.1	2.5	4.3
TR7	339	28.6	63.7	0.6	7.1
TR8	403	20.7	70.5	1.6	7.2
TR9	254	30.5	64.1	0.1	5.3
TRA	159	21.9	69.5	0.1	8.4
TRB	257	34.7	62.1	0.3	2.9
TRC	395	38.4	59.3	0.5	1.7
Total	6053	27.0	65.9	1.8	5.3

4.2.3. Education

Educational attainment⁴ is given by sex in Fig. 4. Among the female respondents, 24.5% were illiterate or had no formal schooling, 38.4% had primary-level schooling; 27.3%, secondary or vocational secondary schooling; and 9.8%, a college education. The corresponding percentages for males were: 9.7%, 34.1%, 39.5% and 16.7%, respectively.

Fig. 4. Respondents' levels of education by sex

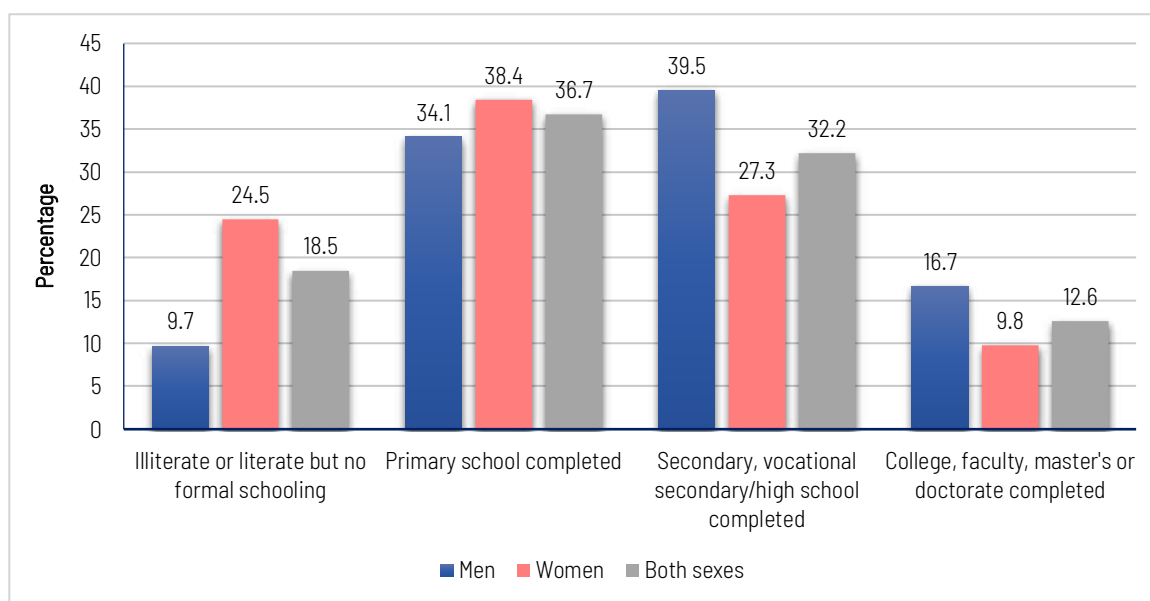


Table 14 shows that 18.5% of the respondents were illiterate or had no formal schooling, 36.7% of all respondents had primary-school education; 32.2%, secondary or vocational secondary education; and 12.6%, college education. The proportion of respondents with no education increased with age, and that higher levels of education were found in younger age groups. These results are perfectly compatible with the average years of education completed, which is examined later (see Table 16).

Table 15 shows the highest level of educational attainment by NUTS-1 regions, with significant variation between regions in educational attainment at all levels. TRA had the highest rate of illiteracy or no formal schooling (39.6%), followed by TRB (33.1%) and TRC (31.6%). The lowest such rates were found in TR4 (11.4%), TR5 (12.1%) and TR1 (10.1%). The regions with the highest percentages of high-school education were TRC (40.8%), TR4 (37.1%) and TR5 (36.3%) while those with the lowest such percentages were TRA (22.0%), followed by TR3 (26.9%) and TR8 (28.3%).

Table 16 and Table 17 show the average years of education of the survey respondents by sex and age group, and NUTS-1 regions, respectively. The mean number of years of education was low (9.1 years) for the overall study sample, as 55.2% of the respondents had an education level below secondary school. The average years of education differed greatly by both sex and age. The group with the highest number of average years of education was that aged 15–29 years. As mentioned, the average years of education decreased proportionally with age.

⁴ This section discusses only highest level of educational attainment of the unweighted sample, because the weighted results reported in Tables 14 and 15 exactly match TURKSTAT's 2016 population estimates, owing to post-stratification by two-way sex-education, age-sex and NUTS-1 population distribution.

Table 14. Respondents' highest level of education by sex and age group

Sex	Age group (years)	N	Illiterate or literate but no formal schooling (%)		Primary school completed (%)		Secondary, vocational secondary, or high school completed (%)		College, faculty, master's or doctorate completed (%)	
			Weighted cases	Unweighted cases	Weighted cases	Unweighted cases	Weighted cases	Unweighted cases	Weighted cases	Unweighted cases
Men	15-29	497	0.8	1.4	4.1	4.8	75.4	68.2	19.7	25.6
	30-44	652	2.0	2.6	19.3	28.4	59.1	47.5	19.6	21.5
	45-59	642	4.3	7.3	31.3	46.6	46.1	31.8	18.3	14.3
	60-69	381	9.7	15.0	43.9	53.0	34.8	22.6	11.7	9.4
	≥ 70	276	28.5	39.5	41.1	45.3	20.8	9.8	9.6	5.4
	Total	2448	4.4	9.7	20.5	34.1	57.0	39.5	18.1	16.7
Women	15-29	673	2.1	4.9	5.2	8.5	70.7	64.9	22.0	21.7
	30-44	1050	6.7	9.9	35.3	47.4	41.1	29.6	16.9	13.0
	45-59	974	15.1	20.5	45.2	55.2	29.0	18.5	10.7	5.7
	60-69	463	39.2	49.5	37.1	38.7	19.2	9.3	4.6	2.6
	≥ 70	445	64.0	71.0	28.1	25.4	6.7	2.7	1.1	0.9
	Total	3605	14.9	24.5	27.7	38.4	42.7	27.3	14.7	9.8
Both sexes	15-29	1170	1.4	3.4	4.7	6.9	73.1	66.3	20.8	23.3
	30-44	1702	4.3	7.1	27.2	40.1	50.2	36.5	18.3	16.3
	45-59	1616	9.7	15.3	38.2	51.8	37.6	23.8	14.5	9.2
	60-69	844	25.0	33.9	40.4	45.1	26.7	15.3	8.0	5.7
	≥ 70	721	49.0	58.9	33.6	33.0	12.7	5.4	4.7	2.6
	Total	6053	9.6	18.5	24.2	36.7	49.9	32.2	16.4	12.6

Note. The weighted results reported exactly match TURKSTAT's 2016 population estimates, owing to post-stratification by two-way sex-education, age-sex and NUTS-1 population distribution.

4. SURVEY RESULTS

Respondents aged 15–29 received 11.3 mean years of education, in contrast to the figures for the groups aged 30–44 (9.6 years), 45–59 (8.1 years), 60–69 (6.0 years) and ≥ 70 (3.9 years). Similarly to the pattern for age groups, the average years of education differed significantly between the sexes: 9.9 years for men and 8.2 years for women (an average difference of 1.7 years).

The average years of education by NUTS-1 regions shown in Table 17 and Fig. 5 parallel the general trends in Table 15. The average years of education were highest in TR5 (9.9 years) and lowest in TR8 (8.3 years).

Table 15. Respondents' levels of education by NUTS-1 regions, both sexes

NUTS-1 regions	N	Illiterate or literate but no formal schooling (%)		Primary school completed (%)		Secondary, vocational secondary, or high school completed (%)		College, faculty, master's or doctorate completed (%)	
		Weighted cases	Unweighted cases	Weighted cases	Unweighted cases	Weighted cases	Unweighted cases	Weighted cases	Unweighted cases
TR1	883	6.0	10.1	28.0	43.3	46.2	31.3	19.8	15.4
TR2	328	6.9	12.2	34.3	50.6	46.3	28.4	12.5	8.8
TR3	899	9.7	16.4	29.0	42.8	41.8	26.9	19.5	13.9
TR4	726	5.1	11.4	23.4	39.0	56.4	37.1	15.1	12.5
TR5	680	5.7	12.1	23.2	33.1	50.3	36.3	20.9	18.5
TR6	730	8.4	19.0	22.0	36.3	56.9	34.4	12.8	10.3
TR7	339	11.5	26.0	23.3	35.1	51.4	28.6	13.7	10.3
TR8	403	15.1	31.5	23.8	33.3	48.5	28.3	12.5	6.9
TR9	254	10.6	20.1	19.6	27.2	45.4	34.3	24.4	18.5
TRA	159	26.7	39.6	17.5	24.5	39.5	22.0	16.3	13.8
TRB	257	16.9	33.1	17.5	24.9	48.4	30.0	17.3	12.1
TRC	395	16.0	31.6	16.0	22.5	59.5	40.8	8.4	5.1
Total	6053	9.6	18.5	24.2	36.7	49.9	32.2	16.4	12.6

Note. The weighted results reported in the table exactly match TURKSTAT's 2016 population estimates due to the post-stratification by two-way sex-age and NUTS-1 population distribution.

Table 16. Respondents' mean number of years of education by sex and age group

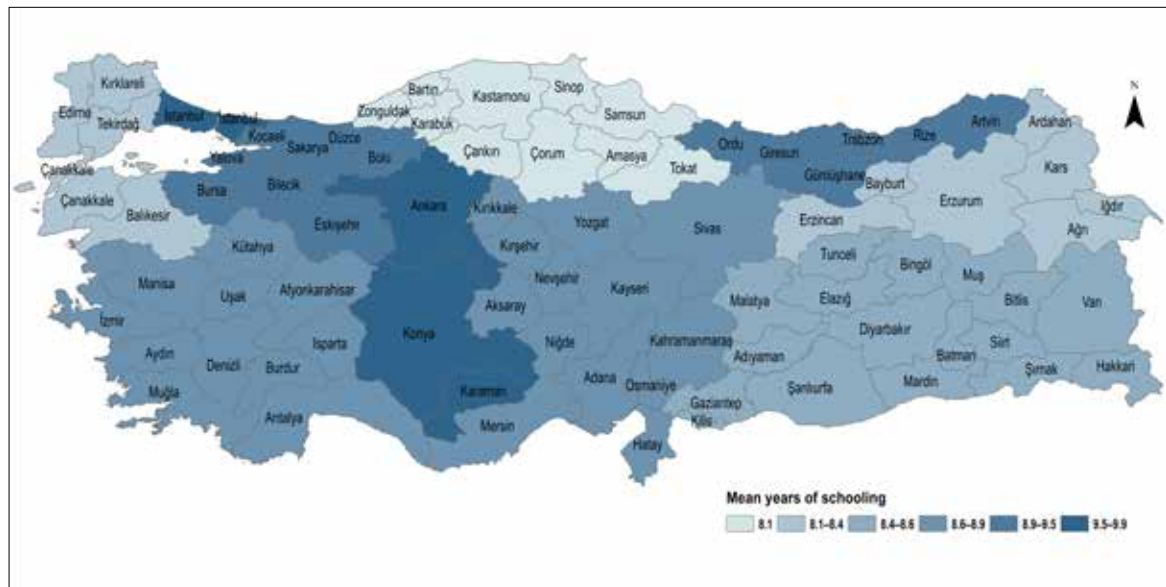
Age group (years)	Men			Women			Both sexes		
	N	Mean	95% CI	N	Mean	(95% CI)	N	Mean	(95% CI)
15–29	497	11.4	11.2–11.7	673	11.2	11.0–11.5	1170	11.3	11.2–11.5
30–44	652	10.3	10.0–10.7	1050	8.8	8.4–9.2	1702	9.6	9.3–9.8
45–59	642	9.3	8.9–9.7	974	6.8	6.3–7.3	1616	8.1	7.7–8.4
60–69	381	7.5	7.0–7.9	463	4.6	4.0–5.2	844	6.0	5.6–6.4
≥ 70	276	5.7	5.0–6.4	445	2.5	2.1–3.0	721	3.9	3.4–4.3
Total	2448	9.9	9.7–10.1	3605	8.2	8.0–8.4	6053	9.1	8.9–9.2

Table 17. Respondents' mean number of years of education by NUTS-1 regions

NUTS-1 regions	Respondents (N)	Years	
		Mean	95% CI
TR1	883	9.7	9.3-10.1
TR2	328	8.4	7.7-9.2
TR3	899	8.8	8.3-9.3
TR4	726	9.4	9.0-9.8
TR5	680	9.9	9.3-10.5
TR6	730	8.9	8.5-9.3
TR7	339	8.8	8.1-9.6
TR8	403	8.1	7.2-8.9
TR9	254	9.5	8.7-10.3
TRA	159	8.3	6.7-9.9
TRB	257	8.6	7.6-9.5
TRC	395	8.5	7.7-9.2
Total	6053	9.1	8.9-9.2

Fig. 5 shows the geographic distribution of the average number of years of education, which was lowest in the western Black Sea region, followed by central Anatolia, eastern Turkey and south-eastern Turkey. The highest number of years of education was observed in the eastern Black Sea region, the Marmara region and western Anatolia.

Fig. 5. Respondents' mean number of years of education by NUTS regions



Source: Ministry of Environment and Urbanization, Republic of Turkey and TURKSTAT.

4.2.4. Employment

Table 18 presents the distribution of respondents by paid-employment status, while Table 19 presents the distribution of unpaid and unemployed respondents. In each table, the results are broken down by age group and sex. The groups described in Table 18 and Table 19 are mutually exclusive.

During the year of the survey, the main paid employment of the respondents was employment outside the government (nongovernmental – 23.5%), followed by employment by the government (6.0%) and self-employment (5.7%) (Table 18). Table 18 shows that 64.9% of the respondents were doing unpaid work. Occupational status differed significantly according to sex, age and area of residence. In terms of paid work, the majority of men (38.9%) and women (8.1%) were nongovernmental employees.

Among men doing paid work, nongovernmental employment is followed by self-employment and governmental (10.2% and 8.6%, respectively). This was observed for men in all age groups (Table 18).

When unemployment is considered, rates of people unemployed and able to work were higher in the younger age groups: 13.3% for the group aged 15–29; 7.8% for those aged 30–44, 4.2% for those aged 45–59 and 2.6% for those aged 60–69. A large fraction of the women were homemakers (Table 19).

Table 18. Respondents’ paid employment status by sex and age group

Sex	Age group (years)	N	Employment status (%)			
			Government employee	Nongovernment employee	Self-employed	Unpaid including retired
Men	15–29	496	3.6	34.6	3.8	58.0
	30–44	651	13.5	62.5	18.0	6.0
	45–59	642	13.8	35.0	12.1	39.1
	60–69	381	2.4	7.6	7.5	82.5
	≥ 70	275	–	2.9	1.0	96.1
	Total	2445	8.6	38.9	10.2	42.4
Women	15–29	672	3.7	11.1	0.6	84.6
	30–44	1049	5.5	12.2	2.0	80.3
	45–59	973	2.7	4.8	1.9	90.6
	60–69	461	0.4	0.1	–	99.5
	≥ 70	445	–	0.2	–	99.8
	Total	3600	3.4	8.1	1.2	87.3
Both sexes	15–29	1168	3.7	23.1	2.2	71.0
	30–44	1700	9.5	37.6	10.1	42.8
	45–59	1615	8.3	20.0	7.1	64.7
	60–69	842	1.4	3.7	3.6	91.3
	≥ 70	720	–	1.3	0.4	98.2
	Total	6045	6.0	23.5	5.7	64.9

When the sexes are compared, the percentage doing paid work was higher in men (57.6%) than women (12.7%), as was the percentage that was unemployed but able to work (15.0% in men and 4.1% in women), again because the majority of women had homemaker status.

Table 19. Respondents' unpaid employment status by sex and age group

Sex	Age group (years)	N	Unpaid employment status (%)				Unemployed (%)	
			Unpaid employee	Student	Home-maker	Retired	Able to work	Not able to work
Men	15-29	258	0.2	79.6	-	0.1	19.2	0.9
	30-44	41	3.2	1.9	14.1	7.0	64.9	8.9
	45-59	282	0.2	-	0.6	84.0	11.7	3.6
	60-69	317	0.6	-	1.1	89.7	5.3	3.3
	≥ 70	262	0.3	-	0.9	88.9	2.5	7.5
	Total	1160	0.4	35.2	1.1	45.3	15.0	3.1
Women	15-29	568	-	49.1	41.5	0.1	9.2	-
	30-44	860	-	0.9	95.0	0.5	3.4	0.2
	45-59	899	0.2	0.2	87.5	11.1	0.9	0.1
	60-69	459	-	-	78.8	20.3	0.5	0.4
	≥ 70	444	0.4	-	74.9	19.6	1.5	3.6
	Total	3230	0.1	15.0	73.7	6.7	4.1	0.4
Both sexes	15-29	826	0.1	61.8	24.3	0.1	13.3	0.4
	30-44	901	0.2	1.0	89.3	1.0	7.8	0.8
	45-59	1181	0.2	0.1	61.1	33.3	4.2	1.1
	60-69	776	0.2	-	45.0	50.5	2.6	1.7
	≥ 70	706	0.4	-	44.4	48.1	1.9	5.2
	Total	4390	0.2	21.6	50.1	19.2	7.6	1.3

4.2.5. Income

The average income of a household provides information on its capacities to meet the members' needs, particularly for food. The average annual per capita income was calculated as total annual household income divided by the number of members of working age (≥ 18 years). The majority of households (4097 or 67.7%) reported their approximate income.

Table 20 shows households' mean per capita annual income. Mean annual per capita household income is the combined annual income divided by the number of household members age ≥ 18 years. The mean annual income reported, irrespective of the number of people employed per household, is 14 992.30 Turkish Lira (TL). Average annual income per capita varied significantly across the NUTS-1 regions. The mean annual per capita income in the highest-income region (TR8) is 2.5 times that in the lowest-income region (TRA). The regions with the highest income were TR8, TR5, TR1 and TR9, and those with the lowest were TRC, TR6, TR2 and TRA.

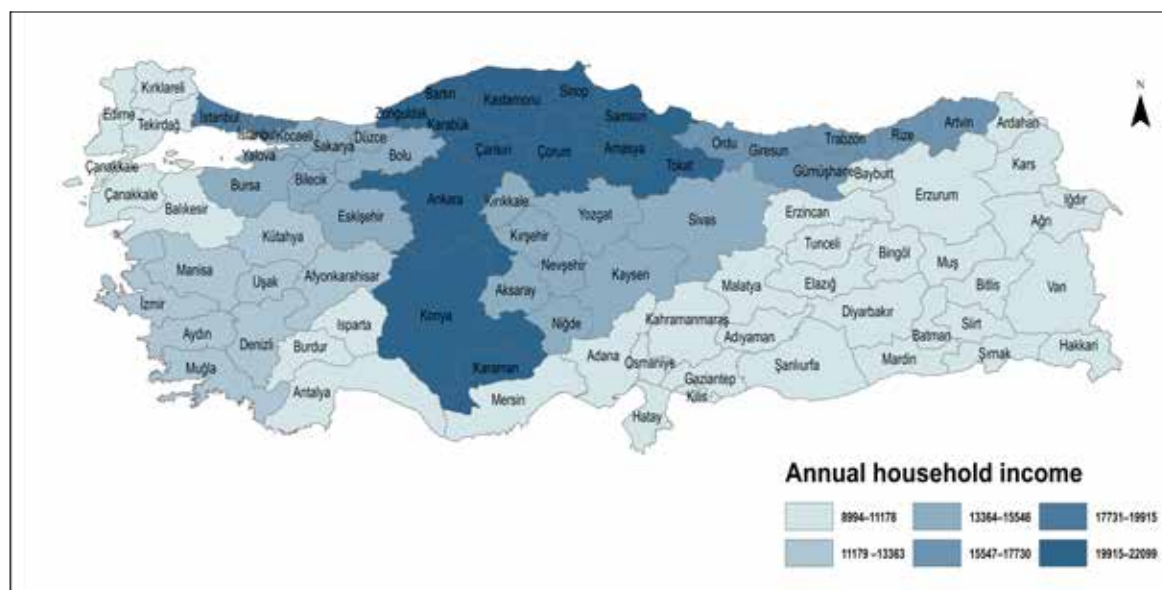
Table 20. Respondents' mean annual per capita household income by NUTS-1 regions

NUTS-1 regions	Households	
	N	Mean income (TL)
TR1	561	17 953.2
TR2	227	10 025.8
TR3	319	12 956.6
TR4	494	14 171.4
TR5	625	20 435.0
TR6	592	10 051.6
TR7	300	13 564.6
TR8	331	22 098.5
TR9	136	17 139.2
TRA	88	8 994.7
TRB	181	10 697.5
TRC	243	10 632.5
Total	4097	14 992.3

Note. Mean annual per capita household income is the combined annual income divided by the number of household members aged ≥ 18 years. Cases are unweighted.

Fig. 6 shows the significant variation in mean annual per capita income across regions: income was highest in the western Anatolia region, followed by the western Black Sea and Istanbul regions, and the lowest income was observed in the south-eastern and north-western regions.

Fig. 6. Mean annual per capita household income by NUTS-1 regions



Source: Ministry of Environment and Urbanization, Republic of Turkey and TURKSTAT.

4.3. Tobacco use

Tobacco is used in several forms, such as cigarette, cigars and bidis, as well as in pipes and hookahs. The worldwide prevalence of current tobacco smoking among adults was approximately 22% in 2012. The prevalence of tobacco smoking differs among countries. Men (37%) tend to smoke more than women (7%) (7).

According to the results given in Table 21, the prevalence of current tobacco consumption was 31.5%. Smoking prevalence was significantly higher in men (43.4%) than women (19.7%), with the difference being significant at a P-value < 1% ($P < 0.01$).

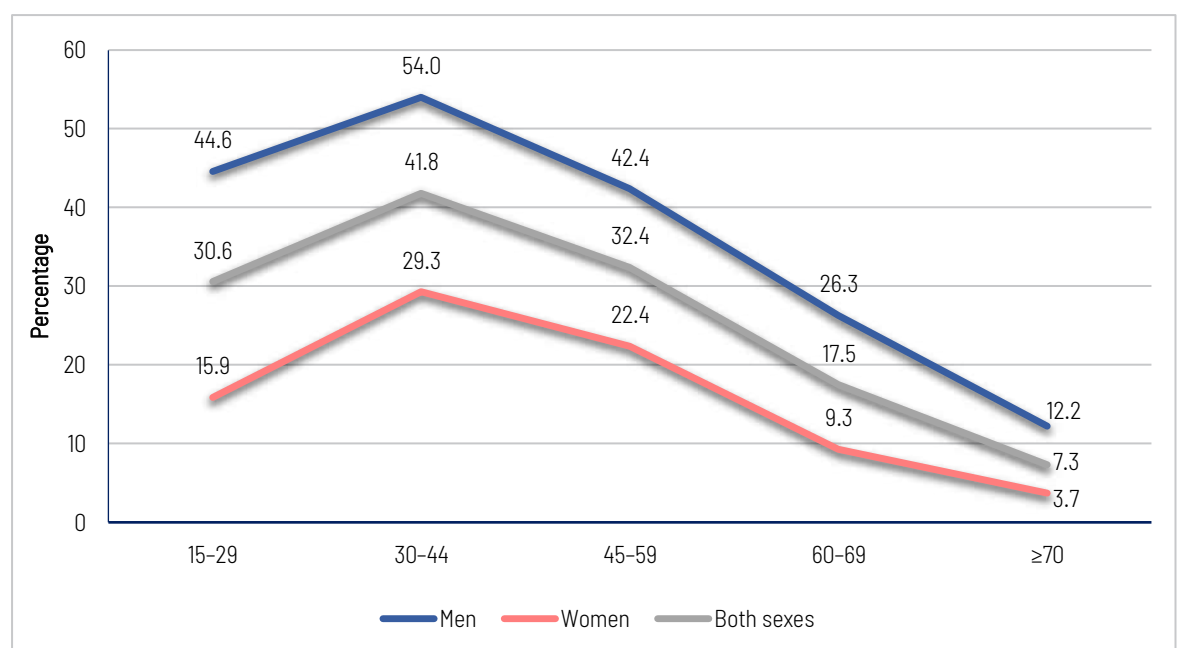
The prevalence of tobacco use is very close to the prevalence of smoking, and 31.6% of the respondents currently used (smoked or smokeless) tobacco (males 43.6% and females 19.7%).

In the total population, current smoking status varied among age groups (see Fig. 7), peaking in the group aged 30–44. Although prevalence was higher in men than women across all age groups, smoking peaked at 54.0% for men and 29.3% for women. Prevalence fell almost exponentially after age 44 and reached the minimum in the oldest group.

Table 21. Percentage of current smokers among respondents by sex and age group

Age group (years)	Men			Women			Both sexes		
	N	Current smoker (%)	95% CI	N	Current smoker (%)	95% CI	N	Current smoker (%)	95% CI
15–29	497	44.6	39.6–49.6	673	15.9	12.4–19.4	1170	30.6	27.2–33.9
30–44	652	54.0	49.3–58.6	1050	29.3	25.2–33.5	1702	41.8	38.6–45.0
45–59	642	42.4	37.4–47.4	974	22.4	17.8–27.0	1616	32.4	29.1–35.7
60–69	381	26.3	20.9–31.7	463	9.3	5.0–13.5	844	17.5	14.0–20.9
≥ 70	276	12.2	6.4–18.0	445	3.7	1.1–6.3	721	7.3	4.4–10.2
Total	2448	43.4	40.8–46.0	3605	19.7	17.6–21.8	6053	31.5	29.7–33.3

Fig. 7. Percentage of current smokers by sex and age group



4. SURVEY RESULTS

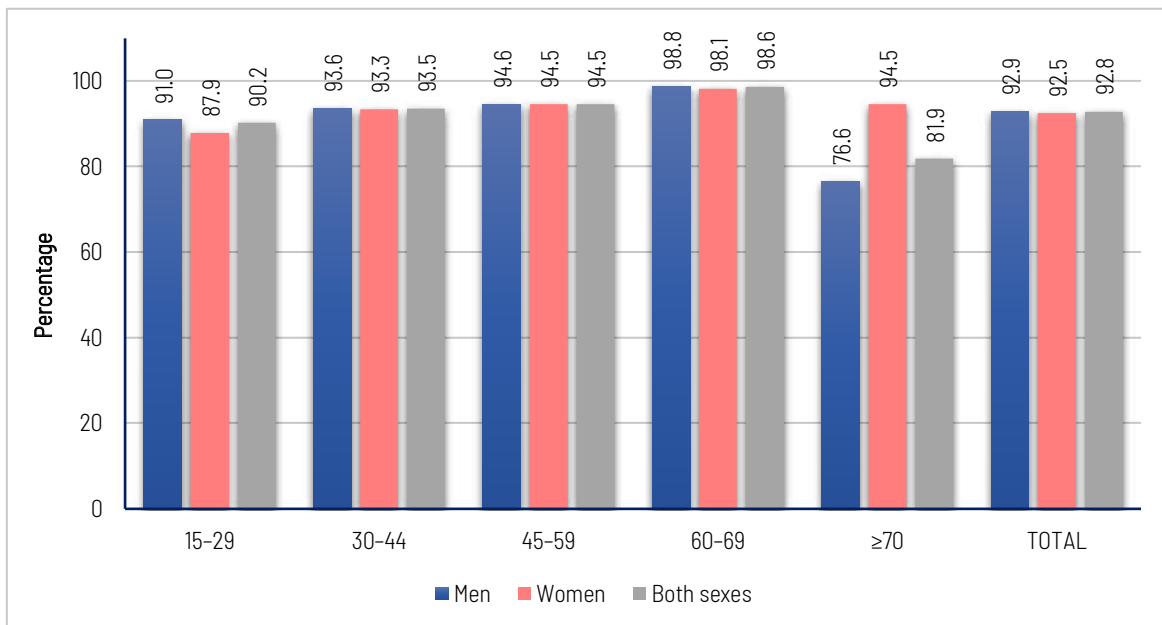
Table 22 shows that the prevalence of current smoking varied across NUTS-1 regions, even though none of the differences were statistically significant at the 5% level. Nevertheless, the highest rates were found in TR4, TR2, TR5 and lowest in TRC, TR8 and TRB.

Table 22. Percentage of current smokers among respondents by NUTS-1 regions

NUTS-1 regions	Respondents		
	N	Current smokers (%)	95% CI
TR1	883	30.8	26.1-35.4
TR2	328	37.2	29.7-44.8
TR3	899	31.7	27.6-35.8
TR4	726	37.5	31.9-43.2
TR5	680	36.5	31.2-41.7
TR6	730	28.7	23.6-33.7
TR7	339	29.0	20.8-37.3
TR8	403	26.9	18.8-35.0
TR9	254	32.4	24.0-40.9
TRA	159	33.7	24.3-43.1
TRB	257	28.3	20.2-36.3
TRC	395	26.8	19.9-33.7
Total	6053	31.5	29.7-33.3

Fig. 8 shows respondents' smoking status by sex and age group: 92.8% of current tobacco users smoked daily, with similar behaviour in both sexes (92.9% in men and 92.5% in women).

Fig. 8. Prevalence of daily smoking among current tobacco users by sex and age group



Consequently, the prevalence of daily consumption is 29.2% (Table 23). Similarly to current smoking, daily smoking in men was more than twice that in women (40.4% and 18.2%, respectively, $P < 0.01$). Daily smoking peaked in the group aged 30–44 (39.1%) and decreased afterwards to 30.7% for people aged 45–59, 17.2% for people aged 60–69, and 6.0% in those aged ≥ 70 ($P < 0.01$); the difference in prevalence between the groups aged 30–44 and ≥ 70 was particularly great in women (7.8 times).

Table 23 also shows the proportions of current non-users of tobacco who were former smokers: 10.7% of the whole study population, although this rate was higher for men (14.8%) than women (6.6%). There was a significant difference across age groups for men, but not for women.

As with current smoking, daily smoking showed no statistically significant difference between NUTS-1 regions, although the prevalence was highest in TR4, TR2 and TR5 and lowest in TRC, TR8 and TR7 (Fig. 9). The regions with the lowest rates are predominantly rural. The regions with the highest and lowest smoking rates (TR4 and TRC, respectively) show a difference of 11.8 percentage points.

Table 23. Smoking status of respondents by sex and age group

Sex	Age group (years)	N	Current smokers (%)				Nonsmokers (%)			
			Daily smokers	95% CI	Nondaily	95% CI	Former smokers	95% CI	Never smoker	95% CI
Men	15-29	497	40.6	35.7-45.5	4.0	2.0-6.1	4.7	1.9-7.5	50.7	45.2-56.1
	30-44	652	50.5	45.8-55.3	3.4	1.8-5.1	10.5	7.9-13.2	35.5	31.0-40.0
	45-59	642	40.1	35.2-45.0	2.3	0.9-3.7	20.0	16.0-24.1	37.6	32.8-42.4
	60-69	381	26.0	20.6-31.4	0.3	0.0-1.0	33.1	27.2-38.9	40.6	34.3-46.9
	≥ 70	276	9.4	4.2-14.5	2.9	0.2-5.5	45.3	37.9-52.8	42.4	35.4-49.5
	Total	2448	40.4	37.8-42.9	3.1	2.2-4.0	14.8	13.1-16.5	41.8	39.0-44.5
Women	15-29	673	14.0	10.6-17.4	1.9	0.8-3.1	4.3	2.4-6.2	79.7	75.9-83.6
	30-44	1050	27.4	23.3-31.5	2.0	1.0-2.9	6.4	4.4-8.4	64.3	60.1-68.5
	45-59	974	21.1	16.6-25.7	1.2	0.2-2.3	9.3	6.2-12.3	68.3	63.4-73.2
	60-69	463	9.1	4.8-13.3	0.2	0.0-0.5	8.0	5.0-11.0	82.7	77.8-87.7
	≥ 70	445	3.5	1.0-6.1	0.2	0.0-0.6	7.5	4.0-11.1	88.7	84.4-93.0
	Total	3605	18.2	16.1-20.3	1.5	0.9-2.0	6.6	5.5-7.8	73.7	71.4-75.9
Both sexes	15-29	1170	27.6	24.4-30.8	3.0	1.8-4.2	4.5	2.8-6.2	64.9	61.2-68.6
	30-44	1702	39.1	35.8-42.3	2.7	1.7-3.7	8.5	6.8-10.2	49.8	46.6-53.0
	45-59	1616	30.7	27.4-33.9	1.8	0.9-2.6	14.7	12.1-17.2	52.9	49.5-56.2
	60-69	844	17.2	13.7-20.7	0.2	0.0-0.6	20.1	16.7-23.4	62.5	58.2-66.7
	≥ 70	721	6.0	3.4-8.6	1.3	0.2-2.5	23.5	19.2-27.7	69.2	64.6-73.8
	Total	6053	29.2	27.5-31.0	2.3	1.7-2.8	10.7	9.7-11.8	57.8	55.9-59.7

Fig. 9. Prevalence of daily smoking in respondents by NUTS-1 regions

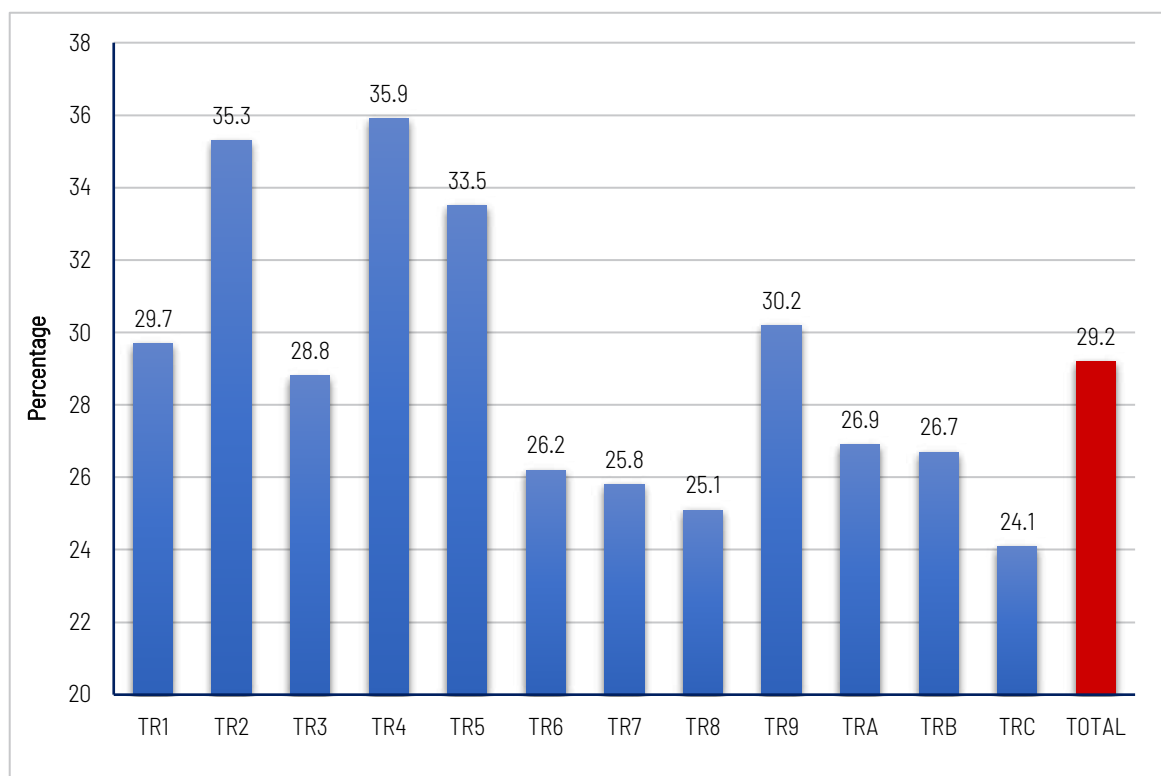


Table 24 shows the mean age at which current daily smokers among the respondents started to smoke. The mean age of onset of daily tobacco smoking was 18.1 years (95% CI: 17.8–18.5%) for both sexes, and there was a statistically significant difference of three years between men and women ($P < 0.05$). The onset of tobacco smoking rose with age, with younger respondents starting to smoke earlier in life also varies between age groups: it was lower among younger participants, going from 16.3 years among participants aged 15–29 years to 23.0 years among the participants aged ≥ 70 ($P < 0.05$ for difference across all age groups), behaviour that was observed in both sexes, but more marked in women.

Table 24. Mean age at which current daily smokers among respondents started smoking, by sex and age group

Age group (years)	Men			Women			Both sexes		
	N	Mean (years)	95% CI	N	Mean (years)	95% CI	N	Mean (years)	95% CI
15–29	204	15.8	15.5–16.2	99	18.0	17.1–18.8	303	16.3	16.0–16.7
30–44	319	17.6	17.0–18.1	263	20.1	18.8–21.4	582	18.5	17.9–19.0
45–59	262	18.2	17.4–18.9	176	21.2	20.0–22.4	438	19.2	18.5–19.9
60–69	99	18.1	16.8–19.5	32	23.5	19.7–27.2	131	19.6	18.2–21.0
≥ 70	23	18.5	16.6–20.3	9	31.6	24.6–38.5	32	23.0	19.4–26.7
Total	907	17.2	16.9–17.5	579	20.2	19.5–20.9	1486	18.1	17.8–18.5

The age of onset of daily tobacco consumption showed statistically significant differences between NUTS-1 regions, although not all regions differed statistically in a pairwise comparison. Nevertheless, the age of onset was lowest in the TRC and TR2 (16.7 and 17.4 years, respectively) and highest in TR5 and TR4 (18.7 and 18.8, respectively).

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Fig. 10 gives the percentages of daily smokers using manufactured cigarettes: 97.3% of all daily smokers, 97.2% for women and 97.3% for men. The use of manufactured cigarettes decreased with age, although the differences were not statistically significant at the 5% level.

Fig. 10. Daily smokers using manufactured cigarettes by sex and age group

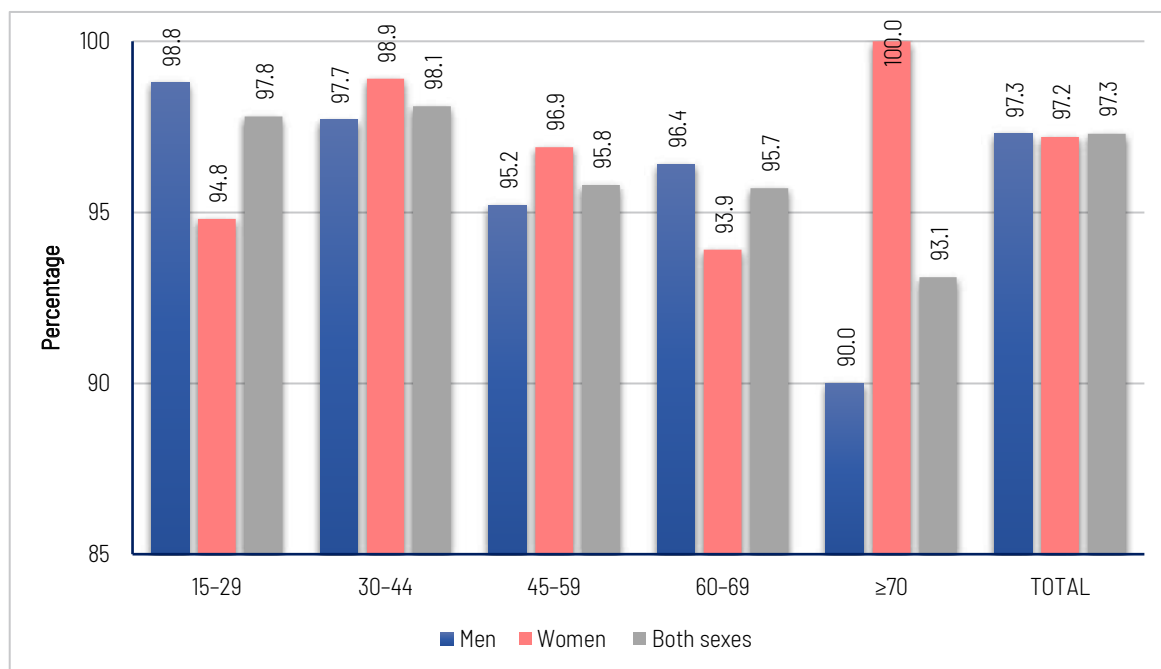


Table 25 shows that daily smokers among the respondents used an average number of 15.5 manufactured tobacco cigarettes per day, with men using more than women (16.8 and 12.7, respectively, $P < 0.05$). The number of manufactured cigarettes consumed daily increased with age, from 14.8 for those aged 15-29 years to 15.2 for those aged ≥ 70 (Table 25), a behaviour that is mainly observed in women. Women consumed a higher average number (5.9 cigarettes) between the ages of 15-29 and ≥ 70 .

Table 25. Mean amount of tobacco used by daily smokers by type and age group

Age group (years)	Manufactured cigarettes			Hand-rolled cigarettes			Pipes of tobacco		
	N	Mean no.	95% CI	N	Mean no.	95% CI	N	Mean no.	95% CI
15-29	308	14.8	13.6-16.0	289	1.0	0.4-1.7	290	0.0	0.0-0.0
30-44	582	15.8	14.6-16.9	541	0.6	0.3-0.9	542	0.0	0.0-0.0
45-59	434	16.0	14.5-17.6	406	1.7	1.0-2.5	408	0.0	0.0-0.0
60-69	132	15.5	13.0-18.0	127	2.1	0.9-3.4	128	0.0	0.0-0.1
≥70	32	15.2	12.5-17.9	31	1.5	0.0-3.4	33	0.0	-
Total	1488	15.5	14.8-16.2	1394	1.1	0.8-1.4	1401	0.0	0.0-0.0

Table 26 presents the low rates of smokeless-tobacco use in Turkey: 0.3% for both sexes, 0.6% for men and 0.1% for women. Rates for men were highest in the groups aged 30-44 and 45-59; the rate for women was highest in the group aged 60-69.

Table 26. Current users of smokeless tobacco by sex and age group

Age group (years)	Men			Women			Both sexes		
	N	Current users (%)	95% CI	N	Current users (%)	95% CI	N	Current users (%)	95% CI
15-29	497	0.2	0.0-0.5	673	0.2	0.0-0.5	1170	0.2	0.0-0.4
30-44	652	1.4	0.2-2.6	1050	-	-	1702	0.7	0.1-1.3
45-59	642	0.4	0.0-0.9	974	-	-	1616	0.2	0.0-0.5
60-69	381	-	-	463	0.6	0.0-1.7	844	0.3	0.0-0.9
≥ 70	276	-	-	445	-	-	721	-	-
Total	2448	0.6	0.1-1.0	3605	0.1	0.0-0.3	6053	0.3	0.1-0.6

Fig. 11 shows the percentages of current smokers in the study population who had tried to stop smoking during previous 12 months by sex and age group: 27.4% for both sexes, although the rate was higher for men (29.4%) than women (23.0%). While the percentage of current smokers who had tried to quit varied across age groups for both men and women, it was highest for men aged 60-69 (40.0%) and for women aged 15-29 (26.9%).

Fig. 12 presents the proportions of current smokers whose doctors had advised them to stop smoking in the previous 12 months; the proportion was much lower for men (21.2%) than women (24.7%) and varied across age groups.

Fig. 11. Current smokers who had tried to quit during the previous 12 months

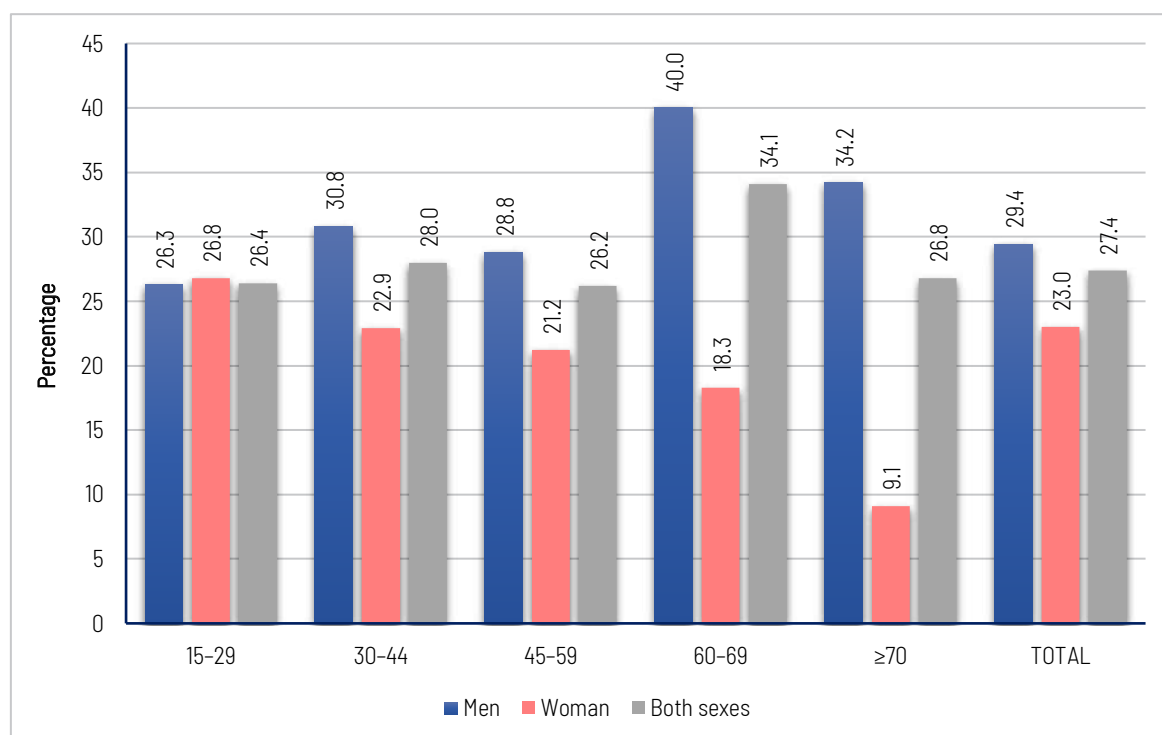
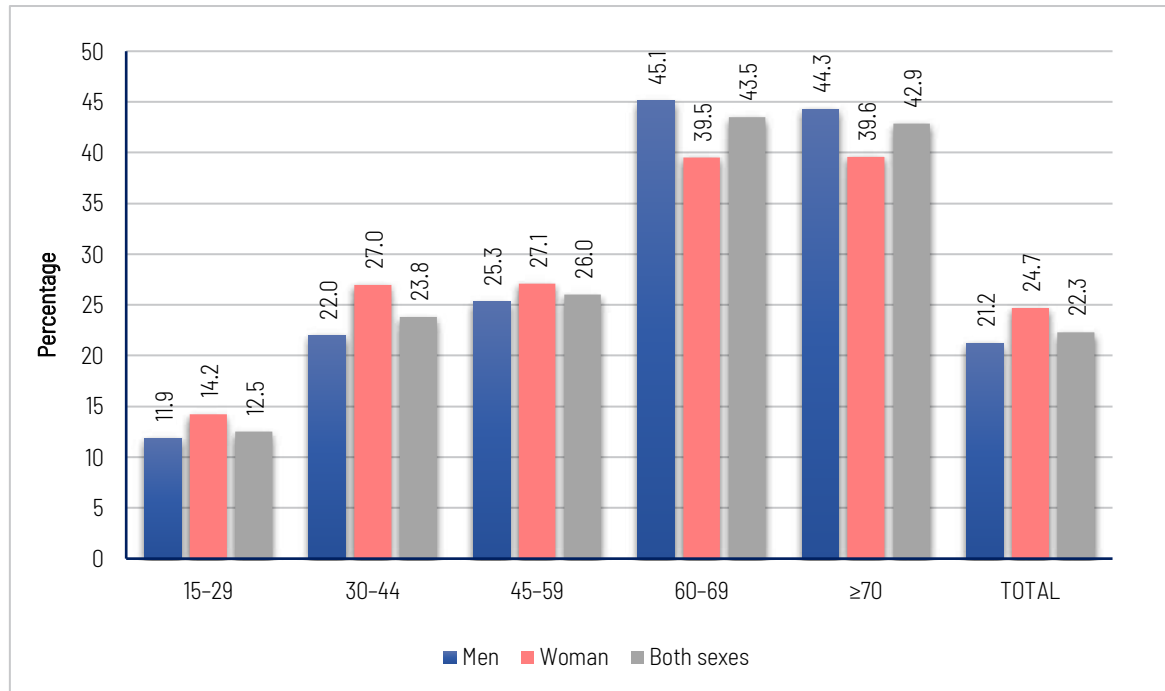


Fig. 12. Current smokers advised by a doctor to stop smoking in the previous 12 months



4.3.1. Conclusions

Some of the most important results on tobacco use by respondents included the following:

- 31.6% currently used (smoked or smokeless) tobacco (males: 43.6%, and females: 19.7%);
- 31.5% currently smoked tobacco (males: 43.4%, and females: 19.7%);
- 29.2% currently smoked tobacco daily (males: 40.4%, and females: 18.2%), and they had started smoking, on average, at the age of 18.1 years (males: 17.2, and females: 20.2);
- 97.3% daily smokers used manufactured cigarettes (males: 97.3%, and females: 97.2%);
- users of manufactured cigarettes smoked a mean number of 15.5 per day (males: 16.8, and females: 12.7);
- 0.3% of respondents currently used smokeless tobacco (males: 0.6%, and females: 0.1%);
- among the study group, 10.7% were former smokers (males: 14.8%, and females: 6.6%) and 57.8% had never smoked (males: 41.8%, and females: 73.7%). 2.3% were nondaily smokers (males: 3.1%, and females: 1.5%);
- the percentage of current smokers who tried to stop smoking in previous 12 months was 27.4% (males: 29.4%, and females: 23.0%);
- the percentage of current smokers advised by a health care provider to stop smoking in the previous 12 months was 22.3% (males: 21.2%, and females: 24.7%).

4.4. Alcohol consumption

Alcohol use is related to several effects on health, such as increased risk of cancer, stroke and cirrhosis; and mortality and disability resulting from accidents, injuries, assault, violence, homicide and suicide (46). Alcohol consumption was estimated to account for 5.9% (3.3 million) of all deaths globally and 5.1% of DALYs in 2012. In 2010, alcohol consumption worldwide was estimated to be 6.2 L pure alcohol per person aged ≥ 15 years. The harmful use of alcohol is closely associated with NCDs. According to WHO, alcohol consumption in Turkey in 2010 was approximately one third of that in the world. Both in Turkey and in the world, alcohol consumption is higher among men than women (47). Some action has been taken against the harmful use of alcohol in Turkey, including advertising bans or comprehensive restrictions, and increased excise taxes (27).

Table 27 presents the findings for alcohol consumption by respondents, by sex and age group. Of all respondents, 4.1% reported having consumed alcohol in the 12 months before the survey. The prevalence of alcohol drunk in the 30 days before the survey was 8.0% for the survey population group, but higher in men than women (13.1% and 3.0%, respectively, $P < 0.05$). It also varied with age, being around 9.7% in those under 30 years of age and 1.7% in those aged ≥ 70 . For both men and women respondents, the prevalence of alcohol consumption in the previous 30 days declined with age. Table 27 also indicates that 83.6% of the study population were lifetime abstainers, with a higher rate in women (92.7%) than men (74.4%), and 4.3% of the population had abstained in the previous 12 months, with a higher rate for men (6.5%) than women (2.1%).

Fig. 13 presents respondents' alcohol consumption status by NUTS-1 regions. The percentages of abstainers were lowest in TR3, TR6 and TR5 regions, a statistically significant difference with TR6 at the 5% significance level ($P < 0.05$), and highest in TR7, TRB and TRC, although no statistically significant differences were observed.

Table 27. Alcohol consumption among respondents by sex and age group

Sex	Age group (years)	N	Current drinker (past 30 days)		Drank in previous 12 months, not currently		Abstainer (previous 12 months)		Lifetime abstainer	
			%	95% CI	%	95% CI	%	95% CI	%	95% CI
Men	15-29	497	15.0	11.2-18.8	6.4	3.8-8.9	2.8	1.2-4.5	75.8	71.4-80.3
	30-44	652	12.9	9.6-16.2	7.1	5.0-9.2	6.9	4.6-9.2	73.1	69.0-77.2
	45-59	642	15.0	11.4-18.6	4.8	2.5-7.2	6.6	4.4-8.8	73.6	69.2-77.9
	60-69	381	8.5	4.8-12.2	4.6	2.0-7.2	13.5	9.1-17.9	73.4	67.6-79.2
	≥ 70	276	4.0	1.0-7.1	4.7	0.0-9.9	12.8	8.2-17.5	78.4	71.7-85.1
	Total	2448	13.1	11.2-15.0	6.0	4.8-7.2	6.5	5.3-7.6	74.4	72.0-76.8
Women	15-29	673	4.2	2.2-6.1	2.9	1.2-4.5	1.3	0.5-2.2	91.6	89.0-94.3
	30-44	1050	3.5	1.7-5.3	2.7	1.1-4.3	3.4	1.4-5.4	90.4	87.4-93.4
	45-59	974	2.2	0.9-3.5	2.3	0.9-3.6	1.9	0.8-3.0	93.6	91.5-95.7
	60-69	463	2.2	0.0-5.5	-	-	0.9	0.1-1.7	96.9	93.5-100.0
	≥ 70	445	-	-	-	-	2.3	0.1-4.5	97.7	95.5-99.9
	Total	3605	3.0	2.1-4.0	2.2	1.4-2.9	2.1	1.4-2.9	92.7	91.3-94.1
Both sexes	15-29	1170	9.7	7.5-11.9	4.6	3.1-6.2	2.1	1.1-3.0	83.6	80.8-86.3
	30-44	1702	8.2	6.3-10.1	4.9	3.6-6.3	5.2	3.6-6.7	81.7	79.1-84.3
	45-59	1616	8.6	6.6-10.7	3.6	2.0-5.1	4.3	3.0-5.5	83.5	80.9-86.2
	60-69	844	5.2	2.8-7.7	2.2	1.0-3.5	7.0	4.7-9.2	85.6	82.2-89.0
	≥ 70	721	1.7	0.4-3.0	2.0	0.0-4.2	6.7	4.0-9.4	89.6	86.1-93.1
	Total	6053	8.0	7.0-9.1	4.1	3.3-4.8	4.3	3.6-5.0	83.6	82.1-85.1

Fig. 13. Respondents' alcohol consumption status by NUTS-1 regions

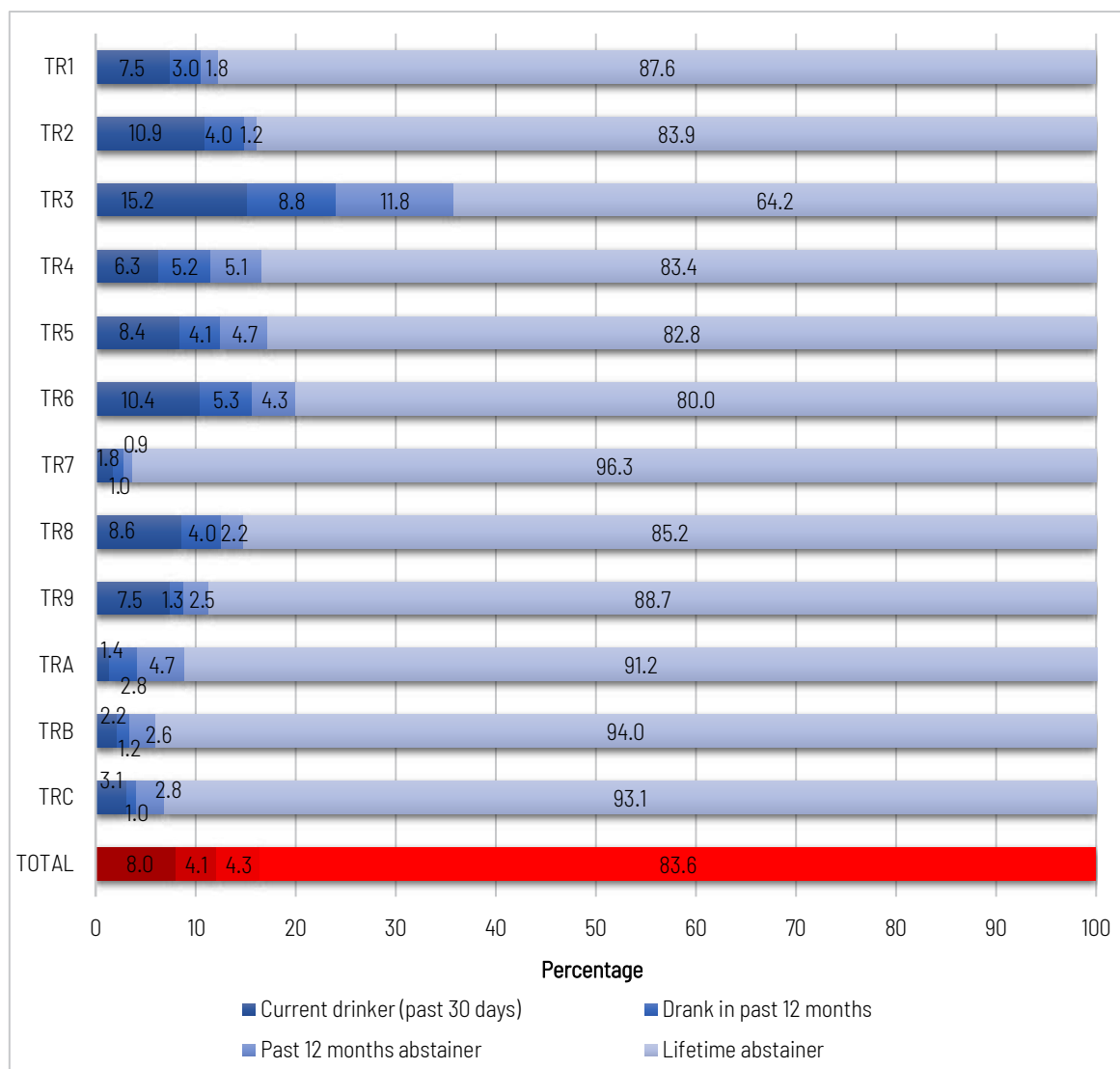


Table 28 gives the mean number of times that current drinkers had drunk ≥ 6 standard drinks in a single drinking occasion in the previous 30 days: 3.6 on average, with a lower number for men than women (3.4 and 4.4, respectively, $P < 0.05$). Among those who consumed ≥ 6 drinks on a single occasion in the previous month, the majority had 3.0 times (the group aged 45–59).

Table 28. Mean number of episodes in which current drinkers drank ≥ 6 drinks on a single occasion in the previous 30 days, by sex and age group

Age group (years)	Men			Women			Both sexes		
	N	Mean number	95% CI (number)	N	Mean number	95% CI (number)	N	Mean number	95% CI (number)
15–29	67	3.6	1.7–5.5	20	3.8	0.5–7.2	87	3.6	2.0–5.3
30–44	68	3.7	2.0–5.4	24	1.8	1.1–2.6	92	3.3	1.9–4.7
45–59	84	3.2	2.2–4.2	16	1.6	1.1–2.2	100	3.0	2.1–3.9
60–69	23	2.7	0.7–4.8	2	27.3	20.2–34.3	25	7.6	0.0–16.1
≥ 70	7	1.8	0.6–3.0	–	–	–	7	1.8	0.6–3.0
Total	249	3.4	2.6–4.3	62	4.4	0.7–8.1	311	3.6	2.6–4.6

Table 29 presents the percentage of respondents who had drunk ≥ 6 drinks on a single occasion in the previous 30 days: an excessive consumption level for both men and women. In general, the prevalence of excessive alcohol consumption was 5.2%, with a statistically significant difference between men and women: 8.7% and 1.8%, respectively ($P < 0.05$). The prevalence of excessive alcohol consumption in general declined with age in both men and women (except in the group aged 45–59), but more pronouncedly in men.

Table 29. Proportion of total respondents who drank ≥ 6 drinks on a single occasion in the previous 30 days, by sex and age group

Age group (years)	Men			Women			Both sexes		
	N	%	95% CI	N	%	95% CI	N	%	95% CI
15–29	497	10.2	6.8–13.7	673	2.1	0.8–3.5	1170	6.3	4.3–8.2
30–44	652	8.6	5.7–11.4	1050	2.3	0.6–4.0	1702	5.5	3.8–7.1
45–59	642	9.9	6.9–12.9	974	1.6	0.4–2.8	1616	5.8	4.1–7.5
60–69	381	4.5	1.9–7.0	463	1.6	0.0–4.8	844	3.0	1.0–5.0
≥ 70	276	2.5	0.4–4.5	445	–	–	721	1.0	0.2–1.9
Total	2448	8.7	7.0–10.3	3605	1.8	1.0–2.6	6053	5.2	4.3–6.2

4.4.1. Conclusions

Some of the most important results on alcohol use by respondents included the following:

- 83.6% were lifetime abstainers (males: 74.4%, and females: 92.7%);
- 4.3% had abstained in the previous 12 months (males: 6.5%, and females: 2.1%);
- 8.0% were current drinkers (had drunk alcohol in the previous 30 days) (males: 13.1% and females: 3.0%); and
- 5.2% had engaged in heavy episodic drinking (≥ 6 drinks on any occasion in the previous 30 days) (males: 8.7%, and females: 1.8%).

4.5. Use of addictive drugs (substances)

Psychoactive substances are a major cause of threats to the health and economy of both individuals and societies (48). One in 20 adults (aged 15–64 years) around the world was estimated to have used at least one illegal drug in 2010 (49). In addition to overdoses, a significant proportion of drug-related deaths is due to the indirect effects of intoxication, which result in CVD, liver and mental disorders (50). In Turkey, it was estimated that there were 0.2–0.5 cases per 1000 of high-risk opioid use, and that 0.1% and 0.7% of adults (aged 15–64) had ever used amphetamines or marijuana, respectively, by 2011 (51).

Table 30 shows that 97.0% of the study population reported never using addictive drugs during their lives: 98.6% of women and 95.5% of men. While men reported lower levels of never using drugs in all age groups, the difference was smaller in the two oldest groups (those aged 60–69 and ≥ 70). Men and women showed similar patterns: the percentages of those who had never used addictive drugs tended to rise with age.

Table 30. Respondents who never used addictive drugs by sex and age group

Age group (years)	Men			Women			Both sexes		
	N	Never used (%)	95% CI	N	Never used (%)	95% CI	N	Never used (%)	95% CI
15-29	497	92.9	88.5-97.3	673	97.8	96.3-99.3	1170	95.3	92.9-97.7
30-44	652	96.5	94.8-98.2	1050	98.7	97.8-99.6	1702	97.6	96.6-98.6
45-59	642	96.7	94.8-98.6	974	99.4	98.8-99.9	1616	98.0	97.0-99.0
60-69	381	96.9	94.6-99.2	463	98.6	97.3-99.8	844	97.8	96.5-99.0
≥ 70	276	98.1	96.7-99.6	445	98.8	97.7-99.9	721	98.5	97.6-99.4
Total	2448	95.5	93.9-97.1	3605	98.6	98.0-99.1	6053	97.0	96.2-97.9

Table 31 shows that 0.5% of the respondents currently used addictive drugs, although such use was higher in men (0.9%) than women (0.2%). Prevalence was higher in the younger age groups and gradually decreased with age.

As to those who had tried addictive drugs at some time in the past (Table 32), the average for men was 2.6%; and the youngest age group reported the highest proportion (4.4%). Among women, 0.9% had tried addictive drugs in the past, with the highest proportion also in the youngest age groups (1.9%).

Table 31. Respondents who currently use addictive drugs by sex and age group

Age group (years)	Men			Women			Both sexes		
	N	Currently using (%)	95% CI	N	Currently using (%)	95% CI	N	Currently using (%)	95% CI
15-29	497	1.5	0.3-2.6	673	-	-	1170	0.7	0.1-1.3
30-44	652	1.0	0.0-2.0	1050	0.3	0.1-0.6	1702	0.7	0.1-1.2
45-59	642	0.2	0.0-0.6	974	0.4	0.0-0.9	1616	0.3	0.0-0.6
60-69	381	0.2	0.0-0.6	463	0.3	0.0-0.6	844	0.2	0.0-0.5
≥ 70	276	0.2	0.0-0.5	445	0.2	0.0-0.6	721	0.2	0.0-0.6
Total	2448	0.9	0.4-1.4	3605	0.2	0.1-0.4	6053	0.5	0.3-0.8

Table 32. Respondents who tried addictive drugs by sex and age group

Age group (years)	Men			Women			Both sexes		
	N	Tried (%)	95% CI	N	Tried (%)	95% CI	N	Tried (%)	95% CI
15-29	497	4.4	0.2-8.7	673	1.9	0.5-3.3	1170	3.2	0.9-5.5
30-44	652	0.9	0.3-1.5	1050	0.5	0.1-0.8	1702	0.7	0.3-1.0
45-59	642	2.8	0.9-4.7	974	0.1	0.0-0.2	1616	1.4	0.5-2.4
60-69	381	2.0	0.3-3.8	463	1.2	0.0-2.4	844	1.6	0.5-2.7
≥ 70	276	1.0	0.0-2.2	445	1.0	0.0-1.9	721	1.0	0.2-1.7
Total	2448	2.6	1.1-4.0	3605	0.9	0.5-1.4	6053	1.7	1.0-2.5

4.5.1. Conclusions

Some of the most important results on drug use by respondents included the following:

- 97.0% reported never having used addictive drugs (males: 95.5%, and females: 98.6%);
- 0.5% currently used addictive drugs (males: 0.9%, and females: 0.2%);
- 1.7% had tried addictive drugs (males: 2.6%, and females: 0.9%).

4.6. Diet: fruit and vegetable consumption

A higher risk of CVD is strongly associated with increased dietary intake of *trans* fats, saturated fats and salt, and a low intake of fruits, vegetables and fish (7,12,28). Nearly 16 million DALYs (1.0% of the total) and 1.7 million deaths (2.8% of the total) around the world are linked with low fruit and vegetable consumption.

On average, respondents were found to have eaten fruit on 4.6 days in a typical week; this value was slightly higher in women (4.8 days) than men (4.5 days). The mean was lower in the two youngest age groups, for both men and women (Table 33).

The mean number of days in a typical week on which the general population of respondents ate vegetables was 5.1 (Table 34); as with the mean for fruit consumption, this value was slightly higher in women (5.2 days) than men (4.9 days). Vegetable consumption was lower in the two youngest age groups and higher in the two oldest.

Table 33. Mean number of days in a typical week in which respondents consumed fruit by sex and age group

Age group (years)	Men			Women			Both sexes		
	N	Mean (days)	95% CI (days)	N	Mean (days)	95% CI (days)	N	Mean (days)	95% CI (days)
15-29	474	4.1	3.9-4.3	645	4.6	4.4-4.8	1119	4.3	4.2-4.5
30-44	629	4.2	4.0-4.4	1026	4.6	4.4-4.8	1655	4.4	4.2-4.5
45-59	618	4.8	4.6-5.1	939	5.0	4.9-5.2	1557	4.9	4.8-5.1
60-69	371	5.5	5.3-5.8	452	5.2	5.0-5.4	823	5.4	5.2-5.5
≥ 70	268	5.3	5.0-5.7	434	5.0	4.7-5.2	702	5.1	4.9-5.3
Total	2360	4.5	4.4-4.6	3496	4.8	4.7-4.9	5856	4.6	4.5-4.7

Table 34. Mean number of days in a typical week in which respondents consumed vegetables by sex and age

Age group (years)	Men			Women			Both sexes		
	N	Mean (days)	95% CI (days)	N	Mean (days)	95% CI (days)	N	Mean (days)	95% CI (days)
15-29	459	4.6	4.4-4.9	629	4.9	4.7-5.1	1088	4.8	4.6-4.9
30-44	622	5.0	4.8-5.2	1023	5.2	5.1-5.4	1645	5.1	5.0-5.2
45-59	614	5.0	4.8-5.2	942	5.4	5.3-5.6	1556	5.2	5.1-5.4
60-69	371	5.2	5.0-5.5	452	5.5	5.3-5.7	823	5.4	5.2-5.5
≥ 70	264	5.6	5.3-5.9	430	5.2	4.9-5.4	694	5.3	5.1-5.5
Total	2330	4.9	4.8-5.1	3476	5.2	5.1-5.3	5806	5.1	5.0-5.2

Table 35 shows the mean number of days of fruit and vegetable consumption in a typical week by NUTS-1

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regions. TRC (south-eastern Anatolia) had the lowest fruit consumption and TR7 (central Anatolia), the lowest vegetable consumption. In contrast, average vegetable consumption was highest in TR9 and average fruit consumption was highest in TR6.

Table 35. Mean number of days in a typical week in which respondents of both sexes consumed fruit and vegetables by NUTS-1 regions

NUTS-1 regions	Fruit consumption			Vegetable consumption		
	Respondents (N)	Mean (days)	95% CI (days)	Respondents (N)	Mean (days)	95% CI (days)
TR1	852	4.6	4.4-4.8	853	4.8	4.6-5.0
TR2	324	4.1	3.7-4.5	326	4.8	4.3-5.3
TR3	895	5.0	4.7-5.2	897	5.2	5.0-5.4
TR4	724	4.8	4.6-5.0	725	4.4	4.1-4.8
TR5	680	4.4	4.2-4.6	680	5.3	5.1-5.5
TR6	728	5.1	4.8-5.3	723	5.6	5.4-5.9
TR7	313	4.4	4.0-4.7	311	3.8	3.4-4.3
TR8	400	4.7	4.3-5.0	403	5.5	5.2-5.8
TR9	252	4.4	4.0-4.8	253	6.1	5.8-6.3
TRA	157	4.9	4.4-5.5	158	5.6	5.2-6.0
TRB	242	4.8	4.6-5.1	241	5.6	5.1-6.0
TRC	289	3.8	3.4-4.3	236	4.8	4.5-5.2
Total	5856	4.6	4.5-4.7	5806	5.1	5.0-5.2

Table 36 and Table 37 present the average numbers of servings of fruits and vegetables, respectively, that respondents consumed on a typical day of the week. Average fruit consumption was slightly higher in men than women, and in both men and women in the two oldest age groups (Table 36). Table 36 presents the mean number of servings of fruits consumed per day by sex and age group: 1.4 for both sexes, 1.5 for women and 1.4 for men.

Table 36. Mean number of servings of fruit consumed per day by sex and age group

Age group (years)	Men			Women			Both sexes		
	N	Mean (servings)	95% CI (servings)	N	Mean (servings)	95% CI (servings)	N	Mean (servings)	95% CI (servings)
15-29	460	1.3	1.1-1.6	635	1.4	1.2-1.6	1095	1.3	1.2-1.5
30-44	622	1.3	1.1-1.4	1021	1.3	1.2-1.5	1643	1.3	1.2-1.4
45-59	614	1.5	1.3-1.7	935	1.6	1.4-1.9	1549	1.6	1.4-1.8
60-69	370	1.8	1.5-2.0	449	1.6	1.4-1.9	819	1.7	1.5-1.9
≥ 70	268	2.0	1.5-2.5	430	1.5	1.1-1.9	698	1.7	1.4-2.0
Total	2334	1.4	1.3-1.5	3470	1.5	1.3-1.6	5804	1.4	1.3-1.5

Table 37 presents the mean number of servings of vegetables on average per day by sex and age groups: 1.7 for both sexes, 1.7 for women and 1.6 for men, with no statistical difference across the sexes. There is also no statistical difference across the age groups in terms of mean number of servings of vegetables on average per day.

Table 37. Mean number of servings of vegetables on average per day by sex and age group

Age group (years)	Men			Women			Both sexes		
	N	Mean (servings)	95% CI (servings)	N	Mean (servings)	95% CI (servings)	N	Mean (servings)	95% CI (servings)
15-29	458	1.6	1.3-1.9	627	1.6	1.3-1.9	1085	1.6	1.3-1.8
30-44	619	1.5	1.3-1.7	1019	1.7	1.5-2.0	1638	1.6	1.4-1.8
45-59	612	1.6	1.2-2.0	942	1.8	1.5-2.1	1554	1.7	1.4-2.0
60-69	369	1.5	1.1-1.8	449	2.0	1.6-2.4	818	1.7	1.5-2.0
≥ 70	263	2.1	1.5-2.8	428	1.8	1.2-2.3	691	1.9	1.5-2.3
Total	2321	1.6	1.4-1.8	3465	1.7	1.6-1.9	5786	1.7	1.5-1.8

Table 38 shows that 87.8% of the proportion of the study population consumed fewer than five servings of fruit and/or vegetables on average per day. This proportion was higher in the two youngest age groups, and highest for both men and women in the group aged 30-44 years. Thus, 87.8% of the respondents did not reach the recommended daily consumption of at least five servings of fruits or vegetables. This behaviour did not show statistically significant differences by sex, age group, area or region of residence (see Table 38).

Table 38. Proportion of respondents consuming fewer than five servings of fruit and/or vegetables on average per day by sex and age group

Age group (years)	Men			Women			Both sexes		
	N	%	95% CI	N	%	95% CI	N	%	95% CI
15-29	464	89.3	85.4-93.2	639	89.3	86.2-92.4	1103	89.3	86.7-92.0
30-44	627	89.4	86.7-92.1	1028	89.4	87.0-91.9	1655	89.4	87.5-91.3
45-59	619	87.6	83.8-91.4	947	87.0	84.1-89.9	1566	87.3	84.7-89.9
60-69	372	83.3	78.3-88.2	452	82.8	78.5-87.1	824	83.0	79.7-86.3
≥ 70	268	79.1	72.8-85.4	432	85.5	80.3-90.6	700	82.7	78.7-86.8
Total	2350	87.8	85.8-89.8	3498	87.9	86.3-89.5	5848	87.8	86.4-89.3

4.6.1. Conclusions

Some of the most important results on respondents' fruit and vegetable consumption included the following:

- the mean number of days when fruits were consumed in a typical week was 4.6 (males: 4.5, and females: 4.8);
- the mean number of servings of fruit consumed on average per day was 1.4 (males: 1.4, and females: 1.5);
- the mean number of days when vegetables were consumed in a typical week was 5.1 (males: 4.9, and females: 5.2);
- the mean number of servings of vegetables consumed on average per day was 1.7 (males: 1.6, and females: 1.7);
- 87.8% of respondents ate fewer than five servings of fruit and/or vegetables on average per day (males: 87.8%, and females: 87.9%).

4.7. Dietary salt

Table 39 presents the respondents' salt-consumption habits by sex and age group. When both sexes are considered, more than one fourth of the study population (28.1%) always or often added salt to their food

before eating. Although there was no statistically significant difference at 5% significance level between men (29.3%) and women (26.8%) in this regard, there were significant differences between age groups. The proportion of always or often adding salt to their food before eating was highest in the groups aged 15–29 (33.1%), and progressively declined in the groups aged 30–44 (26.8%), 45–59 (26.3%), 60–69 (23.1%) and ≥ 70 (22.8%). Similarly, about a quarter of the respondents (26.0%) stated that they always or often added salt to their food when cooking or preparing meals at home, and this proportion showed declining trend with age: 29.7% of those aged 15–29, 26.8% of those aged 30–44, 25.6% of those aged 45–59, 20.2% of those aged 60–69 and 15.4% of those aged ≥ 70 . Table 39 also shows the proportion of respondents who reported always or often eating processed foods high in salt (25.5%); this was higher in males (27.8%) than females (23.3%).

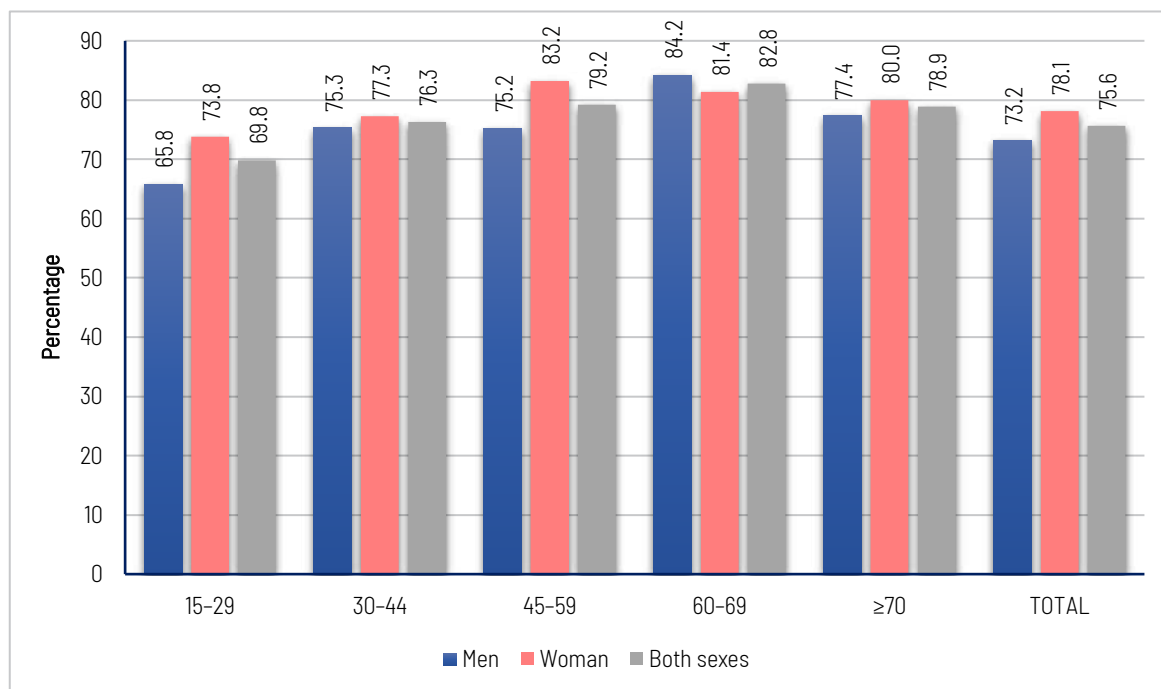
Table 39. Respondents' use of dietary salt by sex and age group

Use	Age group (years)	Men			Women			Both sexes		
		N	%	95% CI	N	%	95% CI	N	%	95% CI
Always or often add salt before eating or when eating	15–29	482	35.5	30.4–40.6	668	30.7	26.4–35.0	1150	33.1	29.7–36.5
	30–44	640	25.8	21.5–30.0	1043	27.9	24.4–31.4	1683	26.8	24.0–29.7
	45–59	634	28.4	23.6–33.2	970	24.2	19.5–28.8	1604	26.3	22.9–29.7
	60–69	379	24.5	18.8–30.1	461	21.8	16.8–26.9	840	23.1	19.3–27.0
	≥ 70	272	25.2	17.9–32.5	440	21.0	15.8–26.3	712	22.8	18.4–27.2
	Total	2407	29.3	26.7–31.9	3582	26.8	24.6–29.0	5989	28.1	26.3–29.9
Always or often add salt when cooking or preparing food at home	15–29	461	29.7	24.7–34.7	662	29.8	25.4–34.2	1123	29.7	26.3–33.2
	30–44	626	26.2	22.1–30.3	1041	27.4	23.5–31.3	1667	26.8	23.9–29.7
	45–59	621	24.6	20.1–29.2	967	26.6	22.1–31.2	1588	25.6	22.3–28.9
	60–69	365	21.8	16.4–27.2	458	18.8	14.2–23.5	823	20.2	16.6–23.9
	≥ 70	262	16.5	11.0–22.1	432	14.6	10.2–19.1	694	15.4	11.7–19.2
	Total	2335	25.9	23.3–28.5	3560	26.1	23.8–28.4	5895	26.0	24.2–27.9
Always or often consume processed food high in salt	15–29	484	35.1	30.1–40.0	665	32.2	27.6–36.7	1149	33.6	30.1–37.1
	30–44	641	26.8	22.7–30.9	1044	23.5	19.7–27.2	1685	25.1	22.2–28.1
	45–59	632	25.4	20.8–30.0	970	17.9	13.6–22.2	1602	21.6	18.4–24.9
	60–69	381	18.3	13.7–22.8	459	16.1	11.8–20.5	840	17.2	13.9–20.4
	≥ 70	267	17.5	11.9–23.1	427	11.5	6.4–16.6	694	14.1	10.3–17.9
	Total	2405	27.8	25.3–30.3	3565	23.3	21.0–25.6	5970	25.5	23.7–27.4

Table 39 also shows that the percentage of men and women always or often adding salt when cooking or preparing food at home (25.9% and 26.1%, respectively).

Fig. 14 presents estimates of the proportions of the study population who thought lowering their dietary salt intake is very important: 75.6% overall. The proportion was higher in women (78.1%) than men (73.2%), although the difference is not significant. The percentages of the study population giving high importance to lowering salt in their diets did not vary much across age groups for either men and women, but was somewhat lower for the group aged 15–29.

Fig. 14. Respondents who think lowering salt in diet is very important



4.7.1. Conclusions

Some of the most important results on respondents' use of salt included the following:

- 28.1% always or often added salt or salty sauce to their food before eating or as they were eating (males: 29.3%, and females: 26.8%);
- 25.5% always or often ate processed foods high in salt (males: 27.8%, and females: 23.3%);
- 75.6% thought that reducing salt in their diets was very important (males: 73.2%, and females: 78.1%).

4.8. Physical activity

For the analysis of STEPS data, existing guidelines were followed in the study: a person's energy consumption when being moderately active is estimated to be four times as high as it is when sitting quietly, and eight times as high when being vigorously active. Throughout a week, including activity for work, during transport and leisure time, WHO recommends that adults should engage in at least (44):

- 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 achieving at least 600 MET-minutes.

Table 40 presents the physical activity of the study population using the definitions of levels of physical activity given in section 3.14.1.4: 26.0% of respondents performed moderate activity; 24.6%, high activity; and 49.4%, low activity. As expected, the group aged ≥ 70 reported significantly lower proportions with moderate or high activity (18.6% and 10.8%, respectively) and a greater proportion with low physical activity (70.6%). While both men and women showed the same tendency for activity to decline with age, more men (36.3%) than women (13.1%) engaged in high levels of physical activity, a statistically significant difference at the 5% level (as the results with 95% CI do not overlap – 33.6–39.0% for men versus 11.5–14.6% for women). For the moderate physical activity levels, the proportion is higher, but not statistically significant at the 5% level, 26.3% for men and 25.8% for women. The percentages with low levels of physical activity showed the same pattern: 37.4% for men and a significantly higher (at 5% level) 61.1% for women.

Table 40. Respondents' levels of total physical activity as defined by WHO by sex and age group

Sex	Age group (years)	N	Low activity		Moderate activity		High activity	
			%	95% CI	%	95% CI	%	95% CI
Men	15-29	467	31.7	26.3-37.2	25.6	20.9-30.3	42.6	37.0-48.3
	30-44	623	37.3	32.6-42.1	23.4	19.0-27.9	39.2	34.5-44.0
	45-59	626	37.5	33.0-42.0	28.5	24.2-32.9	34.0	29.0-38.9
	60-69	371	47.2	41.0-53.4	30.8	25.4-36.2	22.0	16.8-27.3
	≥ 70	272	51.5	44.0-59.0	29.1	22.4-35.8	19.5	13.2-25.7
	Total	2359	37.4	34.7-40.1	26.3	23.9-28.7	36.3	33.6-39.0
Women	15-29	646	56.2	51.6-60.9	29.3	25.1-33.5	14.5	11.1-17.9
	30-44	1009	58.0	53.9-62.1	28.2	24.5-31.8	13.9	11.1-16.6
	45-59	946	58.4	53.9-62.9	26.3	22.2-30.3	15.3	12.4-18.3
	60-69	449	72.1	66.9-77.3	19.1	14.7-23.5	8.8	5.6-12.0
	≥ 70	439	84.9	81.0-88.7	10.9	7.5-14.2	4.3	2.0-6.6
	Total	3489	61.1	58.9-63.3	25.8	23.8-27.8	13.1	11.5-14.6
Both sexes	15-29	1113	43.8	40.1-47.6	27.4	24.3-30.6	28.7	25.2-32.2
	30-44	1632	47.7	44.5-50.9	25.8	22.9-28.7	26.5	23.6-29.4
	45-59	1572	48.0	44.7-51.3	27.4	24.4-30.4	24.6	21.7-27.6
	60-69	820	60.2	56.0-64.3	24.7	21.2-28.2	15.1	12.0-18.3
	≥ 70	711	70.6	66.4-74.8	18.6	15.1-22.2	10.8	7.6-14.0
	Total	5848	49.4	47.6-51.2	26.0	24.5-27.6	24.6	22.9-26.2

The study population spent a median of 30.0 minutes (interquartile range: 4.3-90.0) in physical activity on average per day. This value was higher in males (51.4 minutes - interquartile range: 11.4-180.0) than females (17.1 minutes - interquartile range: 0.0-55.0).

Table 41 reports respondents' mean minutes of work-related physical activity on average per day by sex and age group: 56.4 minutes. The mean amount of work-related physical activity was significantly higher in men (91.5 minutes) than women (22.1 minutes). The highest amounts were 132.6 minutes for men in the group aged 30-44 years and 26.9 minutes for women in the group aged 45-59.

Table 41. Respondents' mean minutes of work-related physical activity on average per day by sex and age group

Age group (years)	Men			Women			Both sexes		
	N	Mean (minutes)	95% CI (minutes)	N	Mean (minutes)	95% CI (minutes)	N	Mean (minutes)	95% CI (minutes)
15-29	467	80.4	58.6-102.2	646	23.4	14.4-32.3	1113	52.2	40.2-64.3
30-44	623	132.6	100.0-165.1	1009	25.8	18.9-32.6	1632	79.1	62.1-96.2
45-59	626	93.3	72.9-113.7	946	26.9	18.1-35.6	1572	60.1	48.8-71.4
60-69	371	40.4	23.4-57.3	449	9.6	4.7-14.6	820	24.4	15.6-33.1
≥ 70	272	15.9	7.6-24.2	439	6.2	3.2-9.3	711	10.4	6.3-14.4
Total	2359	91.5	77.8-105.2	3489	22.1	18.1-26.1	5848	56.4	49.2-63.6

Table 42 presents the mean minutes of transport-related physical activity on average per day by sex and age group: 33.1 minutes (41.0 minutes for men and 25.3 minutes for women). The mean was highest in the group aged 45–59 in both men (43.7 minutes) and women (28.0 minutes). Table 43 presents the respondents' mean minutes of recreation-related physical activity on average per day by sex and age group (10.2 minutes), which was significantly higher in men (14.7 minutes) than women (5.8 minutes). This mean is highest in the youngest age group: 22.2 minutes for men and 9.4 minutes for women.

Table 42. Respondents' mean minutes of transport-related physical activity on average per day by sex and age group

Age group (years)	Men			Women			Both sexes		
	N	Mean (minutes)	95% CI (minutes)	N	Mean (minutes)	95% CI (minutes)	N	Mean (minutes)	95% CI (minutes)
15–29	467	43.5	36.7–50.4	646	26.6	23.2–29.9	1113	35.2	31.3–39.0
30–44	623	37.2	31.8–42.6	1009	27.6	23.6–31.6	1632	32.4	29.1–35.7
45–59	626	43.7	37.5–49.9	946	28.0	24.2–31.9	1572	35.9	32.1–39.6
60–69	371	37.8	30.6–45.1	449	20.7	15.0–26.4	820	28.9	23.9–33.9
≥ 70	272	42.0	29.1–54.8	439	10.3	7.7–12.8	711	23.8	17.8–29.8
Total	2359	41.0	37.7–44.4	3489	25.3	23.3–27.4	5848	33.1	31.0–35.1

Table 43. Respondents' mean minutes of recreation-related physical activity on average per day by sex and age group

Age group (years)	Men			Women			Both sexes		
	N	Mean (minutes)	95% CI (minutes)	N	Mean (minutes)	95% CI (minutes)	N	Mean (minutes)	95% CI (minutes)
15–29	467	22.2	17.4–27.0	646	9.4	4.4–14.3	1113	15.9	12.4–19.4
30–44	623	11.9	6.1–17.7	1009	4.7	3.1–6.2	1632	8.3	5.2–11.4
45–59	626	13.9	8.2–19.7	946	4.2	3.0–5.4	1572	9.1	6.1–12.0
60–69	371	7.1	2.8–11.5	449	5.4	1.3–9.5	820	6.2	3.2–9.2
≥ 70	272	4.6	1.7–7.5	439	1.2	0.0–2.5	711	2.7	1.2–4.1
Total	2359	14.7	12.0–17.5	3489	5.8	4.1–7.4	5848	10.2	8.6–11.8

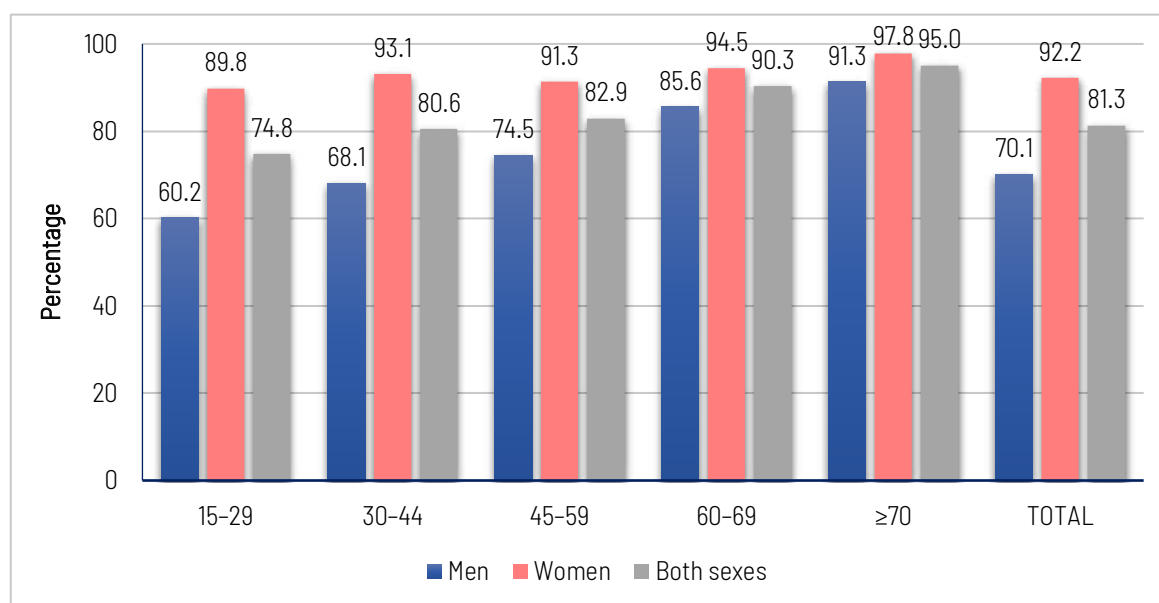
Table 44 presents the estimates for the percentage of respondents who did not meet the WHO recommendations on physical activity for health (< 150 minutes of moderate-intensity activity per week, or equivalent), broken down by age group and sex. The percentage was 43.6% overall, although more women (53.6%) fell short than men (33.1%): a statistically significant difference at 5% level. The percentage of study population not meeting the WHO recommendations showed a rising trend with age: 37.8% for the group aged 15–29, rising to 66.1% for those aged ≥ 70 when both sexes are considered jointly.

Table 44. Proportions of respondents not meeting the WHO recommendations on physical activity for health by sex and age group

Age group (years)	Men			Women			Both sexes		
	N	%	95% CI	N	%	95% CI	N	%	95% CI
15-29	467	26.7	21.5-31.9	646	49.2	44.4-54.0	1113	37.8	34.2-41.5
30-44	623	33.7	29.0-38.3	1009	49.8	45.6-54.0	1632	41.7	38.5-45.0
45-59	626	32.7	28.2-37.1	946	50.9	46.1-55.6	1572	41.8	38.4-45.2
60-69	371	43.8	37.7-50.0	449	66.2	60.6-71.8	820	55.5	51.3-59.7
≥ 70	272	47.8	40.3-55.3	439	79.8	75.4-84.2	711	66.1	61.8-70.5
Total	2359	33.1	30.5-35.6	3489	53.9	51.6-56.3	5848	43.6	41.8-45.4

Fig. 15 shows the proportions of respondents who did not engage in vigorous physical activity: 81.3% overall, although more women (92.2%) than men (70.1%) were inactive. These proportions rose with age.

Fig. 15. Proportions of respondents not engaging in a vigorous physical activity by sex and age group



4.8.1. Conclusions

Some of the most important results on respondents’ physical activity included the following:

- 43.6% had insufficient physical activity, defined as <150 minutes of moderate-intensity activity per week, or equivalent (males: 33.1%, and females: 53.9%);
- the median time spent in physical activity on average per day was 30.0 minutes (males: 51.4 minutes, and females: 17.1 minutes);
- 81.3% of respondents did not engage in vigorous activity (males: 70.1%, and females: 92.2%).

4.9. History of raised blood pressure

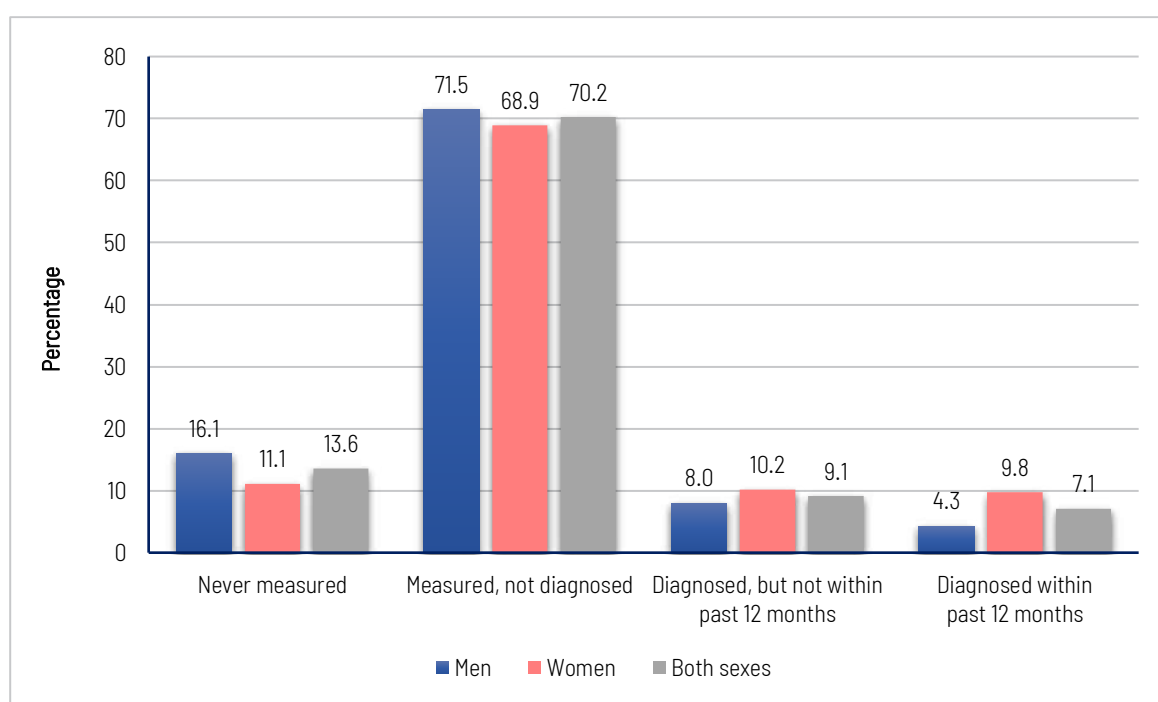
High salt and fat consumption, reduced intake of fruits and vegetables, overweight and obesity, harmful use of alcohol, physical inactivity, psychological stress, socioeconomic determinants and inadequate access to health care are modifiable risk factors for hypertension. For most of the people with hypertension, however,

the precise reason for the condition is not known. The aforementioned risk factors predispose people to raised blood pressure. The modifiable nature of most of these factors should be viewed as an opportunity.

Hypertension has a higher prevalence among men than women, and seems to be more common in low-income countries than high-income countries (7). Nearly a quarter of the population of Turkey has hypertension (52,53).

The survey assessed hypertension as a risk factor for NCD by measuring blood pressure. The proportion of respondents who had never had their blood pressure measured was 13.6%; 16.1% for men and 11.1% for women. The frequency of raised blood pressure or hypertension history in the study population was 16.2%; 12.3% for men and 20.0% for women (Fig. 16).

Fig. 16. Blood pressure measurement and hypertension diagnosis among respondents by sex



Although it was known that 72.7% of those previously diagnosed with raised blood pressure or hypertension were currently taking medication, rates of use of this medication varied between age groups. They were lowest in the group aged 15–29 (29.6%) and highest in those aged ≥ 70 (85.4%).

Participants who were currently taking medication for raised blood pressure were asked about their activities for managing hypertension; 75.7% used medication regularly while 11.9% were not doing anything (Table 45).

Table 45. Respondents' activities to manage hypertension by sex

Sex	Activities (%)						
	Regular medication	Irregular medication	Herbal medicines	Physical activity	Diet	Nothing	Other
Men	72.9	5.2	2.1	3.4	12.1	12.0	3.2
Women	77.5	5.7	0.6	1.5	10.7	11.8	0.8
Both sexes	75.7	5.5	1.2	2.3	11.2	11.9	1.7

4.9.1. Conclusions

Some of the most important results on respondents' hypertension included the following:

- 13.6% of respondents had never had their blood pressure levels measured;
- 16.2% had raised blood pressure or hypertension (men: 12.3%, and women: 20.0%), with frequency rising with age;
- 75.7% of those previously diagnosed with raised blood pressure or hypertension, were currently taking medication.

4.10. History of diabetes

The prevalence of diabetes is increasing in Turkey: from 7% of the population over 20 years of age in 1997 to 13% in 2009 (53). At present, 13.2% of the population has diabetes. Diabetes is the eighth most common cause of death by disease in Turkey (accounting for 2.2% of deaths). Nearly one in three people in Turkey has metabolic syndrome. Females (41.1%) have higher risk than males (28.8%) (42).

The percentage of respondents who had never had their blood glucose levels measured was 35.0%; 39.9% for men and 30.2% for women. According to the participants' statements, the frequency of raised blood sugar or diabetes was 9.1%; 7.6% for men and 10.6% for women (Fig. 17). The frequency of raised blood sugar or diabetes in the study population increased from 1.1% in the group aged 15–29 to 28.8% in the group aged ≥ 70.

Of all the respondents previously diagnosed with raised blood glucose or diabetes, 23.7% were currently taking medication prescribed for diabetes: 26.4% for men 21.7% for women. Further, 72.1% of all those previously diagnosed with raised blood glucose or diabetes were currently taking insulin: 69.8% for men and 73.8% for women (Fig. 18).

The use of medication for diabetes varied between the age groups. It was at the lowest level in those aged 30–44 (18.6%) and highest in those aged 60–69 (29.5%). Participants who were currently taking medication for raised blood sugar were asked about their activities for managing diabetes: 75.8% were using medication regularly, while 12.5% were not taking anything (Table 46).

Fig. 17. Blood sugar measurement and diabetes diagnosis among respondents by sex

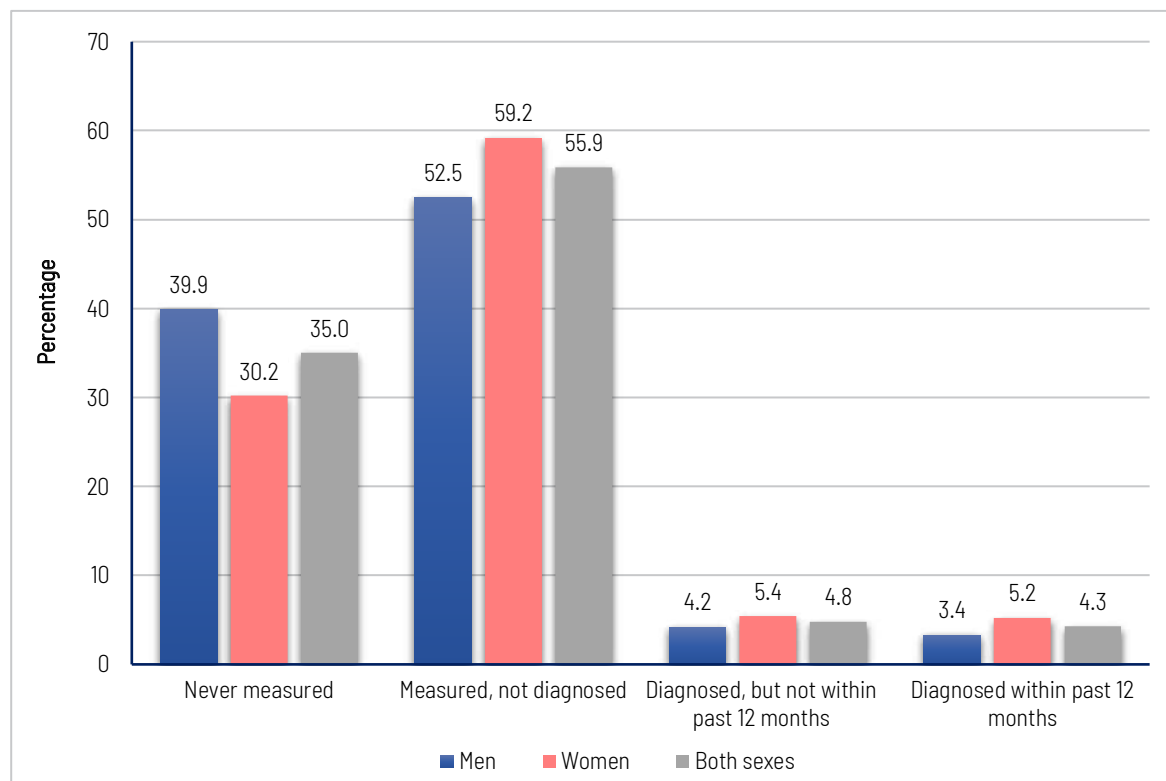


Fig. 18. Percentages of respondents with raised blood glucose who are currently taking medication or insulin, by sex

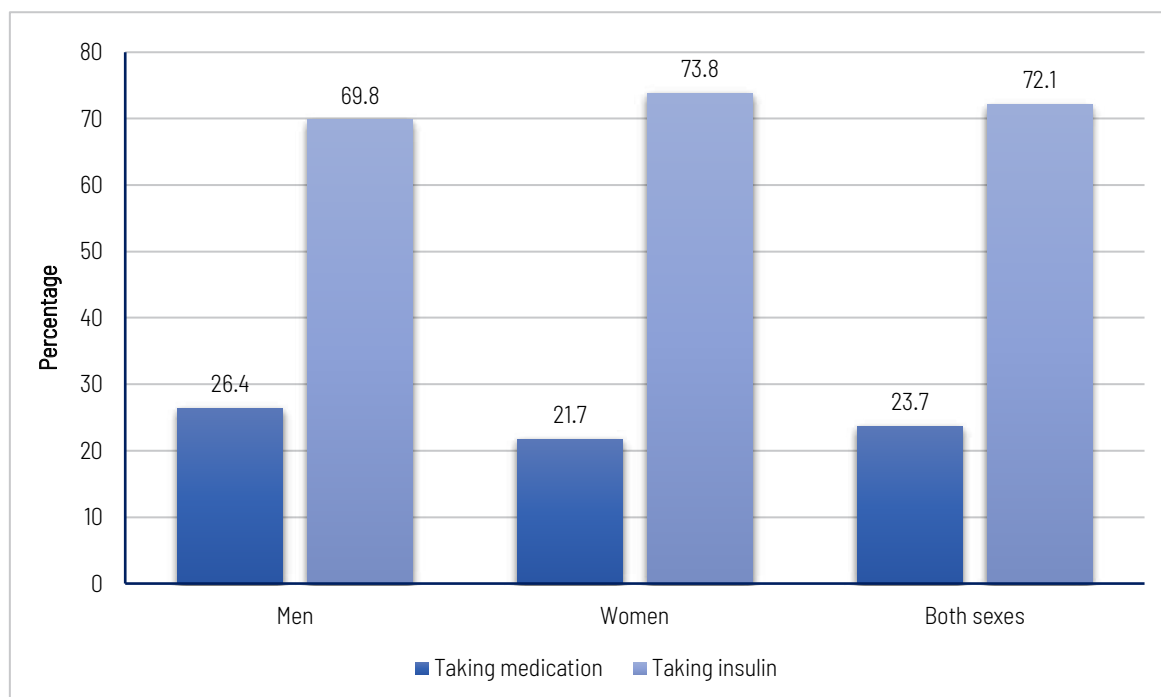


Table 46. Respondents' activities to manage diabetes by sex

Sex	Activities (%)						
	Regular medication	Irregular medication	Herbal medicines	Physical activity	Diet	Nothing	Other
Men	73.3	6.8	1.7	3.2	9.3	13.4	4.1
Women	77.6	2.9	0.1	3.3	15.5	11.8	1.7
Both sexes	75.8	4.5	0.7	3.3	13	12.5	2.7

4.10.1. Conclusions

Some of the most important results on respondents' blood sugar and diabetes included the following:

- more than one out of three never had their blood glucose levels measured;
- 9.1% of Turkey's adult population had raised blood sugar or diabetes (7.6% for men and 10.6% for women), with prevalence increasing with age; and
- 23.7% of those previously diagnosed with raised blood glucose or diabetes were currently taking medication, and 72.1% were currently taking insulin for diabetes.

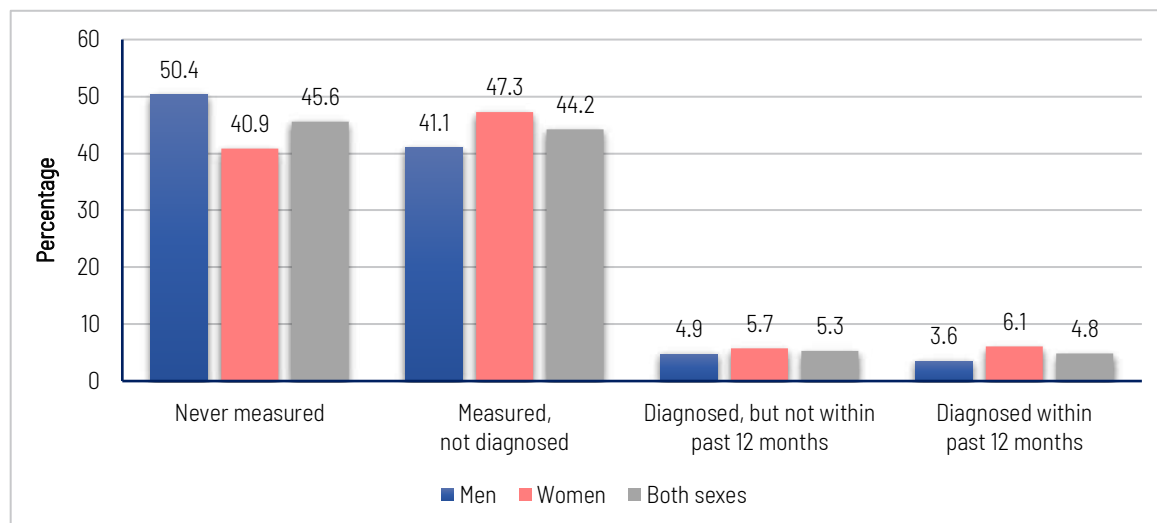
4.11. History of raised total cholesterol

CVD are the most common cause of death worldwide and one of the major modifiable risk factors is abnormal blood lipid profile (54). According to Onat et al. (55), mean total cholesterol levels were similar in women and men in Turkey, increasing from 149 mg/dl in the group aged 20–29 to 187 mg/dl in the group aged 40–49, when compared with western countries, Turkey currently has relatively low levels of total cholesterol in blood. Nevertheless, 12 million Turkish citizens have total cholesterol levels higher than 200 mg/dl (4). Cholesterol

levels seem to have increased over the last 20 years. Mean blood triglyceride levels increased by approximately 25 mg/dl in men and 20 mg/dl in women since 1990 (56).

The percentage of respondents who had never had their blood cholesterol measured was 45.6%; 50.4% for men and 40.9% for women. The frequency of a history of raised cholesterol in the survey population was 10.1% (8.5% for men and 11.8% for women – Fig. 19) and rose from 1.2% in the group aged 15–29 to 22.3% in those aged 60–69.

Fig. 19. Cholesterol measurement and raised-cholesterol diagnosis among respondents by sex



Of all the respondents previously diagnosed with raised total cholesterol, 36.9% were currently taking medication prescribed for the condition; 39.8% for men and 34.9% for women. The use of medication varied significantly between age groups; it was lowest in the group aged 30–44 (10.4%) and highest in those aged ≥ 70 (55.0%). Respondents who were currently taking drugs (medication) for raised total cholesterol were asked about their activities for managing the condition: 38.5% were using medication regularly, while 33.9% were not doing anything (Table 47).

Table 47. Respondents' activities to manage total cholesterol by sex

Sex	Activities (%)						
	Regular medication	Irregular medication	Herbal medicines	Physical activity	Diet	Nothing	Other
Men	39.2	3.0	3.3	4.5	22.2	34.6	1.0
Women	38.1	5.9	3.6	4.4	19.0	33.4	1.1
Both sexes	38.5	4.7	3.5	4.5	20.3	33.9	1.0

4.11.1. Conclusions

Some of the most important results on respondents' blood cholesterol included the following:

- almost half of respondents (45.6%) had never had their total cholesterol levels measured;
- 10.1% of Turkey's adult population had history of raised total cholesterol (8.5% for men and 11.8% for women), and prevalence increased with age in general;
- 36.9% of those previously diagnosed with raised total cholesterol were currently taking medication for it.

4.12. History of CVD

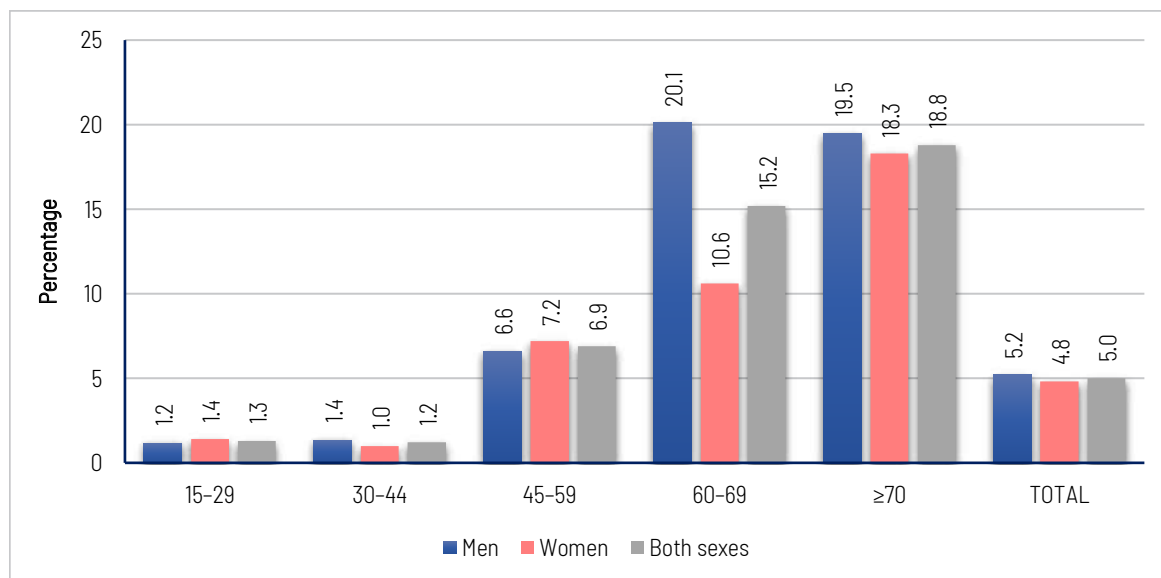
CVD are a group of diseases affecting the heart and blood vessels, such as CHD, cerebrovascular disease and peripheral arterial disease. While NCDs accounted for an estimated 36 million deaths (63% of the 57 million deaths that occurred globally in 2008), CVD accounted for 48% of deaths from NCDs (7,9). CVD are the most common cause of death worldwide.

Mortality due to CVD is projected to increase from 17.5 million in 2012 to 22.2 million in 2030 (13). While mortality due to CVD declined in high-income countries, it was relatively flat in many low- and middle-income countries (57).

NCDs were estimated to be responsible for 86% of total deaths in Turkey; CVD responsible for the 47% (37). The two most common causes of death by disease in Turkey are ischaemic heart disease (22%) and cerebrovascular diseases (15%) (53). The prevalence of CVD is increasing in Turkey (53); CVD accounted for the deaths of 102 386 males and 103 071 females in 2000. These numbers are projected to rise to 175 663 and 144 297 in 2020, and 235 567 and 180 530 in 2030, respectively. By 2030, mortality due to CVD is projected to increase by about 2.3 times in males and about 1.8 times in females.

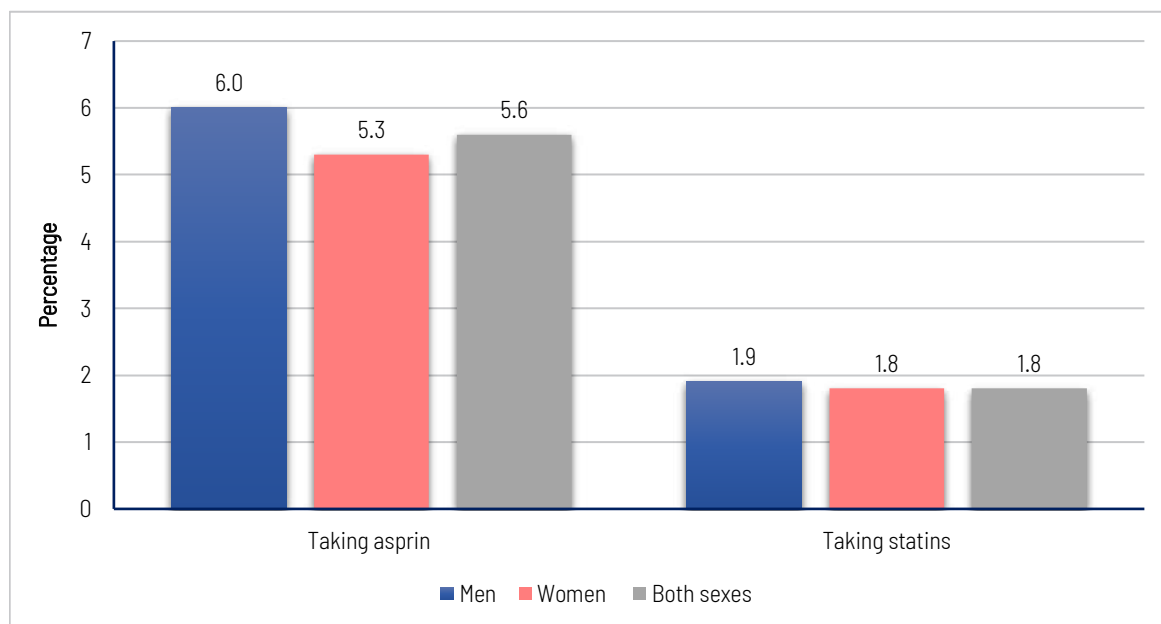
The percentage of respondents who had had a heart attack or chest pain from heart disease (angina) or a stroke (cerebrovascular accident or incident) was 5.0%; 5.2% for men and 4.8% for women. Women have a lower frequency in all age groups except those aged 15–29 and 45–59. In addition, the frequency of heart attack or chest pain from heart disease, or stroke increased with age: from 1.3% in the group aged 15–29 to 18.8% in those aged ≥ 70 (Fig. 20).

Fig. 20. Respondents who ever had a heart attack or chest pain from heart disease, or a stroke, by sex and age group



Of all the respondents, 5.6% were currently taking aspirin regularly to prevent or treat heart disease; 6.0% for men and 5.3% for women. In addition, 1.8% of the study population were currently taking statins regularly for this purpose; 1.9% for men and 1.8% for women (Fig. 21). The age groups varied in their use of aspirin or statins to prevent or treat heart disease. The level of drug use was lowest in the group aged 15–29 (0.3% taking aspirin and 0.5%, statins) and highest in those aged ≥ 70 (24.4% taking aspirin and 7.3%, statins). The use of aspirin to prevent or treat heart disease also varied between the sexes, as more women used it up to the age of 44, and more men used it from 45 years onward. On the other hand, more women than men used statins only in the group aged 15–29.

Fig. 21. Percentages of respondents who are currently taking aspirin or statins regularly to prevent or treat heart disease by sex



4.12.1. Conclusions

Some of the most important results on respondents' history of CVD included the following:

- 5.0% of respondents had had a heart attack or chest pain from heart disease, or stroke (5.2% for men and 4.8% for women) and the frequency increased with age;
- 5.6% of respondents were currently taking aspirin and 1.8% were currently taking statins regularly to prevent or treat heart disease, although the use of aspirin and/or statins varied between the sexes.

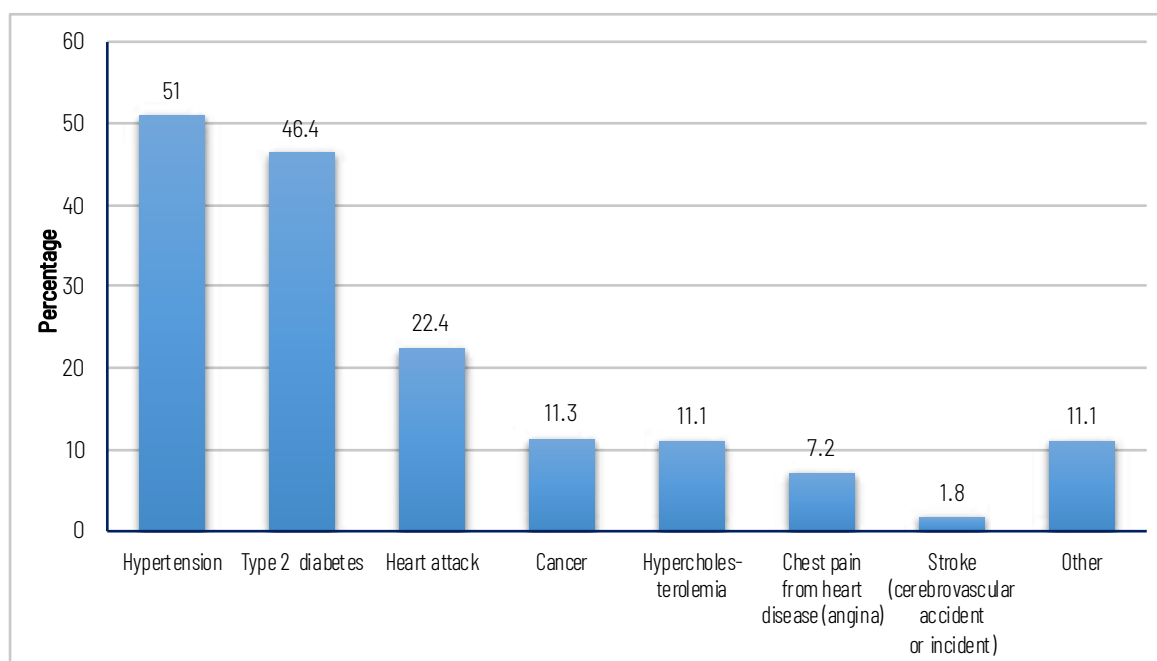
4.13. Family history of chronic diseases

While major modifiable risk factors for NCDs include physical inactivity, unhealthy diet, abnormal blood lipids, obesity and diabetes, as well as high blood pressure, tobacco use and harmful alcohol use, the nonmodifiable risk factors include age, genetic features or family history, gender and ethnic background (54).

Almost half of participants' parents or siblings (45.8%) had a known, diagnosed chronic disease requiring medication.

The most commonly diagnosed conditions were: hypertension (51.0%), type-2 diabetes (46.4%) and heart attack (22.4%) (Fig. 22). Among respondents' parents or siblings, 19.8% had had a heart attack or chest pain from heart disease (angina) or a stroke (cerebrovascular accident or incident).

Fig. 22. Types of diagnosed chronic disease requiring medication for respondents' parents or siblings



4.13.1. Conclusions

Some of the most important results on respondents' family history of NCDs included the following:

- Almost half of participants' (45.8%) parents or siblings had a known, diagnosed chronic disease requiring medication;
- hypertension was the most common condition diagnosed.

4.14. History of asthma, chronic obstructive pulmonary disease or cancer

Chronic respiratory diseases are a leading cause of death worldwide, and tend to have high underdiagnosis rates. Most of the deaths due to chronic respiratory diseases occur in low-income countries. General risk factors include cigarette smoke, occupational dust and chemicals, second-hand smoke, indoor/outdoor air pollution, genetics, infections, socioeconomic factors and ageing (58).

Asthma is characterized by recurrent attacks of breathlessness and wheezing. The symptoms can differ in severity and asthma may cause fatigue and sleepiness. Even though the fatality rate is low, the disease is usually underdiagnosed. Asthma affects approximately 235 million people (59).

Chronic obstructive pulmonary disease (COPD) is a group of lung diseases that prevent proper lung airflow. Gathering accurate epidemiological data on COPD prevalence, morbidity and mortality is difficult and expensive. WHO estimated that 65 million people worldwide had moderate-to-severe COPD and approximately 3 million people died of it in 2015 (5% of all deaths) (60).

Cancer killed 7.6 million people in 2008 and about 70% of such deaths occur in low- and middle-income countries. Cancer mortality is projected to reach 13.1 million by 2030. Approximately 30% of cancer cases are associated with behavioural risk factors (61,62).

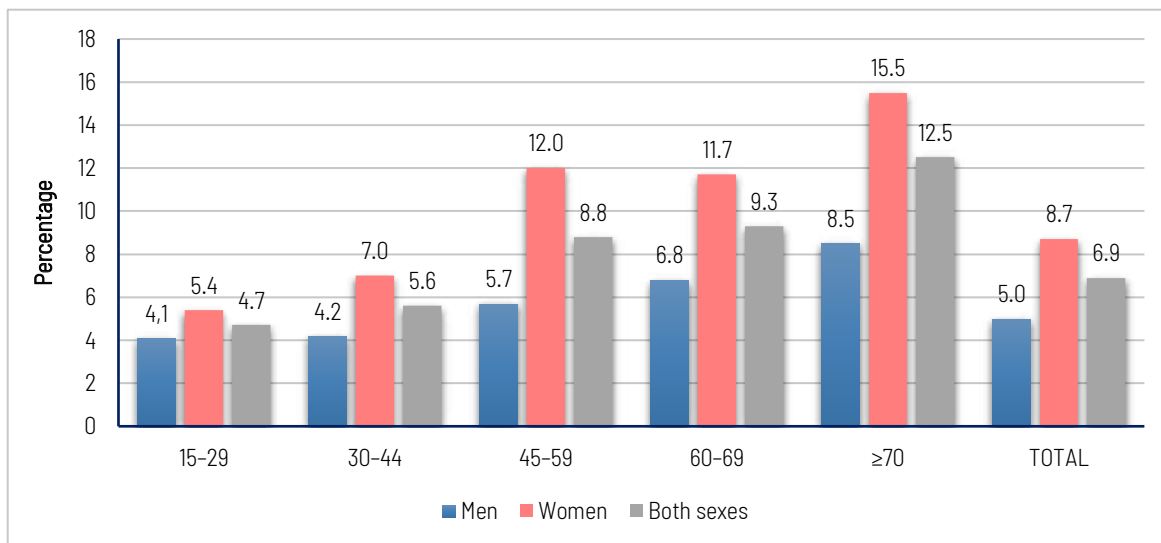
Lung, breast, colorectal, stomach and liver cancer cause more than 50% of cancer deaths. In high-income countries, the most frequent cause of cancer deaths in the population is lung cancer, followed by breast cancer among women and colorectal cancer among men. The types and frequencies of cancer differ among

countries. In sub-Saharan Africa, cervical cancer is still the leading cause of cancer death among women (7).

Cancer is an important public health concern. In Turkey, it is the second most important cause of death but is projected to be the leading cause of death by 2030. Approximately 175 000 new cancer cases were diagnosed in Turkey in 2012 (63).

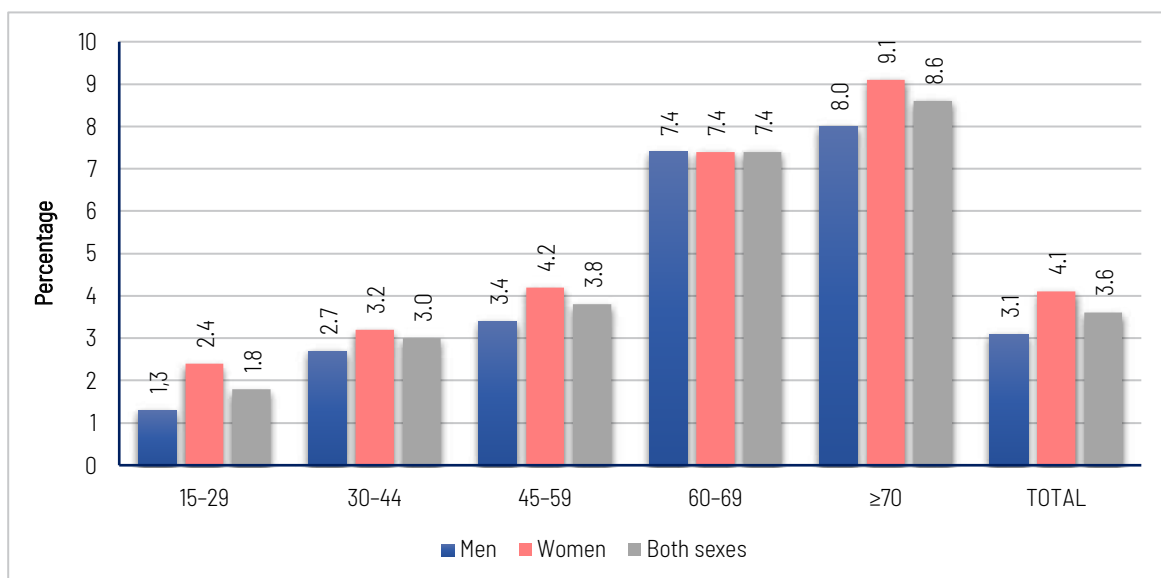
The percentage of respondents who had ever been diagnosed with asthma (including allergic asthma) by a doctor was 6.9%; 5.0% for men and 8.7% for women. The frequency of diagnosis rose from 4.7% in the group aged 15–29 to 12.5% in the group aged ≥ 70, demonstrating that the value in general increased with age (Fig. 23).

Fig. 23. Proportions of respondents with an asthma diagnosis, by sex and age group



COPD is the third most common cause of death by disease in Turkey (accounting for 6%), following ischaemic heart disease and cerebrovascular diseases (36): 3.6% of the respondents had been diagnosed with COPD by a doctor; 3.1% for men and 4.1% for women. Like asthma diagnoses, the frequency of COPD diagnosis rose with age, from 1.8% in the group aged 15–29 to 8.6% in the group aged ≥ 70 (Fig. 24).

Fig. 24. Proportions of respondents with COPD diagnoses, by sex and age group



Among respondents, 0.7% had received a cancer diagnosis by a doctor in the previous 12 months; 0.4% for men and 0.9% for women. The frequency of cancer diagnosis, too, increased with age, from 0.3% in the group aged 15–29 to 2.2% in the group aged ≥ 70.

4.14.1. Conclusions

Some of the most important results on respondents' history of asthma, COPD or cancer included the following:

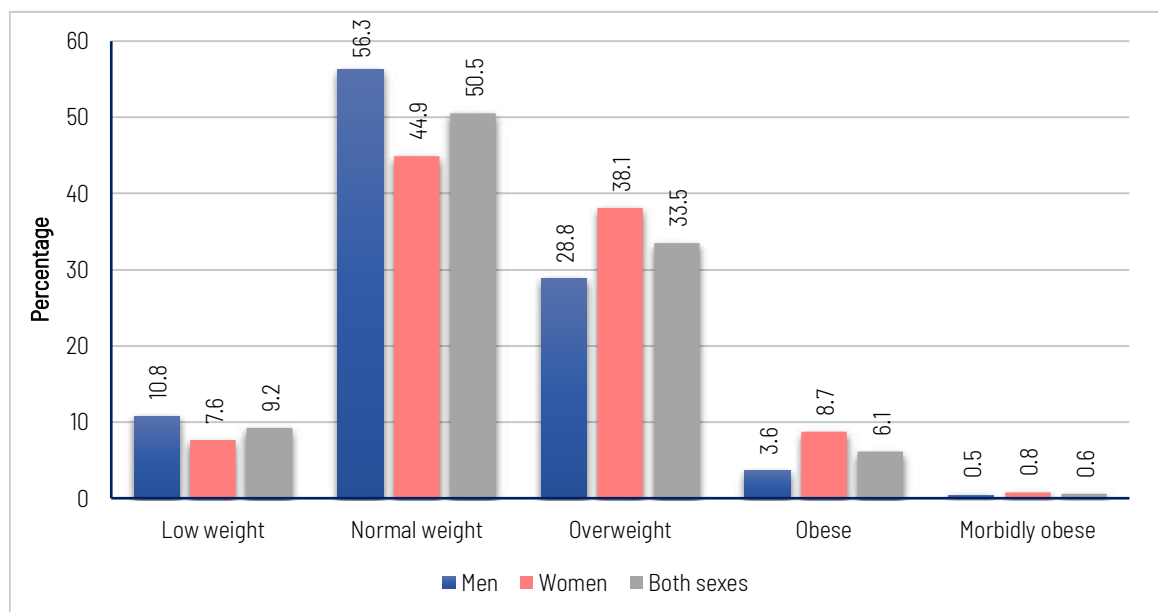
- 6.9% had been diagnosed with asthma, including more women (8.7%) than men (5.0%);
- 3.6% had been diagnosed with COPD, including more women (4.1%) than men (3.1%);
- 0.7% had been diagnosed with cancer in the previous 12 months, including more women (0.9%) than men (0.4%);
- The frequency of asthma, COPD and cancer diagnoses increased with age.

4.15. Lifestyle advice

Several approaches have been proposed to reduce and/or prevent NCDs. WHO describes a set of evidence-based best-buy interventions that are cost-effective and feasible (64). These interventions' aims include to reduce or prevent tobacco use and to promote physical activity and adequate and balanced nutrition, including reducing salt and fat intake, and consuming at least five servings of fruit or vegetables a day (65,66).

Respondents were asked about their perceptions of their weight: 9.2% thought they were thin; 50.5%, normal; 33.5%, overweight; and 6.1%, obese (Fig. 25). Perceptions of normal or low weight were more common among men, and perceptions of overweight and obesity were more common among women.

Fig. 25. Respondents' perception of their weight by sex

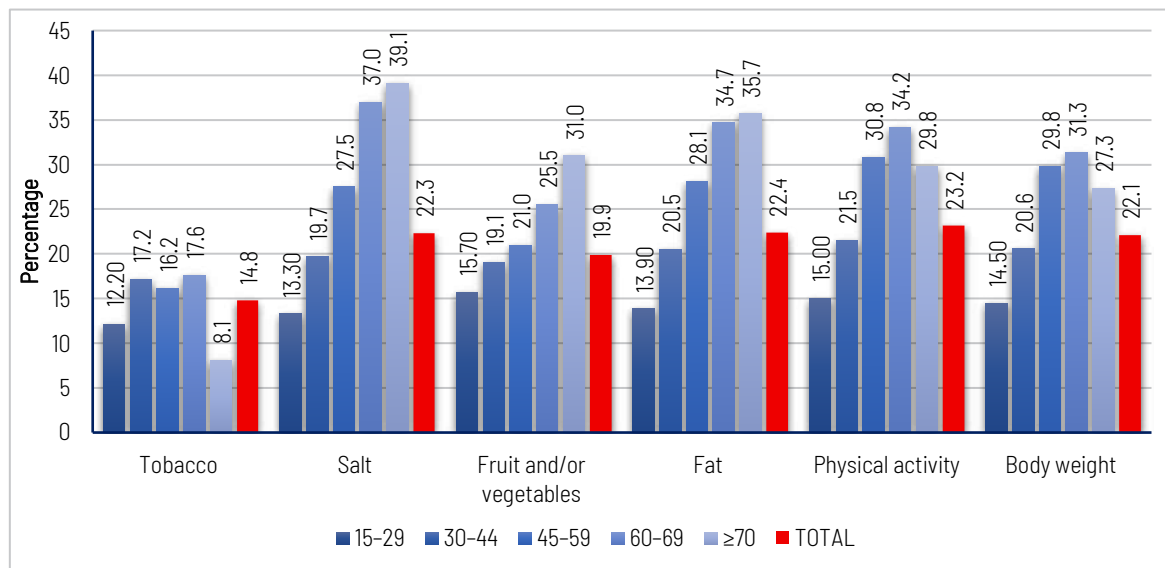


Perceptions of weight varied among the age groups. The proportion of those perceiving their weight as low and normal decreased from 15.8% and 60.5%, respectively, in the group aged 15–29 to 4.7% and 41.4%, respectively, in the group aged 60–69. Conversely, perceptions of excess weight rose with age, with proportions of respondents considering themselves overweight rising from 21.0% in the group aged 15–29 to 42.9% in the group aged 45–59, and the share of those considering themselves obese increasing from 2.3% in the group aged 15–29 to 10.7% in the group aged ≥ 70.

Fig. 26 shows the proportions of respondents who had received a range of advice on changing their lifestyles from a doctor or other health worker:

- 14.8% (18.6% for men and 11.1% for women) were advised to quit or not to start using tobacco, with the frequency decreasing from 17.2% in the group aged 30–44 to 8.1% in the group aged ≥ 70;
- 22.3% (20.8% for men and 23.9% for women) were advised to reduce salt intake, with the frequency increasing in general with age, from 13.3% in the group aged 15–29 to 39.1% in the group aged ≥ 70;
- 19.9% (19.3% for men and 20.4% for women) were advised to eat five or more servings of fruit and/or vegetables each day, with the frequency increasing in general with age, from 15.7% in the group aged 15–29 to 31.0% in the group aged ≥ 70;
- 22.4% (19.6% for men and 25.2% for women) were advised to reduce fat in their diets, with the frequency increasing in general with age, from 13.9% in the group aged 15–29 to 35.7% in the group aged ≥ 70;
- 23.2% (20.3% for men and 26.2% for women) were advised to increase their physical activity, with the frequency increasing from 15.0% in the group aged 15–29 to 34.2% in the group aged 60–69;
- 22.1% (18.9% for men and 25.4% for women) were advised to maintain a healthy body weight or to lose weight, with the frequency increasing from 14.5% in the group aged 15–29, to 31.3% in the group aged 60–69.

Fig. 26. Percentage of respondents who received lifestyle advice from a doctor or health worker during the previous 12 months by age group



The percentage of respondents who had received counselling or education from health workers on one or more subjects related to healthy living (healthy nutrition, weight reduction, smoking cessation or physical activity) during the previous 12 months was 40.5%; 38.1% for men and 42.9% for women. The frequency increased from 29.7% in the group aged 15–29 to 55.3% in the group aged 60–69.

4.15.1. Conclusions

Some of the most important results on lifestyle advice given to respondents included the following:

- more men than women perceived their weight as normal, and more women than men perceived themselves as overweight;
- a doctor or health worker had advised:
 - fewer than one out of seven individuals to quit using tobacco or not to start;
 - fewer than one out of four individuals to reduce salt in their diets;
 - fewer than one out of five individuals to eat five or more servings of fruit and/or vegetables each day;
 - fewer than one out of four individuals to reduce fat in their diets;
 - fewer than one out of four individuals to start being or be more physically active;
 - fewer than one out of four individuals to maintain a healthy body weight or to lose weight;
- in general, more men were advised to quit using tobacco or not to start, and more women were advised to reduce salt in the diet, to eat five or more servings of fruit and/or vegetables per day, to reduce fat in their diets, to start being or be more physically active, and to maintain a healthy body weight or to lose weight;
- two in five of respondents (40.5% – 38.1% for men and 42.9% for women) had received counselling or education from health workers on one or more subjects related to healthy living during the previous 12 months.

4.16. Awareness of harm to health from selected risk factors for NCDs

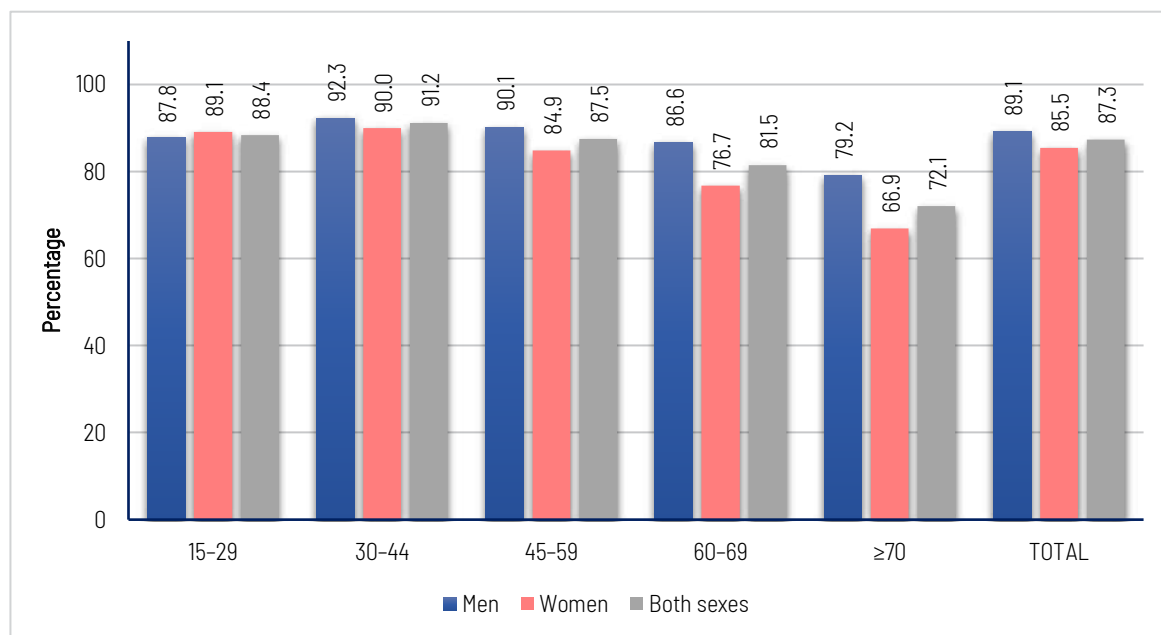
Tobacco is one of the most important causes of preventable death; tobacco use accounts for the death of 7% of men and 12% of women annually (24,64). WHO estimated that 8 million people will die from tobacco use by 2030 (24). In addition, tobacco use is a prominent cause of morbidity including CVD, chronic respiratory disease, cancer and diabetes.

Physically inactive people have higher risk of death than those engaging in a minimum of 150 minutes of moderate-intensity physical activity per week (19). Physical activity has been shown to reduce body fat, decrease risks of CVD and metabolic disease, improve bone health, and decrease anxiety and depression symptoms (19).

WHO reported that 23% of adults (> 18 years) and 81% of adolescents (11–17 years) were insufficiently physically active in 2010 (11). Women are usually less active than men, and older people less active than younger people. The ideal median BMI for adults is accepted as 21–23 kg/m² and the targeted BMI range is 18.5–24.9 kg/m². Overweight is defined as having a BMI ≥ 25 kg/m², while obesity is considered as having a BMI ≥ 30 kg/m². Both may result in an increased risk for several conditions (31). Combined, they cause about 3.4 million deaths and 93.6 million DALYs each year (18).

The respondents' awareness of health risks from NCD risk factors was assessed by asking them to state two or more negative health effects of any of the selected risk factors: 87.3% (89.1% for men and 85.5% for women) could do so. The frequency decreased from 91.2% in the group aged 30–44 to 72.1% in the group aged ≥ 70 (Fig. 27).

Fig. 27. Percentage of respondents who could name two or more negative health effects of any of the selected NCD risk factors



Varying proportions of respondents could state two or more negative health effects of each risk factor (Table 48):

- smoking tobacco: 76.2% (77.0% for men and 75.5% for women), with the frequency decreasing from 80.4% in the group aged 30-44 to 61.2% in the group aged ≥ 70;
- high-salt diet: 71.6% (72.3% for men and 71.0% for women), with the frequency decreasing from 76.7% in the group aged 45-59 to 56.8% in the group aged ≥ 70;
- low consumption of fruits and/or vegetables (32.8% for men and 33.6% for women), with the frequency decreasing from 35.2% in the group aged 30-44 to 20.7% in the group aged ≥ 70;
- physical inactivity: 58.3% (59.6% for men and 57.1% for women);
- high-fat diet: 64.3% (65.7% for men and 62.8% for women), with the frequency decreasing from 69.9% in the group aged 30-44 to 45.0% in the group aged ≥ 70;
- alcohol use: 74.2% (75.9% for men and 72.5% for women), with the frequency decreasing from 79.9% in the group aged 30-44 to 54.1% in the group aged ≥ 70;
- substance abuse: 73.4% (75.5% for men and 71.4% for women), with the frequency decreasing from 79.3% in the group aged 30-44 to 53.7% in the group aged ≥ 70;

No gender differences were found in terms of indicating two or more negative health effects of different risk factors.

Table 48. Proportions of respondents that could state two or more negative health effects of different risk factors, by age group

Age group (years)	Risky behaviour (%)						
	Smoking tobacco	High-salt diet	Low fruits and/or vegetable intake	Physical inactivity	High-fat diet	Harmful alcohol use	Substance abuse
15-29	76.1	68.8	34.0	57.2	62.2	73.7	74.2
30-44	80.4	75.9	35.2	63.5	69.9	79.9	79.3
45-59	77.7	76.7	34.7	60.1	67.5	76.6	74.2
60-69	70.8	66.8	30.0	55.5	59.6	67.0	64.6
≥ 70	61.2	56.8	20.7	39.8	45.0	54.1	53.7
Total	76.2	71.6	33.2	58.3	64.3	74.2	73.4

4.16.1. Conclusions

Most respondents could state two or more negative health effects of NCD risk factors:

- any of the selected NCD risk factors: nearly nine out of 10;
- smoking tobacco: three out of four;
- high-salt diet: approximately three out of four;
- alcohol use and substance abuse: nearly three out of four;
- high-fat diet: more than six out of 10;
- physical inactivity: nearly three out of five;
- low consumption of fruits and/or vegetables: approximately one out of three.

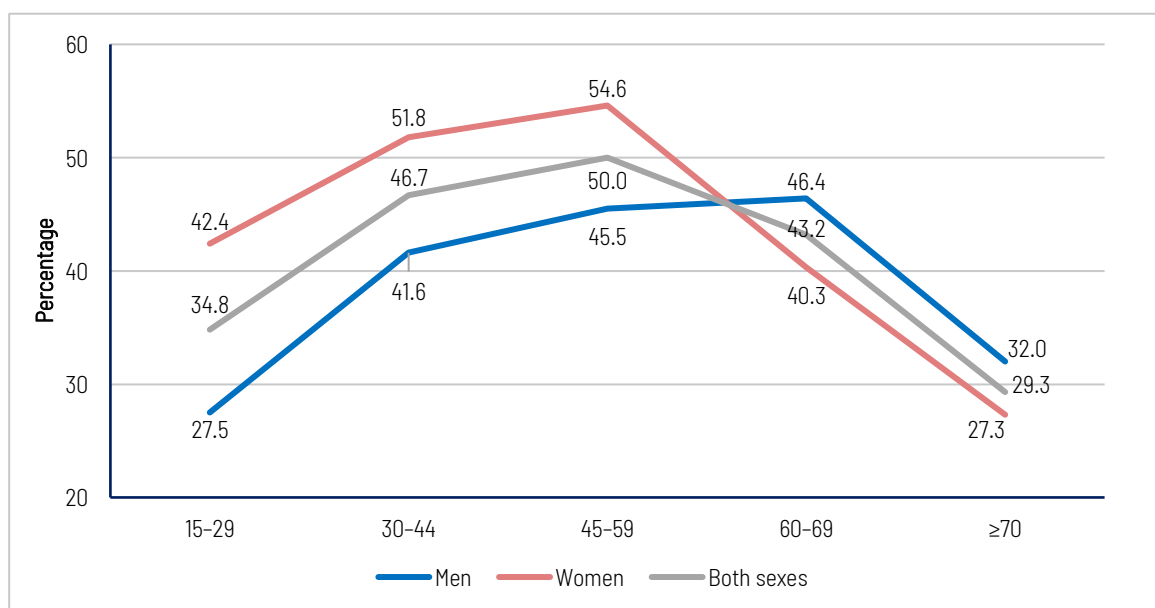
4.17. Cancer screening tests

Breast cancer mainly occurs in women, although there are rare cases in men (61). A woman’s lifetime risk of being diagnosed with breast cancer is about one in eight. Risk factors for breast cancer include hormone therapy, overweight and physical inactivity, ethnic background, genetics/family history, gene mutations, and older age. Colorectal cancer is the third most common type of cancer. The risk factors for this cancer of the distal part of the digestive system include ageing, African ethnic background, unhealthy diet, physical inactivity, diabetes and family history (66). Cervical cancer is a cancer of the female reproductive system. Nearly all cases are linked to genital infection with human papillomavirus (HPV); HPV infection, smoking, immune deficiencies, poverty, lack of access to the Pap test and family history are among the risk factors.

The respondents were asked what they knew about the availability of various screening tests for cancer: 42.1% (37.8% for men and 46.4% for women) had heard that cancer screening was available free of charge in family health centres (FHC) and cancer early diagnosis screening and training centres (CEDSTC).

The proportions that had heard that cancer screening was available in FHC and CEDSTC increased from 34.8% in the group aged 15–29 to 50.0% in the group aged 45–59, and then declined in the two oldest groups (Fig. 28).

Fig. 28. Percentages of respondents who have heard that the cancer screenings are available free in FHC and CEDSTC, by sex and age group



Varying percentages of respondents had had various cancer tests:

- 74.5% (76.5% for men and 72.4% for women) of those aged 50–70 had never had a guaiac faecal occult blood test;
- 12.1% (11.1% for men and 13.2% for women) aged 50–70 had had a colonoscopy in the previous 10 years;
- 57.4% of women aged 40–69 had ever had mammography;
- 54.2% of women aged 30–65 had ever had cervical cancer screening.

4.17.1. Conclusions

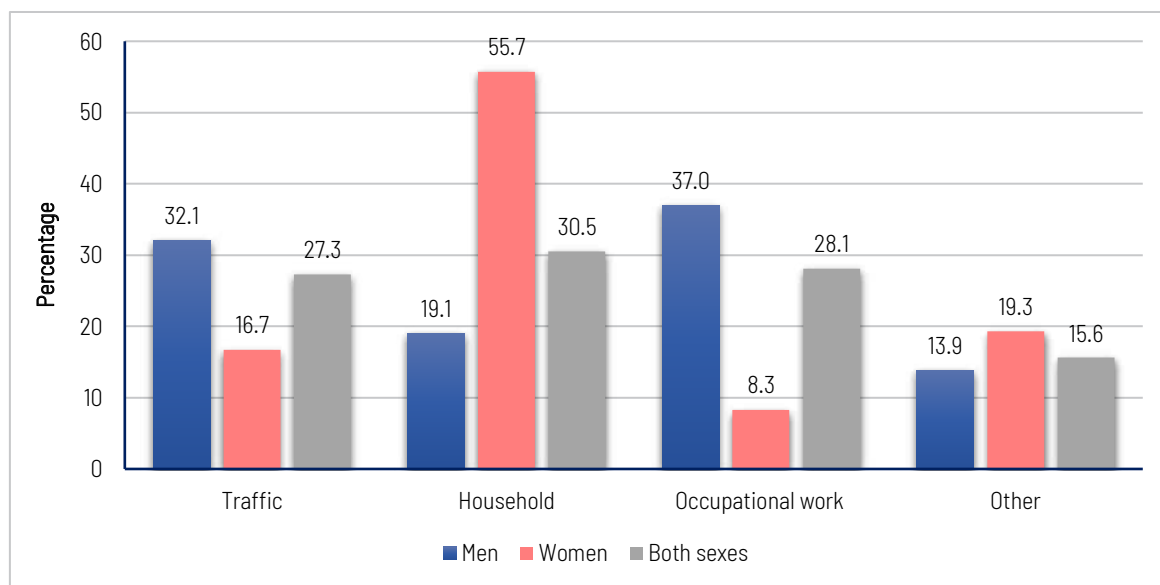
Some of the most important results on respondents' history of cancer screening included the following:

- two out of five respondents had heard that cancer screening was available free of charge, although awareness was lower in men (37.8%) than women (46.4%);
- three out of four participants aged 50–70 had never had a guaiac faecal occult blood test;
- approximately one out of nine individuals aged 50–70 had had a colonoscopy in the previous 10 years;
- two out of five women aged 40–69 had never had mammography;
- approximately half of women aged 30–65 had never had cervical cancer screening.

4.18. Accidents and injuries

Injuries were estimated to be responsible for 7% of total deaths in Turkey (37). Among the survey population, 3.9% (5.4% for men and 2.4% for women) had been injured as a result of an accident in the previous 12 months. This proportion was highest (7.5%) in males in the youngest age group. Fig. 29 shows the leading types of accidents causing injuries suffered in the previous 12 months: traffic accidents (27.3% of injured respondents), household accidents (30.5% of injured respondents), occupational accidents (28.1%) and other types of accidents (15.6%).

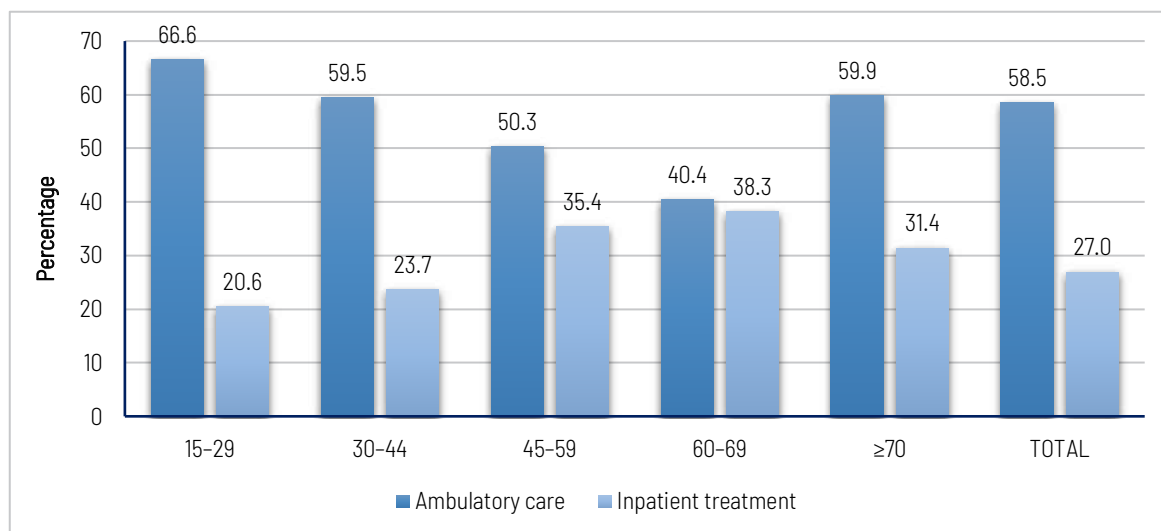
Fig. 29. Types of accidents causing injuries suffered by the respondents in the previous 12 months, by sex



Among respondents injured as a result of an accident in the previous 12 months 58.5% had received ambulatory care (53.9% for men and 68.6% for women) and 27.0% had received inpatient care (31.5% for men and 17.0% for women).

These proportions varied among the age groups. The share of those who had received ambulatory care ranged from 66.6% in the group aged 15–29 to 40.4% in those aged 60–69. The proportion who received inpatient care rose from 20.6% in the group aged 15–29 and to 38.3% in those aged 60–69 (Fig. 30).

Fig. 30. Percentages of respondents injured as a result of an accident in the previous 12 months who received ambulatory or inpatient care, by age group



4.18.1. Conclusions

Some of the most important results on injuries to respondents from accidents in the previous 12 months included the following:

- 3.9% had been injured as a result of an accident;
- accidents in traffic (27.3%), the household (30.5%) and the workplace (28.1%), and other types of accidents (15.6%) were mainly responsible for these injuries;
- more than eight out of 10 injured respondents had received medical care;
- the frequency and causes of injuries, and the types of medical care received varied between the sexes: more men were injured as a result of traffic and occupational/work accidents, while more women were injured as a result of household and other types of accidents; and more men received inpatient treatment, while more women received ambulatory care.

4.19. Ambulatory or inpatient care

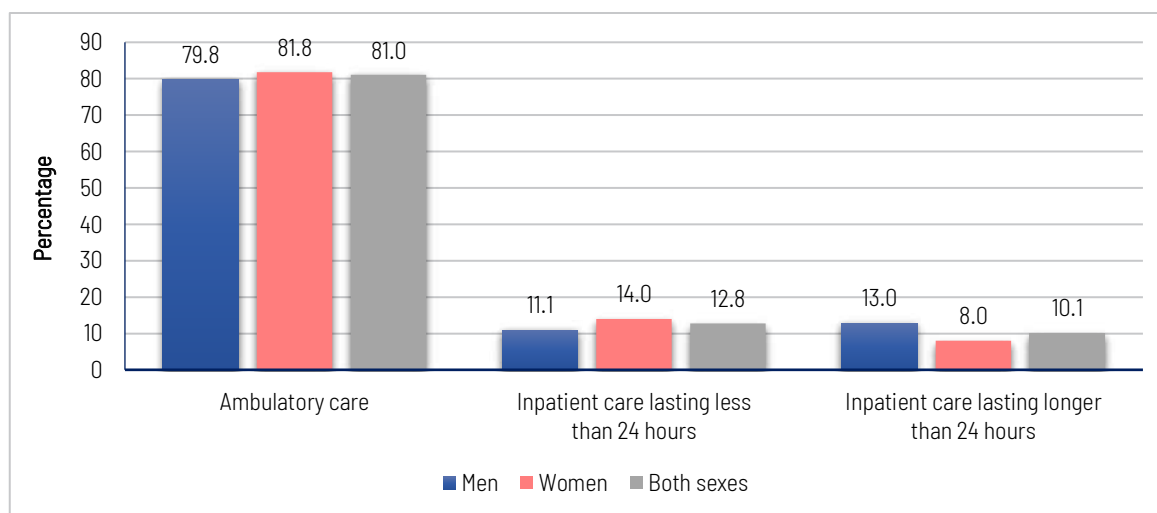
The percentage of those in the survey population who had visited a hospital for the treatment of hypertension, CVD, diabetes, cancer, COPD or asthma in the previous 12 months was 30.3%; 28.8% for men and 31.4% for women. These proportions rose from 15.9% in the group aged 15-29 to 39.7% in the group aged ≥ 70 (Table 49).

Table 49. Percentages of respondents who had visited a hospital for the treatment of hypertension, CVD, diabetes, cancer, COPD or asthma in the previous 12 months, by sex and age group

Age group (years)	Men		Women		Both sexes	
	%	95% CI	%	95% CI	%	95% CI
15-29	12.6	2.6-22.7	18.5	8.3-28.8	15.9	8.3-23.4
30-44	18.1	9.5-26.8	22.9	16.8-28.9	20.8	15.7-25.8
45-59	28.5	22.1-34.9	32.3	25.5-39.0	30.6	25.8-35.5
60-69	39.1	31.9-46.2	39.5	32.4-46.6	39.3	34.2-44.4
≥ 70	42.0	32.7-51.3	38.2	31.5-45.0	39.7	34.1-45.3
Total	28.8	25.1-32.5	31.4	27.9-34.9	30.3	27.6-32.9

Of those who had visited a hospital for the treatment of hypertension, CVD, diabetes, cancer, COPD or asthma in the previous 12 months, 81% had received ambulatory care (79.8% for men and 81.8% for women), 12.8% had received inpatient care lasting fewer than 24 hours (11.1% for men and 14.0% for women) and 10.1% had received care lasting longer than 24 hours (13.0% for men and 8.0% for women) (Fig. 31).

Fig. 31. Type and length of care received by respondents who had visited a hospital for the treatment of hypertension, CVD, diabetes, cancer, COPD or asthma in the previous 12 months



4.19.1. Conclusions

Some of the most important results on hospital treatment of respondents included the following:

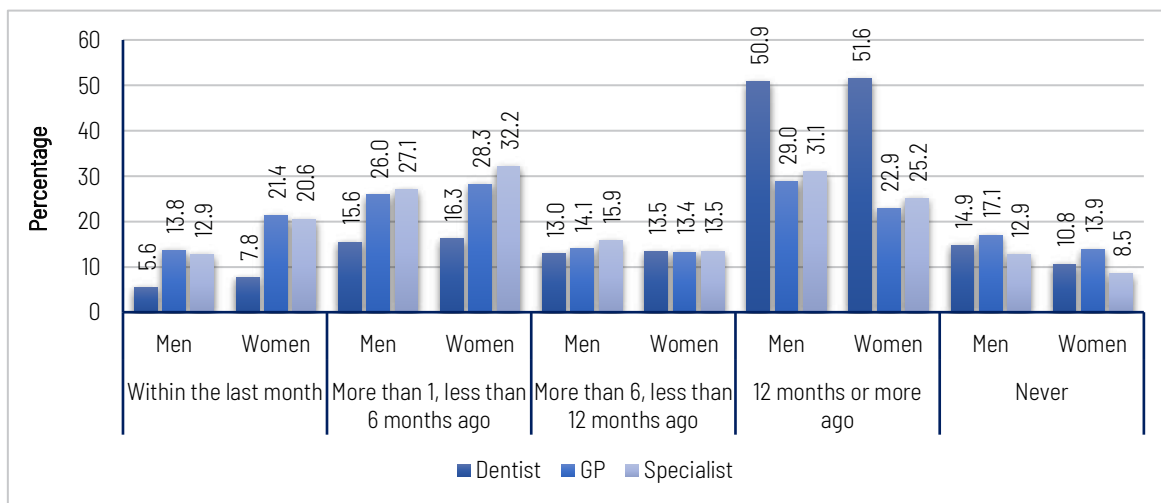
- nearly one out of three had visited a hospital for the treatment of hypertension, CVD, diabetes, cancer, COPD or asthma in the previous 12 months;
- more than four out of five of those who visited a hospital for these reasons received ambulatory care.

4.20. Ambulatory diagnosis, treatment and home care

Investigators determined the proportions of respondents that had received various types of health care. For example, 12.9% of respondents had never visited a dentist, but 6.7% had visited a dentist within the previous month. In addition, 15.5% of respondents had never visited a general practitioner (GP) or family doctor, while 17.6% had done so within the previous month. Similarly, 10.7% had never visited a specialist physician while 16.8% had done so within the previous month.

The percentage of respondents who had visited some health personnel is given in Fig. 32 by sex.

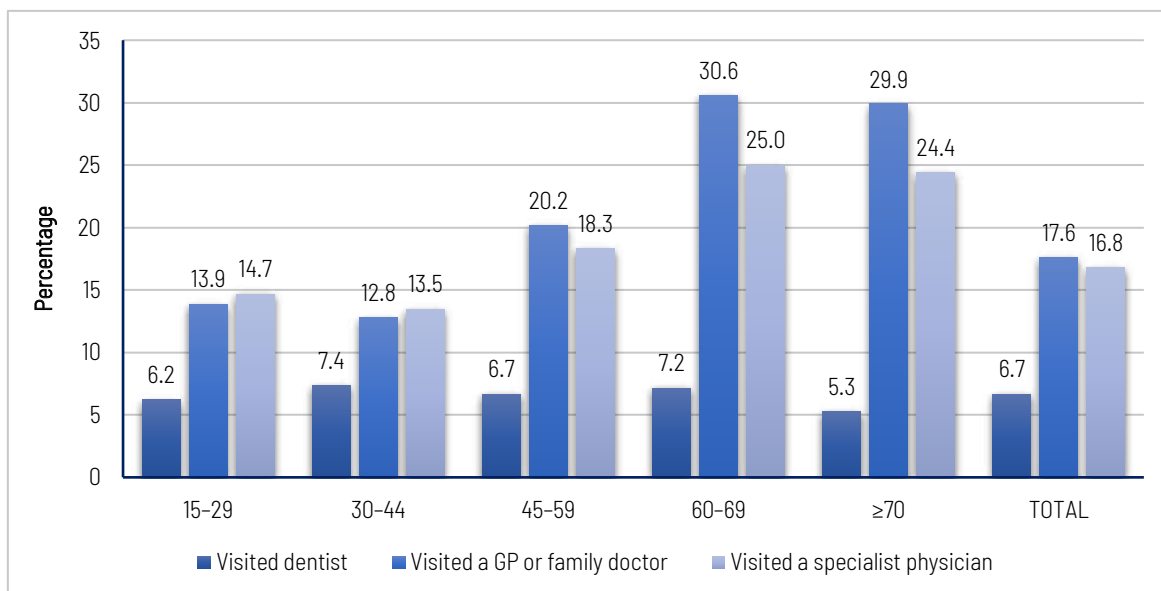
Fig. 32. Percentages of respondents who had visited health personnel, by sex



Visits to health care providers also varied between age groups: 17.9% of respondents in the group aged 15–29 had never visited a dentist, but this frequency was approximately one out of 10 in other age groups. Among respondents in the group aged 15–29, 16.3% had never visited a GP or family doctor and 13.9% had never visited a specialist physician; the corresponding figures for the other age groups decreased, to 13.4% and 6.9%, respectively, in the group aged ≥ 70.

Visits to health professionals increased with age. In the group aged 15–29, 6.2% of respondents had visited a dentist within the previous month, 13.9% had visited a GP or family doctor and 14.7% had visited a specialist. The corresponding figures for the group aged 60–69 were 7.2%, 30.6% and 25.0%, respectively (Fig. 33).

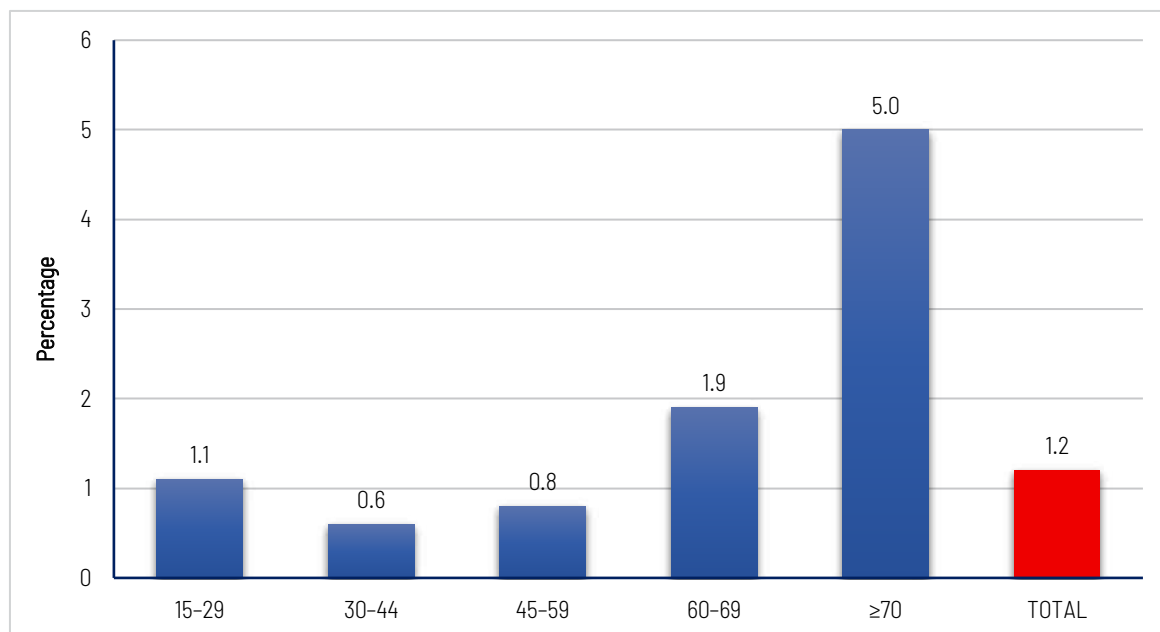
Fig. 33. Percentages of respondents who had visited health personnel within the previous month, by age group



The average (mean) number of times in which respondents had visited a GP or family doctor in the previous four weeks was 1.2; 1.3 times for men and 1.2 times for women. Men and women had made the same average (mean) number of visits to specialist physicians in the previous four weeks: 1.4.

Further, 1.2% of respondents had received medical care at home in the previous 12 months (1.1% for men and 1.3% for women). This proportion rose with age: from 0.6% in the group aged 30–44 to 5.0 in the group aged ≥ 70 (Fig. 34).

Fig. 34. Percentages of respondents who had received medical care at home in the previous 12 months



4.20.1. Conclusions

Some of the most important results on respondents' use of care included the following:

- nearly one out of eight had never visited a dentist, although more than half had visited a dentist ≥ 12 months previously;
- about 16% of the respondents had never visited a GP or a family doctor, but nearly 45% had done so within the previous six months;
- the mean numbers of visits to a GP or family doctor and to specialist physicians (in the previous four weeks) were 1.2 and 1.4, respectively;
- more than one out of 10 had never visited a specialist physician;
- about 1% had received medical care at home within the previous 12 months.

4.21. Physical measurements

Hypertension as a risk factor for NCDs was assessed by measuring blood pressure. The mean SBP of the study population, including those currently on medication for raised blood pressure, was 123.0 mmHg; 125.3 mmHg for men and 120.8 mmHg for women. SBP rose from 117.3 mmHg in the group aged 15–29 to 139.9 mmHg in the group aged ≥ 70 , underlining that the value in general increases with age (Fig. 35). The mean DBP of the study population, including those currently on medication for raised blood pressure, was 78.4 mmHg; 78.2 mmHg for men and 78.7 mmHg for women. DBP also increased with age: from 74.5 mmHg in the group aged 15–29 to 82.4 mmHg in those aged 60–69 (Fig. 35).

Fig. 35. Respondents' mean SBP and DBP (mmHg) by sex and age group

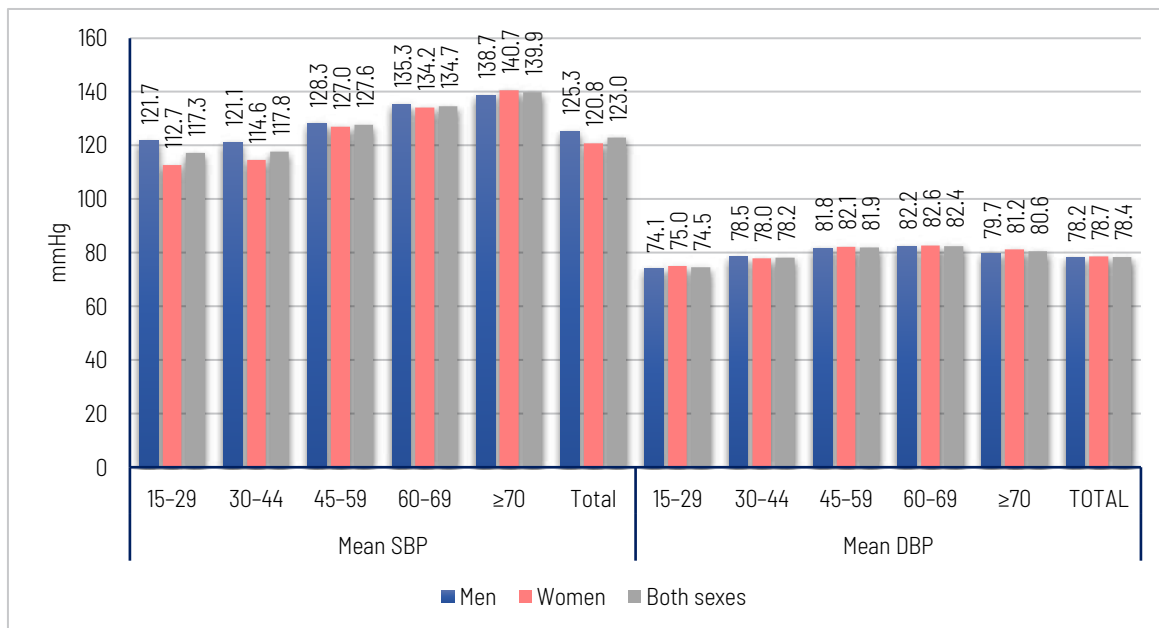
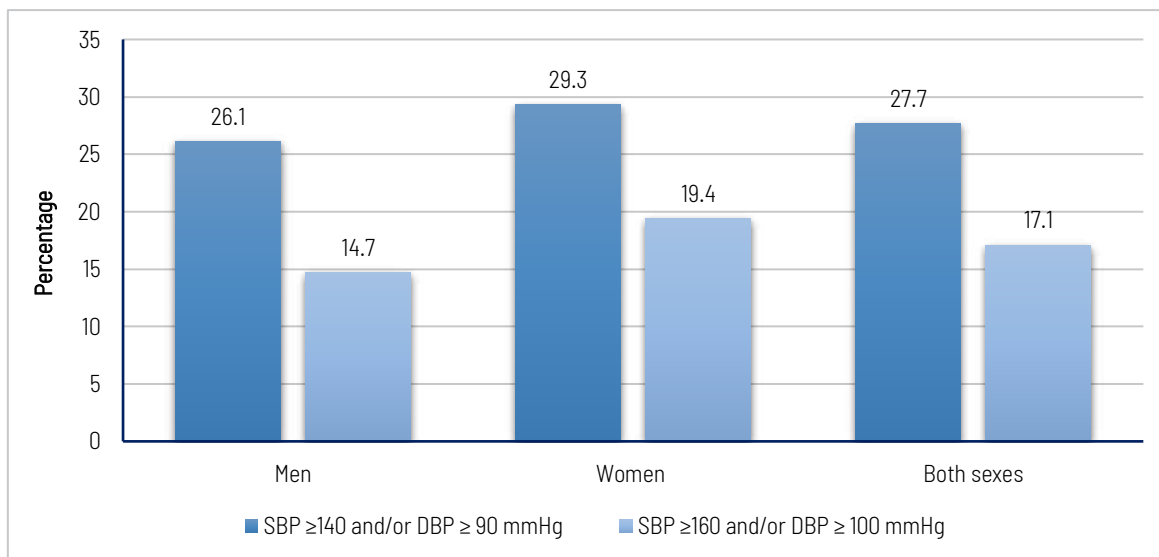


Fig. 36 shows the proportions of respondents who had raised blood pressure or were currently on medication for the condition at two different levels: 27.7% had an SBP \geq 140 and/or DBP \geq 90 mmHg and 17.1%, an SBP \geq 160 and/or DBP \geq 100 mmHg.

Fig. 36. Percentages of respondents with raised blood pressure or currently on medication for raised blood pressure, by sex



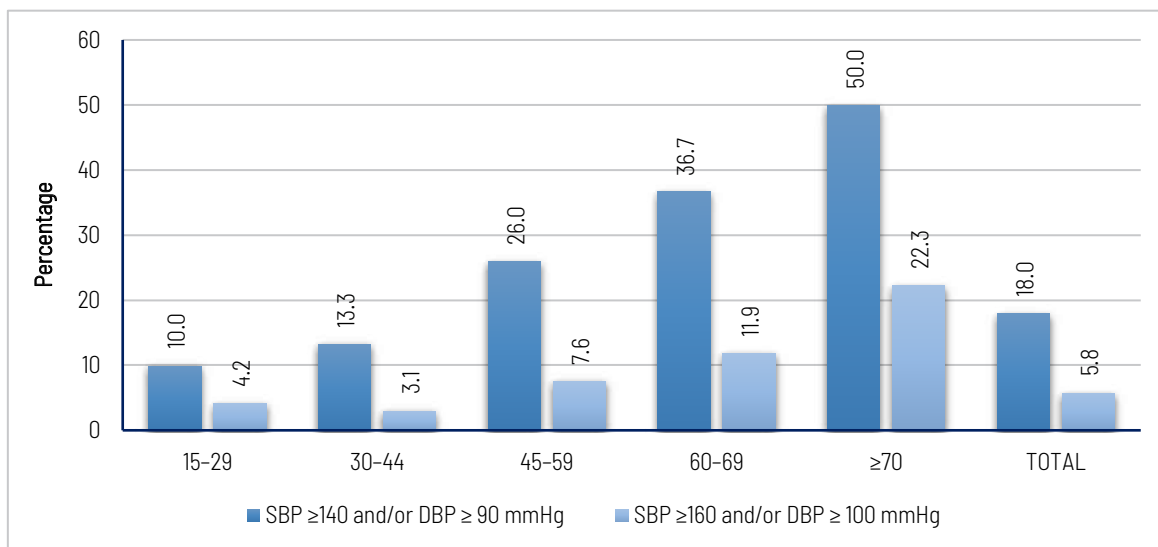
The proportions of respondents who had raised blood pressure or were currently on medication for it increased with age, from 11.2% in the group aged 15–29 to 73.0% in the group aged \geq 70 for those with an SBP \geq 140 and/or DBP \geq 90 mmHg, and from 5.5% in the group aged 15–29 to 58.0% in the group aged \geq 70 for those with an SBP \geq 160 and/or DBP \geq 100 mmHg.

Of all the respondents excluding those on medication for the condition, 18.0% had an SBP \geq 140 and/or DBP \geq 90 mmHg; 18.6% for men and 17.3% for women.

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The proportions of these respondents rose with age, from 10.0% in the group aged 15-29 to 50.0% in the group aged ≥ 70 . Similarly, 5.8% of the respondents had an SBP ≥ 160 and/or DBP ≥ 100 mmHg; 6.0% for men and 5.7% for women. These proportions also rose, from 4.2% in the group aged 30-44 to 22.3% in those aged ≥ 70 (Fig. 37).

Fig. 37. Percentages of respondents with raised blood pressure, excluding those on medication for raised blood pressure, by age group



57.1% of the respondents with raised blood pressure (SBP ≥ 140 and/or DBP ≥ 90 mmHg) were not on medication (64.7% for men and 50.5% for women).

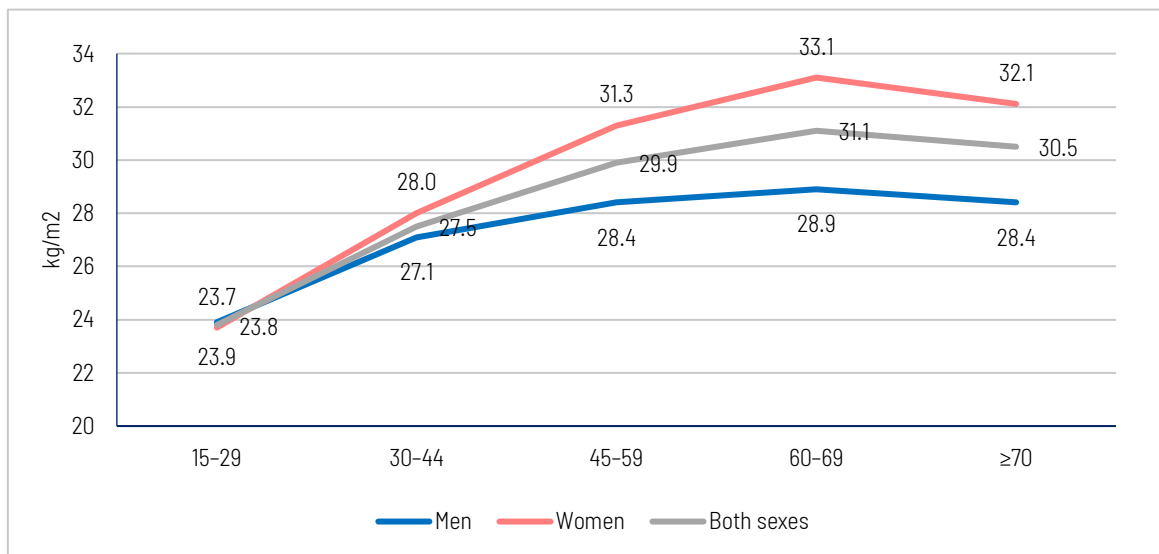
The proportion of all hypertensive people with controlled blood pressure were calculated to show hypertension control in the population. Blood pressure was under control for 23.8% of the population; 18.5% for men and 28.4% for women (Table 50).

Table 50. Proportion of all hypertensive people with controlled blood pressure in the population

Age group (years)	Men			Women			Both sexes		
	N	%	95% CI	N	%	95% CI	N	%	95% CI
15-29	55	6,9	(0,5-14,3)	60	8,5	(1,4-15,7)	115	7,6	(1,3-13,9)
30-44	100	7,2	(0,5-13,8)	181	23,0	(14,3-31,7)	281	15,2	(9,4-21,0)
45-59	230	20,0	(13,6-26,4)	412	32,4	(24,1-40,8)	642	26,7	(21,1-32,2)
60-69	201	26,5	(19,8-33,1)	293	35,4	(28,5-42,2)	494	31,4	(26,6-36,3)
≥ 70	185	31,0	(22,5-35,2)	336	29,3	(23,1-35,5)	521	30,0	(24,8-35,1)
TOTAL	771	18,5	(15,2-21,7)	1282	28,4	(24,5-32,3)	2053	23,8	(21,0-26,5)

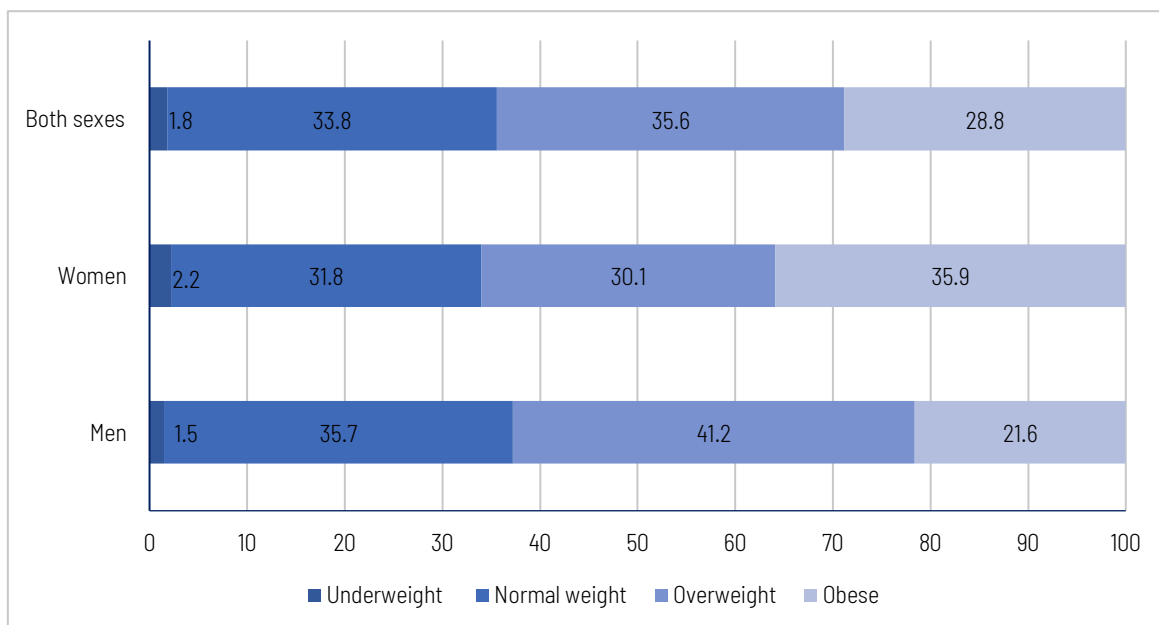
Anthropometric measurements such as height, weight, and waist and hip circumference were used to calculate BMI and mean waist-hip ratio (WHR), in order to estimate the prevalence of overweight and obesity in the study population (excluding pregnant women) by age and sex. The men in the study population had a mean height of 171.4 cm and mean weight of 78.0 kg; the corresponding figures for women were 157.7 cm and 70.1 kg. The respondents' mean BMI was 27.4 kg/m²; 26.6 kg/m² for men and 28.3 kg/m² for women. The values increased from 23.8 kg/m² in the group aged 15-29 to 31.1 kg/m² in those aged 60-69 (Fig. 38).

Fig. 38. Respondents' mean BMI, by sex and age group



Of all the respondents, 1.8% were underweight (BMI < 18.5); 33.8% were normal weight (BMI of 18.5-24.9); 35.6% overweight (BMI of 25.0-29.9); and 28.8% were obese (BMI ≥ 30.0) (Fig. 39). Overweight predominated among males, and obesity among females.

Fig. 39. Distribution by BMI category, by sex



Men had a greater mean waist circumference (91.3 cm) than women (87.9 cm), while women had a greater mean hip circumference (102.5 cm) than men (98.7 cm). WHR was computed for all respondents, excluding pregnant women, using measurements of waist and hip circumferences, showing that men (0.93) had a greater WHR than women (0.86).

4.21.1. Conclusions

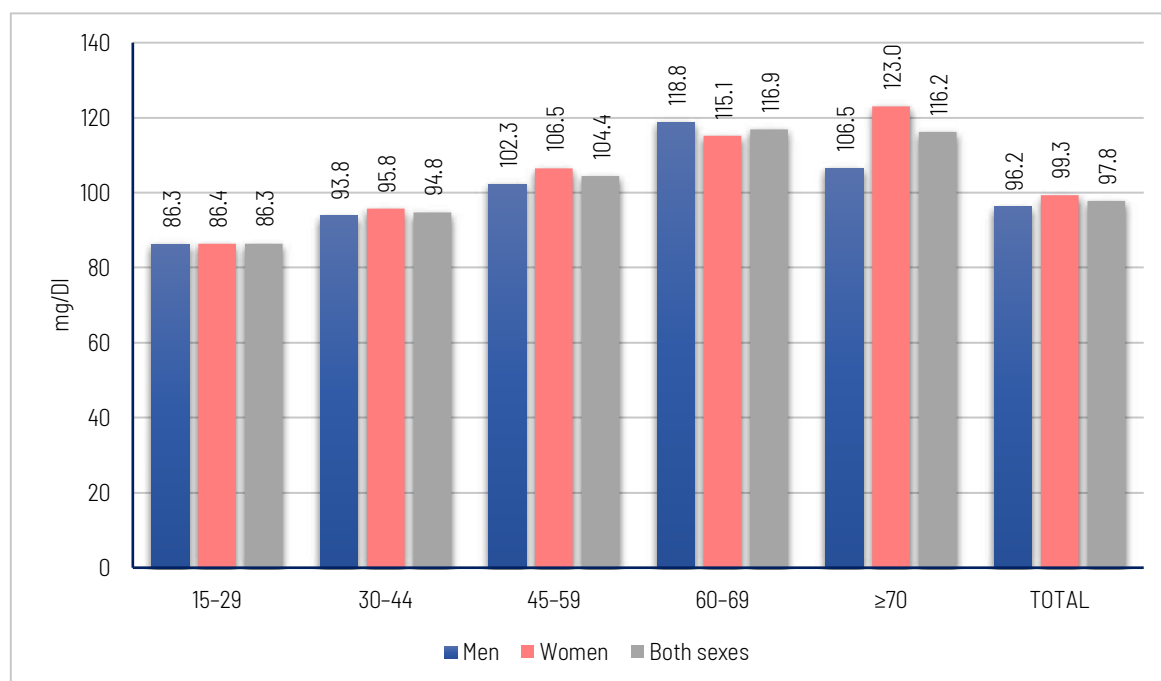
Some of the most important results on physical measurements of respondents included the following:

- the mean blood pressure was an SBP of 123.0 mmHg and a DBP of 78.4 mmHg;
- 26.1% of men and 29.3% of women had raised blood pressure or currently on medication for raised blood pressure, and the percentage of respondents with raised blood pressure increased with age;
- 57.1% of the respondents with raised blood pressure (SBP \geq 140 and/or DBP \geq 90 mmHg) were not on medication (64.7% for men and 50.5% for women);
- proportion of all hypertensive people with controlled blood pressure in the population was 23.8% (18.5% of men and 28.4% of women);
- while men were taller and weighed more than women, women had a higher mean BMI;
- the mean BMI was 27.4 kg/m² for both sexes (26.6 kg/m² for men and 28.3 kg/m² for women);
- 64.4% were overweight (BMI \geq 25 kg/m²) and 28.8% obese (BMI \geq 30 kg/m²): 62.8% and 21.6% of men and 66.0% and 35.9% of women, respectively;
- while men had a greater mean waist circumference (91.3 cm versus 87.9 cm), women had a greater mean hip circumference (102.5 cm versus 98.7 cm).

4.22. Biochemical measurements

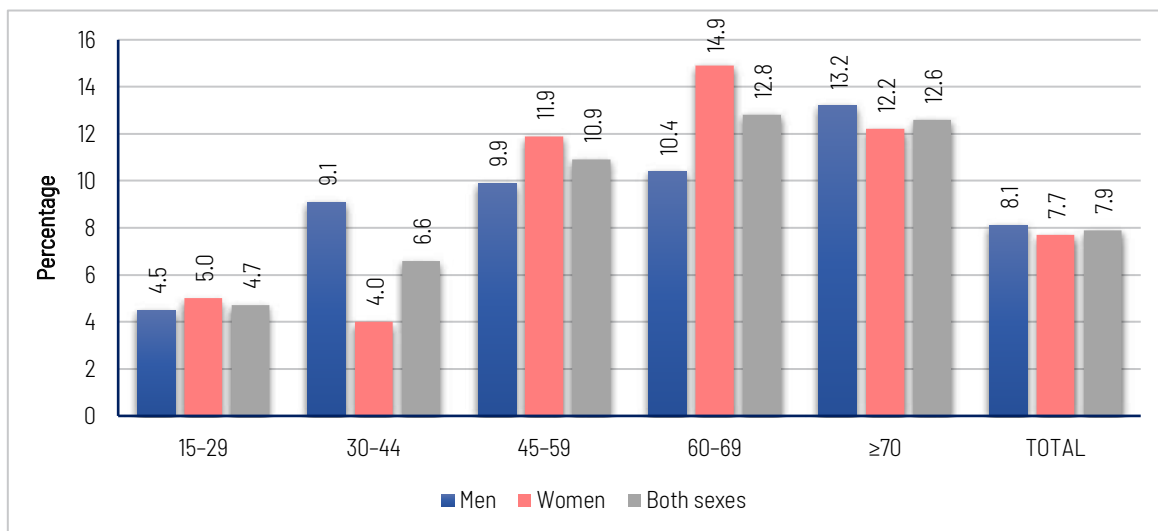
Diabetes as a risk factor for NCDs was assessed by means of fasting blood glucose and HbA1c measurements. Fig. 40 shows the mean fasting blood glucose of the study population, including those currently on medication for diabetes (but excluding non-fasting recipients), was 97.8 mg/dl. The increases in levels for both sexes, from 86.3 mg/dl in the group aged 15–29 to 116.2 mg/dl in the group aged \geq 70, underlines that this value increases in general with age.

Fig. 40. Mean fasting blood glucose, by sex and age group



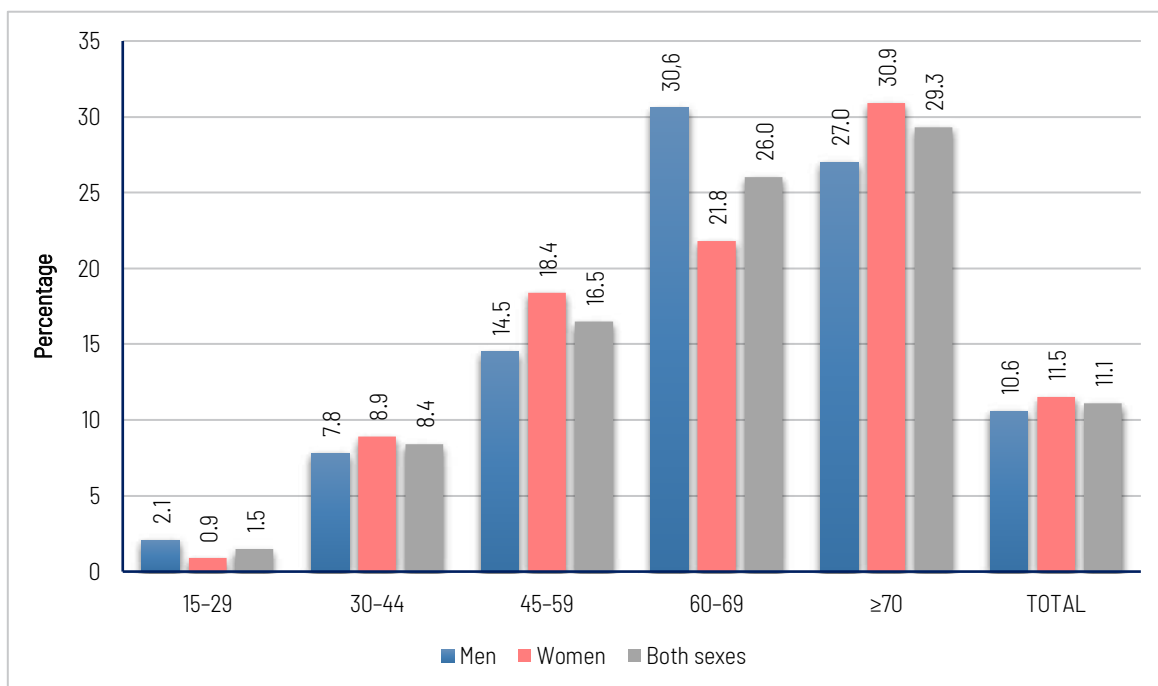
Of all the respondents, 7.9% had impaired fasting glycaemia (plasma venous value of 110–126 mg/dl); 8.1% for men and 7.7% for women. The frequency increased from 4.7% in the group aged 15–29 to 12.6% in the group aged \geq 70 (Fig. 41).

Fig. 41. Prevalence of impaired fasting glycaemia by sex and age group



Further, 11.1% of the study population had raised blood glucose (plasma venous value ≥ 126 mg/dl) or were currently on medication for diabetes; 10.6% for men and 11.5% for women. The frequency increased from 1.5% in the group aged 15–29 to 29.3% in the group aged ≥ 70 (Fig. 42).

Fig. 42. Proportions of respondents who had raised blood glucose or were currently on medication for diabetes, by sex and age group



The proportion of respondents with mean HbA1c results, including those currently on medication for diabetes (but excluding non-fasting respondents), was 5.9%; 5.9% for both men and women (Table 51). The mean HbA1c level increased from 5.5% in the group aged 15–29 to 6.5% in those aged ≥ 70 .

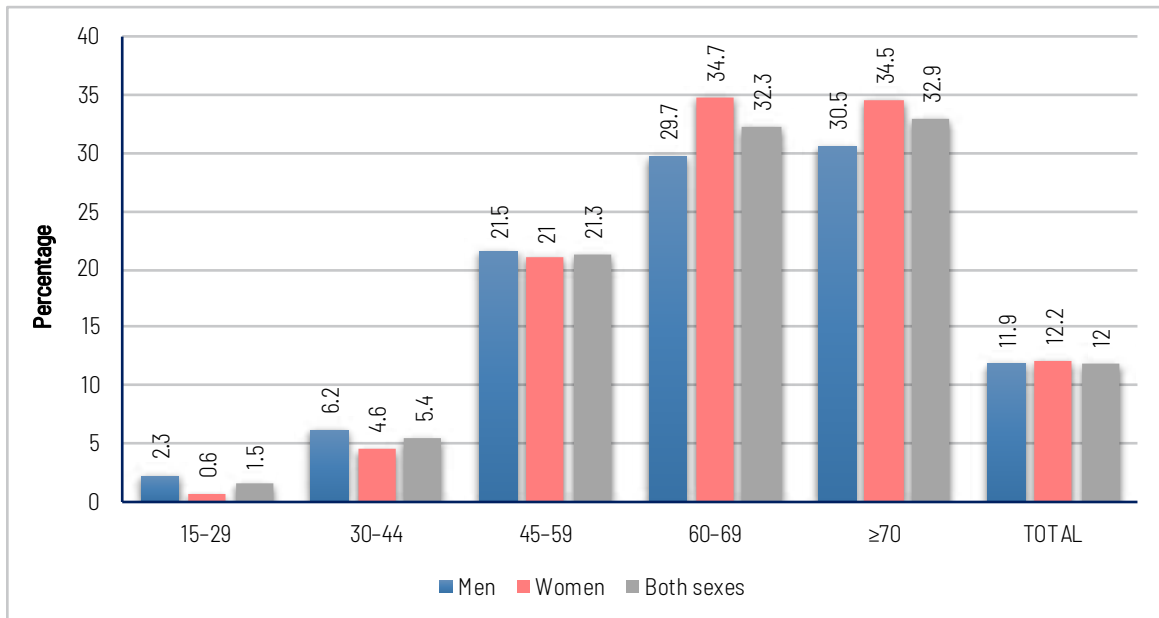
4. SURVEY RESULTS

Table 51. Proportions of respondents with mean HbA1c, by sex and age group

Age group (years)	Men			Women			Both sexes		
	N	Mean (%)	95% CI	N	Mean (%)	95% CI	N	Mean (%)	95% CI
15-29	251	5.5	5.4-5.6	319	5.4	5.4-5.5	570	5.5	5.4-5.5
30-44	332	5.7	5.6-5.9	524	5.7	5.6-5.7	856	5.7	5.6-5.8
45-59	348	6.2	6.0-6.4	557	6.3	6.1-6.5	905	6.3	6.1-6.4
60-69	226	6.8	6.4-7.2	283	6.5	6.3-6.8	509	6.7	6.4-6.9
≥ 70	182	6.4	6.2-6.6	316	6.6	6.3-6.9	499	6.5	6.3-6.7
Total	1339	5.9	5.8-6.0	1999	5.9	5.8-6.0	3338	5.9	5.8-6.0

Of all the respondents, 12.0% had raised HbA1c; 11.9% for men and 12.2% for women. The frequency increased from 1.5% in the group aged 15-29 to 32.9% in those aged ≥ 70 (Fig. 43).

Fig. 43. Percentage of respondents with raised HbA1c ≥ 6.5%, by sex and age group



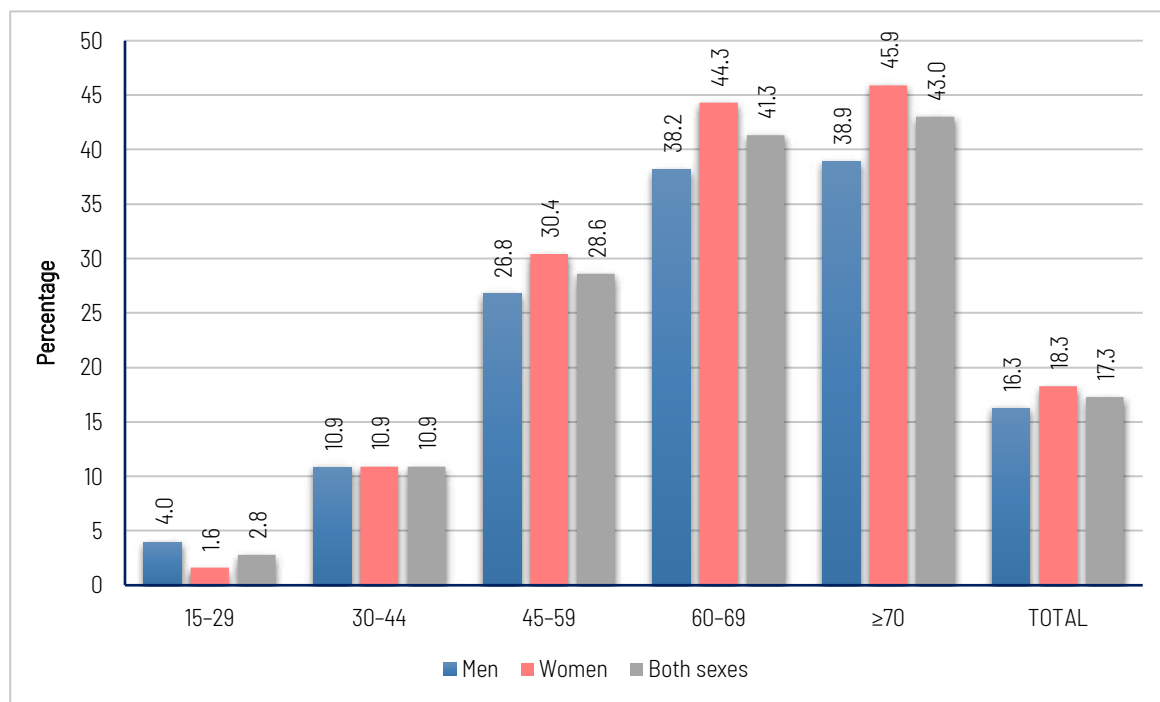
13.3% of the study population had raised HbA1C (≥6.5%) or were currently on medication for diabetes (12.7% for men and 13.8% for women) (Table 52).

Table 52. Proportion of respondents with raised HbA1C (≥6.5%) or who were currently on medication for diabetes

Age group (years)	Men			Women			Both sexes		
	N	%	95% CI	N	%	95% CI	N	%	95% CI
15-29	240	2.3	0.2-4.5	310	1.4	0.0-2.9	550	1.9	0.6-3.2
30-44	324	7.0	3.8-10.2	511	6.1	2.9-9.4	835	6.6	4.3-8.9
45-59	336	22.4	15.9-28.9	546	22.2	16.0-28.3	882	22.3	17.8-26.8
60-69	224	32.5	23.3-41.8	283	39.0	30.5-47.5	507	35.9	29.6-42.1
≥ 70	179	32.7	21.1-44.4	304	36.2	27.0-45.4	483	34.8	27.6-42.0
Total	1303	12.7	10.4-15.1	1954	13.8	11.5-16.1	3257	13.3	11.6-14.9

In addition, 17.3% of the study population had raised HbA1c or raised blood glucose or were currently on medication; 16.3% for men and 18.3% for women. The frequency increased from 2.8% in the group aged 15–29 to 43.0% in the group aged ≥ 70 (Fig. 44).

Fig. 44. Proportions of respondents with raised HbA1c or raised blood glucose or were currently on medication, by sex and age group



The mean total cholesterol level of the study population, including those currently on medication for raised cholesterol, was 161.2 mg/dl; 154.9 mg/dl for men and 167.3 mg/dl for women. The mean level rose from 139.7 mg/dl in the group aged 15–29 to 178.6 mg/dl in those aged 45–59 (Table 53).

Table 53. Mean total cholesterol, by sex and age group

Age group (years)	Men			Women			Both sexes		
	N	Mean (mg/dl)	95% CI (mg/dl)	N	Mean (mg/dl)	95% CI (mg/dl)	N	Mean (mg/dl)	95% CI (mg/dl)
15-29	246	137.8	132.4-143.2	311	141.8	136.6-147.0	557	139.7	135.9-143.6
30-44	326	160.4	153.6-167.2	520	163.4	158.3-168.5	846	161.9	157.7-166.1
45-59	342	168.1	161.1-175.2	551	189.5	180.9-198.2	893	178.6	173.0-184.2
60-69	226	164.4	156.4-172.4	287	191.2	184.9-197.5	513	178.4	172.9-183.8
≥ 70	180	156.9	148.9-165.0	314	192.0	177.8-206.2	494	177.5	167.7-187.4
Total	1320	154.9	151.4-158.5	1983	167.3	163.7-171.0	3303	161.2	158.5-163.8

The respondents currently on medication for raised cholesterol included 24.7% with a total cholesterol ≥ 190 mg/dl (20.9% for men and 28.5% for women) and 8.0% with a total cholesterol ≥ 240 mg/dl (6.5% for men and 9.5% for women) (Fig. 45). Table 54 shows the mean HDL level in the study population: 45.9 mg/dl (40.5 mg/dl for men and 51.2 mg/dl for women). The mean HDL cholesterol of women was 50.1 mg/dl in the group aged 15–29 and in general increased with age, reaching 52.5 mg/dl in those aged ≥70. The mean HDL cholesterol for

4. SURVEY RESULTS

men was the lowest with 38.8 mg/dl in those aged 30–44 and increased with age, rising to 43.2 mg/dl in the group aged ≥ 70 .

Fig. 45. Percentages of respondents with total cholesterol levels ≥ 190 mg/dl including ≥ 240 mg/dl or currently on medication for raised cholesterol, by sex

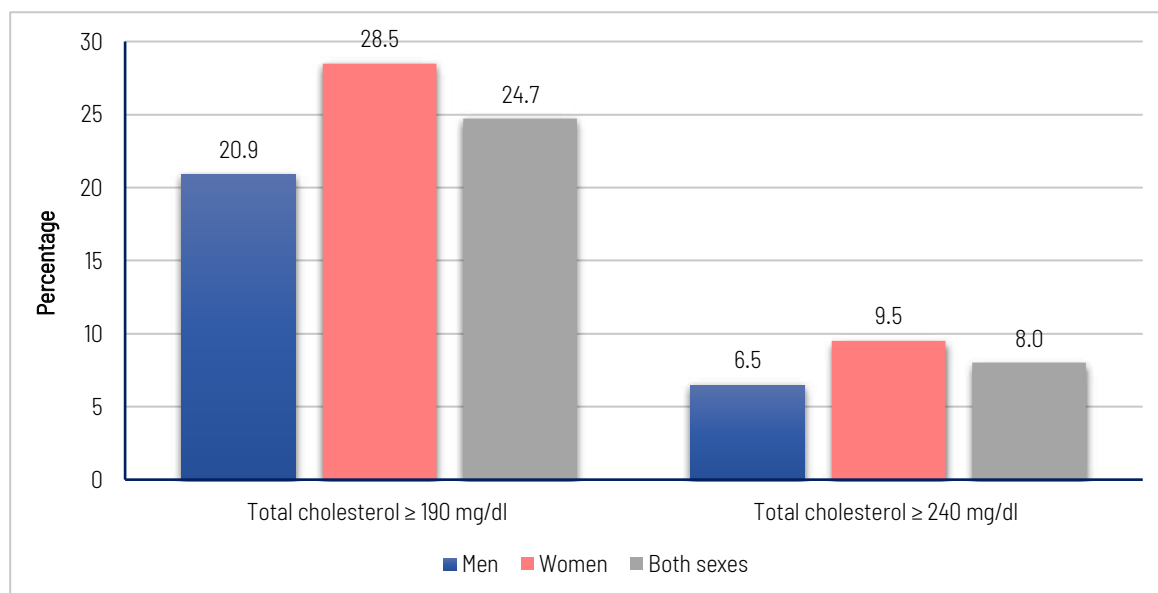


Table 54. Respondents' mean HDL cholesterol levels, by sex and age group

Age group (years)	Men			Women			Both sexes		
	N	Mean (mg/dl)	95% CI (mg/dl)	N	Mean (mg/dl)	95% CI (mg/dl)	N	Mean (mg/dl)	95% CI (mg/dl)
15–29	246	42.0	39.8–44.2	317	50.1	48.1–52.1	563	46.0	44.4–47.6
30–44	328	38.8	37.2–40.4	522	51.2	49.2–53.2	850	44.9	43.5–46.4
45–59	343	39.3	37.5–41.1	556	51.8	49.8–53.9	899	45.5	44.0–47.1
60–69	224	41.6	39.2–44.1	284	52.0	50.0–54.0	508	47.0	45.3–48.8
≥ 70	182	43.2	39.9–46.5	315	52.5	49.9–55.1	497	48.7	46.6–50.7
Total	1323	40.5	39.4–41.5	1994	51.2	50.2–52.2	3317	45.9	45.0–46.7

Low HDL is defined as a plasma venous value < 50 mg/dl for women and < 40 mg/dl for men; 52.3% of respondents had low HDL (55.6% for men and 49.1% for women)(Fig. 46). In addition, 61.7% of the men aged 30–44 was below the optimal level of HDL cholesterol; this proportion fell to 40.4% in those aged ≥ 70 ; this percentage decreased with age in general. The percentage of HDL cholesterol below the optimal level for women was similar in all age groups.

Fig. 46. Percentages of respondents with low HDL cholesterol, by sex and age group (< 50 mg/dl for women and < 40 mg/dl for men)

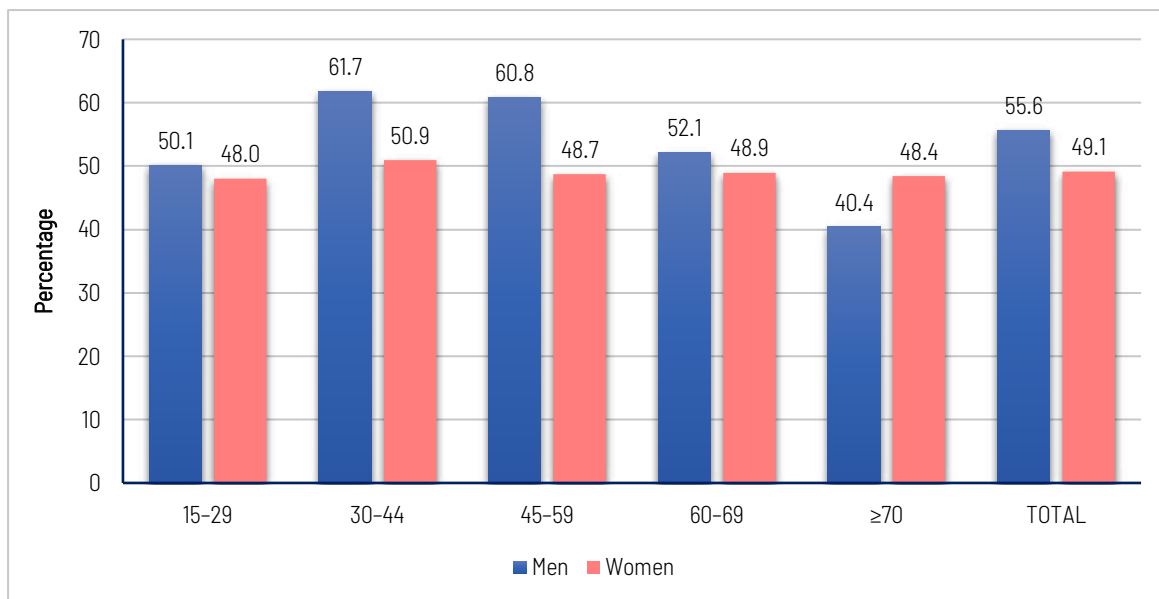
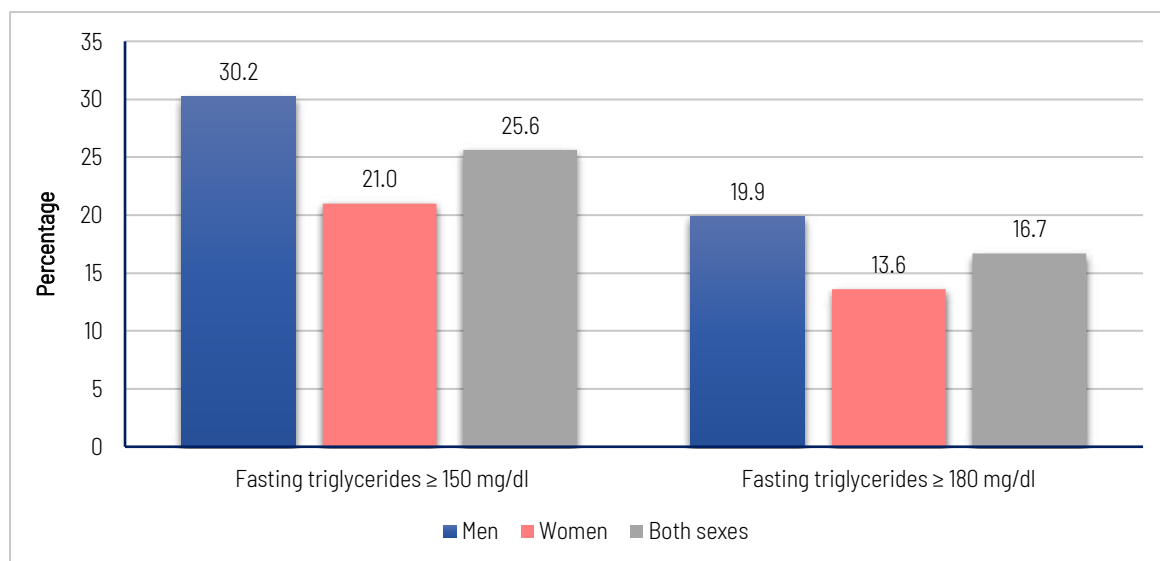


Table 55 shows that the mean fasting triglycerides level for all respondents (excluding non-fasting respondents) was 122.8 mg/dl; 129.0 mg/dl for men and 116.7 mg/dl for women. The mean level increased from 99.1 mg/dl in the group aged 15-29 to 144.5 mg/dl in the group aged 45-59, and tended to decrease in older age.

Table 55. Respondents' mean fasting triglycerides by sex and age group

Age group (years)	Men			Women			Both sexes		
	N	Mean (mg/dl)	95% CI (mg/dl)	N	Mean (mg/dl)	95% CI (mg/dl)	N	Mean (mg/dl)	95% CI (mg/dl)
15-29	239	109.9	99.9-119.8	306	87.7	82.2-93.2	545	99.1	93.0-105.1
30-44	321	137.1	126.7-147.5	509	112.2	102.4-122.0	830	124.8	117.5-132.1
45-59	331	143.1	132.6-153.6	540	145.8	128.7-162.9	871	144.5	134.3-154.6
60-69	220	144.0	126.1-162.0	281	141.4	128.9-154.0	501	142.7	131.7-153.6
≥ 70	173	116.4	105.2-127.6	297	135.6	123.0-148.3	470	127.7	118.6-136.8
Total	1284	129.0	123.2-134.9	1933	116.7	110.8-122.5	3217	122.8	118.5-127.1

Of all the respondents, 25.6% had fasting triglycerides \geq 150 mg/dl (30.2% for men and 21.0% for women) and 16.7% had fasting triglycerides \geq 180 mg/dl (19.9% for men and 13.6% for women) (Fig. 47).

Fig. 47. Percentages of respondents with fasting triglycerides levels ≥ 150 mg/dl and ≥ 180 mg/dl, by sex

Respondents' mean salt intake was 9.9 g per day; 11.0 g for men and 8.7 g for women.

4.22.1. Conclusions

Some of the most important results from biochemical measurements of respondents included the following:

- the mean fasting glucose level was 97.8 mg/dl (96.2 mg/dl for men and 99.3 mg/dl for women) and levels increased in older age, including those currently on medication for diabetes;
- 7.9% had impaired fasting blood glycaemia levels (≥ 110 mg/dl and < 126 mg/dl) and this proportion was higher among men (8.1%) than women (7.7%);
- 11.1% had raised fasting blood glucose or currently on medication for diabetes, without significant differences between men and women;
- mean HbA1c levels were also similar in men and women, although the frequency of raised HbA1c ($\geq 6.5\%$) was 12.0% and increased with age;
- 13.3% had raised HbA1c ($\geq 6.5\%$) or were currently on medication for diabetes (12.7% for men and 13.8% for women)
- 17.3% had fasting plasma venous glucose ≥ 126 mg/dl or HbA1c $\geq 6.5\%$ or were currently on medication for raised blood glucose; the frequency of all three increased with age;
- the mean total blood cholesterol level was 161.2 mg/dl, although women (167.3 mg/dl) tended to have higher levels than men (154.9 mg/dl);
- 24.7% had a raised total cholesterol level, with a higher proportion in women (28.5%) than men (20.9%);
- suboptimal levels of HDL cholesterol were found in 55.6% of men (< 40 mg/dl) and 49.1% of women (< 50 mg/dl);
- men had higher mean levels of fasting triglycerides, and 19.9% of men and 13.6% of women had raised triglycerides (≥ 180 mg/dl);
- the mean daily intake of salt was 9.9 g and men consumed more than women on average (11.0 g per day versus 8.7 g per day).

4.23. CVD risk

The modern concept of primary prevention of CVD entails assessing a person's global risk and choosing the right management in accordance with these results. A ten-year CVD risk of $\geq 30\%$ is defined according to age, sex, blood pressure, smoking status (current smokers or those who quit smoking less than a year before the

assessment), total cholesterol and diabetes (previously diagnosed or a fasting plasma glucose concentration > 126 mg/dl). Among respondents between 40–69 years old, 10.5% had a ten-year CVD risk \geq 30% or already had CVD; 13.3% for men and 7.8% for women.

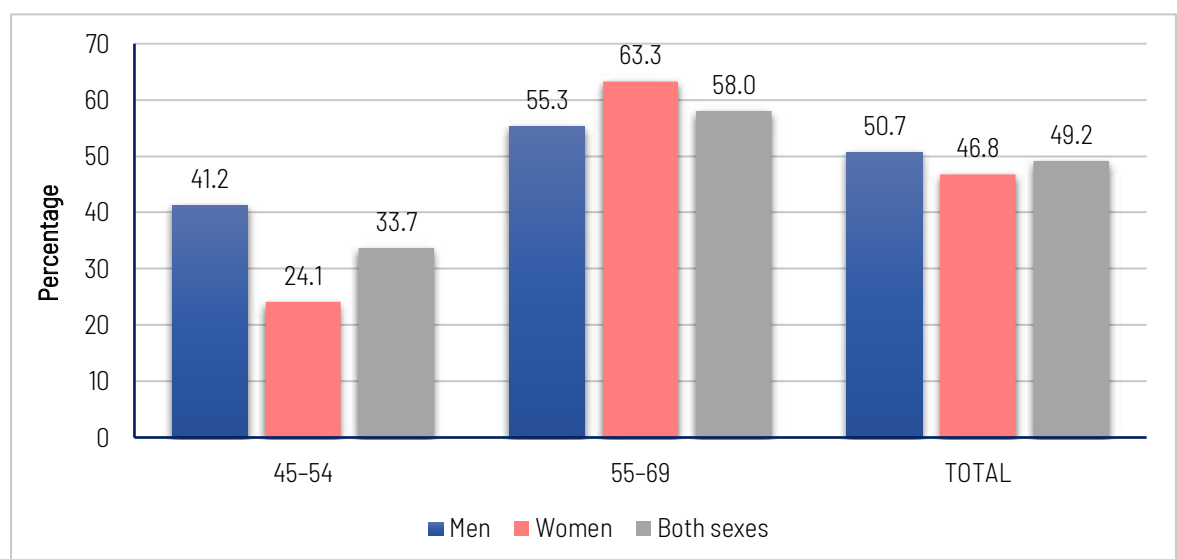
The frequency more than doubled, from 6.3% in the group aged 40–54 to 17.0% in those aged 55–69 (Table 56). Of all the eligible respondents (defined as those aged 40–69 years with a ten-year CVD risk \geq 30%, including those who already had CVD), 49.2% were receiving drug therapy and counselling to prevent heart attacks and strokes. Counselling is defined as receiving advice from a doctor or other health worker to quit or not to start using tobacco, reduce salt in diet, eat at least five servings of fruit and/or vegetables per day, reduce fat in the diet, start or do more physical activity, and maintain a healthy body weight or lose weight.

Table 56. Percentage of respondents who had a ten-year CVD risk \geq 30% or already had CVD, by sex and age group

Age group (years)	Men			Women			Both sexes		
	N	%	95% CI	N	%	95% CI	N	%	95% CI
40–54	310	7.2	3.0–11.3	530	5.4	3.2–7.7	840	6.3	3.9–8.6
55–69	338	22.5	14.8–30.2	471	11.6	6.4–16.8	809	17.0	12.3–21.7
Total	648	13.3	9.2–17.4	1001	7.8	5.3–10.3	1649	10.5	8.1–12.9

Half of men (50.7%) and 46.8% of women received counselling to prevent heart attacks and strokes: 33.7% in the group aged 45–54 and 58.0% in the group aged 55–69. The proportions receiving drug therapy and counselling for this purpose varied with age and sex. In the group aged 45–54, more men (41.2%) than women (24.1%) were receiving drug therapy and counselling; the group aged 55–69 showed the opposite pattern: more women (63.3%) than men (55.3%) were receiving drug therapy and counselling (Fig. 48).

Fig. 48. Percentage of respondents with a ten-year CVD risk \geq 30% or already with CVD and receiving drug therapy and counselling to prevent heart attacks and strokes, by sex and age group



The proportion of eligible persons who were receiving drug therapy and counseling (including glycemic control) to prevent heart attacks and strokes were 55.9% for both sexes, 55.1% for men and 57.0% for women (Table 57).

Table 57. Proportion of eligible persons¹ receiving drug therapy and counseling to prevent heart attacks and strokes

Age group (years)	Men			Women			Both sexes		
	N	%	95% CI	N	%	95% CI	N	%	95% CI
40–54	28	41.2	10.2–72.2	33	24.1	9.0–39.1	61	33.7	14.5–52.9
55–69	65	55.3	33.8–76.8	48	63.3	40.2–86.5	113	58.0	41.4–74.6
≥ 70	35	78.4	62.9–93.8	50	78.7	65.1–92.3	85	78.6	68.6–88.5
Total	128	55.1	39.6–70.7	131	57.0	44.3–69.8	259	55.9	45.3–66.6

¹eligible persons: aged ≥40 years with a 10-year CVD risk ≥ 30% including those with existing CVD)

4.23.1. Conclusions

Some of the most important results on respondents' CVD risk included the following:

- 10.5% of respondents aged 40–69 years had a ten-year CVD risk ≥ 30% or already had CVD, and men (13.8%) had higher risks than women (7.8%);
- less than 50% of the people eligible for drug therapy and counselling to prevent heart attacks and strokes were receiving them;
- the proportions receiving drug therapy and counselling varied by sex and age group;
- the proportion of eligible persons who were receiving drug therapy and counselling to prevent heart attacks and strokes were 55.9% (55.1% for men and 57.0% for women).

4.24. Summary of combined risk factors

Investigators assessed the summary of combined risk factors for NCDs by determining the percentages of respondents with zero, 1–2 or 3–5 of the following risk factors: current daily smoking, consuming fewer than five servings of fruit and/or vegetables per day, not meeting WHO recommendations on physical activity for health (<150 minutes of moderate activity per week, or equivalent), being overweight or obese (BMI ≥ 25 kg/m²), raised blood pressure (SBP ≥ 140 and/or DBP ≥ 90 mmHg or currently on medication).

Fig. 49 shows the distribution of risk factors among respondents aged 18–69 years: 1.3% had no risk factors; 47.8% had 1–2 risk factors and 51.0% had 3–5. The percentages with no and 1–2 risk factors decreased with age (from 1.7% and 56.1% in the group aged 18–44 to 0.5% and 33.6% in those aged 45–69, respectively), while the percentages with 3–5 risk factors increased with age (from 42.2% in the group aged 18–44 to 65.9% in those aged 45–69). Results also varied between the sexes: 1.7% of men and 0.8% of women (aged 18–69) had no risk factors; 46.8% of men and 48.7% of women had 1–2 risk factors; and 51.5% of men and 50.5% of women had 3–5 risk factors.

Fig. 49. Summary of combined risk factors in respondents aged 18–69 by sex and age group

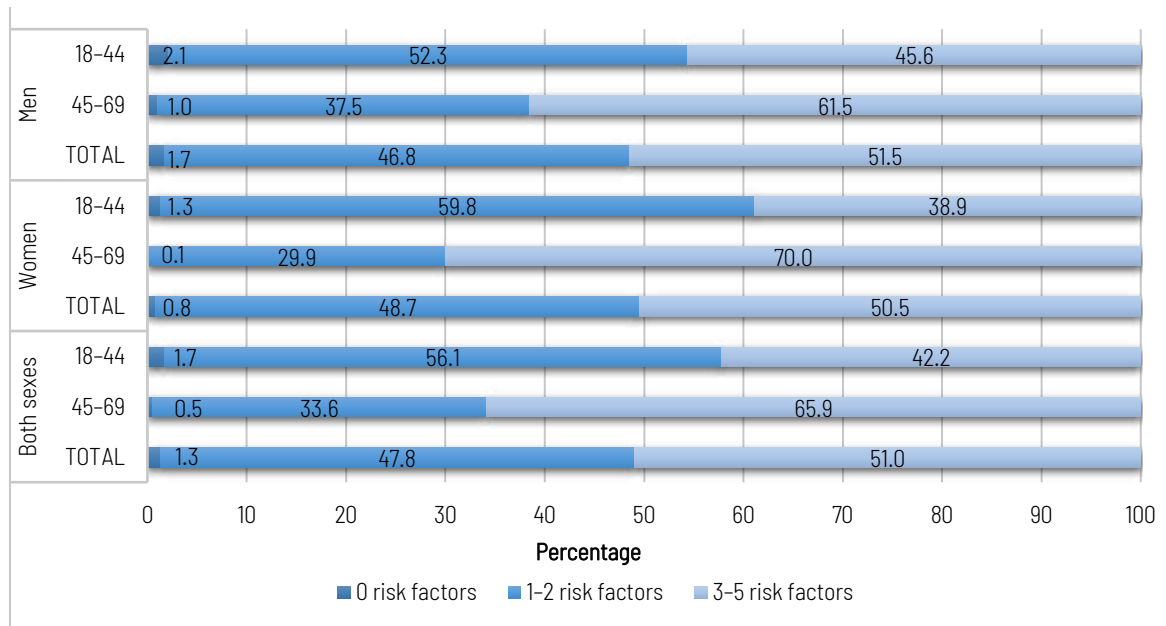
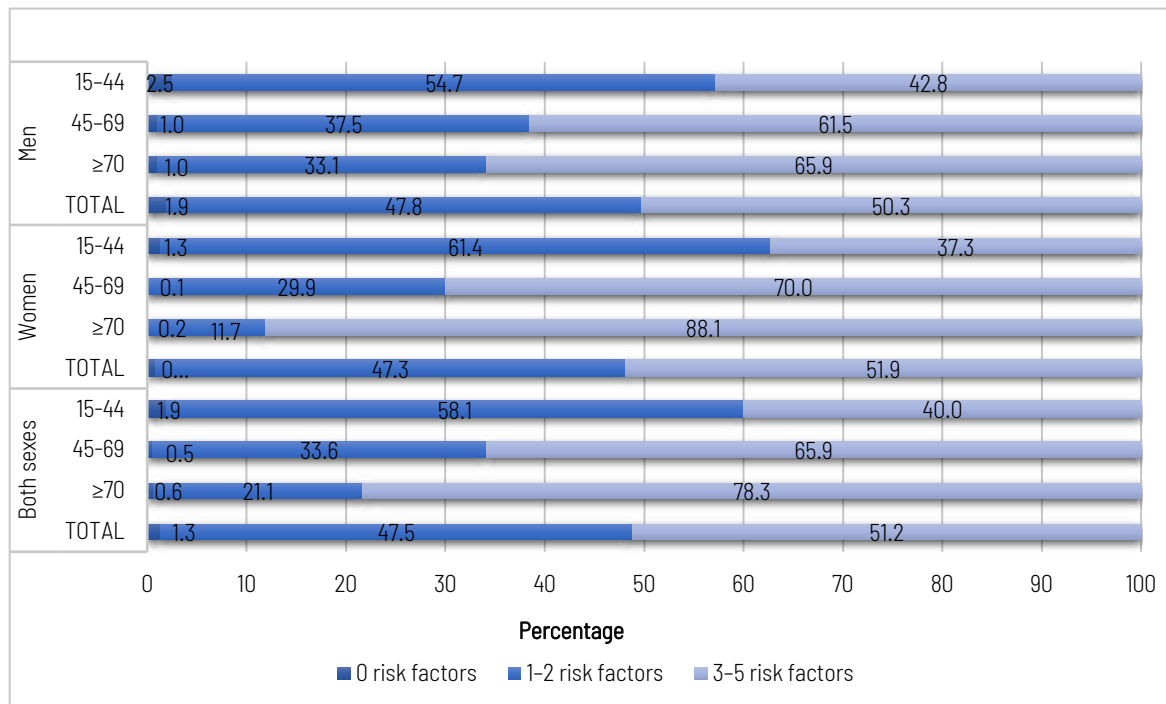


Fig. 50 shows the results for all respondents, distributed into three groups: those aged 15–44, 45–69 and ≥ 70 years. The pattern shown is similar: 1.3% had no risk factors (1.9% for men and 0.8% for women); 47.5% had 1–2 risk factors (47.8% for men and 47.3% for women); and 51.2% had 3–5 risk factors (50.3% for men and 51.9% for women). The proportions with lower numbers of risk factors declined with age, and the proportions with the highest number increased with age.

Fig. 50. Summary of all respondents' combined risk factors by sex and age group



4.24.1. Conclusions

Some of the most important results on respondents' combined risk factors included the following:

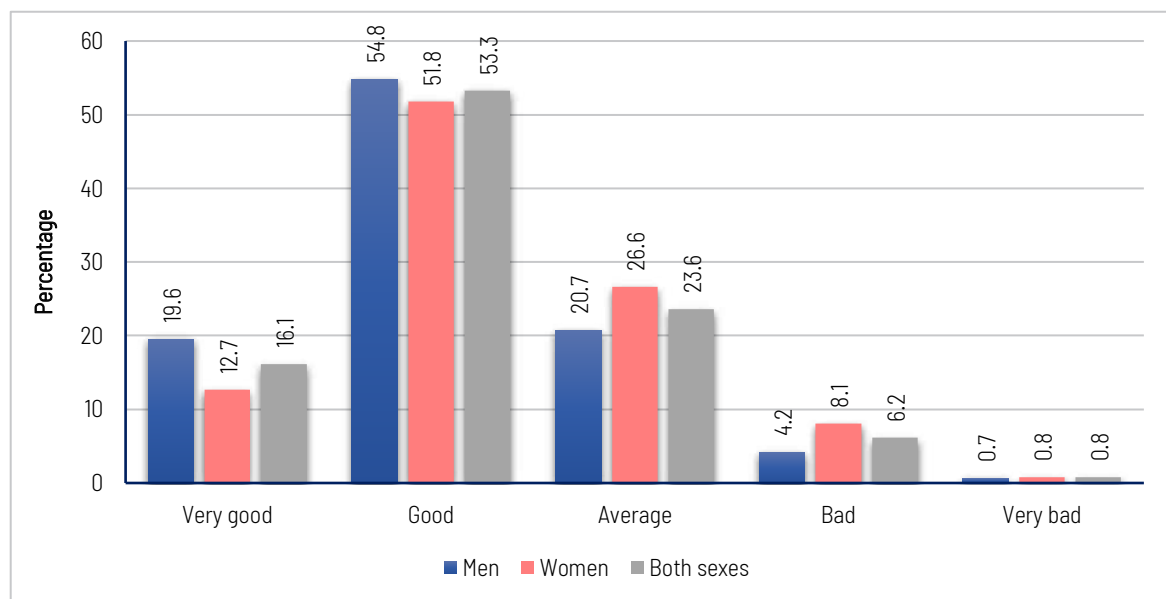
- less than 2% of the study population had none of the stated risk factors, while 51.2% had 3–5;
- the frequency of having 3–5 risk factors increased with age while the frequency of having 0–2 risk factors decreased with age.

4.25. Health perception

Health perception (or perceived health status) are people's subjective ratings of their health status. Investigators assessed respondents' health perceptions with the question typically used in the literature: What do you think of your health status in general? In answering, respondents chose a number ranging from 1 (very good) to 5 (very bad).

More than half of the respondents (53.3%) perceived their health status as good; 54.8% for men and 51.8% for women (Fig. 51). Table 58 presents the perception of health status by age. The perceptions of health status as very good and good decreased with age, while increasing proportions chose the other options.

Fig. 51. Respondents' perceptions of their health status by sex



4.25.1. Conclusions

The most important results on respondents' perceptions of their health included the following:

- 53.3% perceived their health status as good (54.8% for men and 51.8% for women);
- While the most positive perceptions of health decreased with age, the others increased.

Table 58. Health status perception of individuals, by age group

Age group (years)	N	Very good		Good		Average		Bad		Very bad	
		%	%95 CI (%)	%	%95 CI (%)	%	%95 CI (%)	%	%95 CI (%)	%	%95 CI (%)
15-29	1166	27.0	23.6-30.3	58.5	55.0-62.1	11.9	9.9-14.0	2.2	1.2-3.2	0.4	0.0-0.8
30-44	1700	15.4	13.1-17.7	57.9	54.7-61.1	23.0	20.3-25.7	3.4	2.0-4.8	0.3	0.0-0.6
45-59	1612	9.3	7.3-11.4	51.6	48.2-55.0	30.5	27.6-33.4	8.2	5.9-10.5	0.4	0.1-0.6
60-69	843	6.5	4.1-8.8	43.4	39.0-47.9	37.8	33.4-42.1	10.9	8.7-13.1	1.4	0.4-2.5
≥ 70	720	4.2	2.1-6.3	28.6	24.3-32.9	39.2	34.8-43.6	23.3	19.4-27.2	4.7	2.2-7.1
Total	6041	16.1	14.6-17.6	53.3	51.5-55.1	23.6	22.3-25.0	6.2	5.3-7.0	0.8	0.5-1.0

CONCLUSION

Concern about the prevalence of NCDs is growing around the world, and many countries have prioritized the prevention of NCDs in their national public policies. Policies to prevent NCDs require the participation of various sectors (including health, education and transport), so that strategies for population intervention to prevent and control the evaluated risk factors and to promote a healthy life from an early age are implemented and sustained in a coordinated manner. This requires continuous monitoring of the NCD risk factors based on samples representative of the population.

This research studies a sample of the adult population of Turkey, of both sexes and within the group aged ≥ 15 years, to obtain information on the risk factors for NCDs. This is the first study conducted in Turkey that used the STEPS methodology developed by WHO for the surveillance of risk factors for chronic diseases.

The methodology used follows the established standards of the WHO STEPwise approach, which ensures the technical and scientific quality of the survey. The study has obtained valuable information on a wide range of NCD risk factors in Turkey: tobacco use; harmful alcohol use; low consumption of fruits and vegetables and high consumption of salt in the diet; physical inactivity; and overweight and obesity.

For example, the survey showed that 31.6% of respondents currently used tobacco (smoked or smokeless); 43.6% for men and 19.7% for women. Of daily smokers, 97.3% used manufactured cigarettes; 97.3% for men and 97.2% for women. Users of manufactured cigarettes smoked a mean of 15.5 cigarettes; 16.8 for men and 12.7 for women.

As to alcohol consumption, the survey showed that 8.0% of respondents had consumed alcohol in the previous 30 days; 13.1% for men and 3.0% for women. In addition, 5.2% of respondents had engaged in heavy episodic drinking (≥ 6 or more drinks on any occasion in the previous 30 days); 8.7% for men and 1.8% for women.

The survey results show that respondents ate fruit and vegetables on mean numbers of 4.6 and 5.1 days, respectively, in a typical week; 4.5 for men and 4.8 for women, and 4.9 for men and 5.2 for women, respectively. Further, 87.8% ate fewer than five servings of fruit and/or vegetables on average per day; 87.8% for men and 87.9% for women.

Respondents' salt intake came from various sources: 28.1% always or often added salt or salty sauce to their food before or while eating (29.3% for men and 26.8% for women), and 25.5% always or often ate processed foods high in salt (27.8% for men and 23.3% for women).

The survey showed low levels of physical activity; 43.6% had insufficient physical activity (< 150 minutes of moderate-intensity activity per week or equivalent); 33.1% for men and 53.9% for women. It also showed that the median time spent in physical activity on average per day was 30.0 minutes; 51.4 for men and 17.1 for women. In addition, 81.3% (70.1% of men and 92.2% of women) were not engaging in vigorous physical activity.

Further, 40.5% of respondents (38.1% for men and 42.9% for women) had received counselling or education from health workers on one or more subjects related to healthy living during the previous 12 months.

Awareness of health risks from the selected NCD risk factors varied between the sexes. More men than women could state two or more negative health effects of: any of the selected NCD risk factors (89.1% versus 85.5%), smoking tobacco (77.0% versus 75.5%), a high-salt diet (72.3% versus 71.0%), physical inactivity (59.6% versus 57.1%), a high-fat diet (65.7% versus 62.8%), two or more negative health effects of alcohol use (75.9% versus 72.5%) and substance abuse (75.5% versus 71.4%). In contrast, more women than men could state two or more negative health effects of low consumption of fruits and/or vegetables (33.6% versus 32.8%).

One in four respondents aged 50–70 years old had had a faecal occult blood test. While more than half of women aged 30–65 (54.2%) reported having been screened for cervical cancer, three in five women aged 40–69 had had mammography.

Moreover, in the previous month, 6.7% of the respondents had visited a dentist; 17.6%, a GP or family doctor; and 16.8%, a specialist physician.

Raised blood pressure was found in 26.1% of men and 29.3% of women, and percentages of respondents with raised blood pressure increased with age.

The mean BMI was 27.4 kg/m² for both sexes; 64.4% of respondents were overweight (BMI ≥ 25 kg/m²) and 28.8% were obese (BMI ≥ 30 kg/m²).

Almost one in six of participants (17.3%) had fasting plasma venous glucose ≥ 126 mg/dl or HbA1c ≥ 6.5% or were currently on medication for raised blood glucose. This proportion increased with age.

One in four respondents (24.7%) had a raised total cholesterol level, with the proportion of being higher in women (28.5%) than men (20.9%). The percentages with suboptimal HDL cholesterol were 55.6% for men (< 40 mg/dl) and 49.1% for women (< 50 mg/dl).

Mean daily salt intake was 9.9 g, and men consumed more salt than women on average (11.0 g per day versus 8.7 g per day).

To summarize all the risk factors, the survey considered the combined risk factors as an integrated risk metric. For example, 10.5% of respondents had a ten-year CVD risk ≥ 30% or already had CVD. Less than 2% did not have any of the stated risk factors, while 51.2% had 3–5 of them, and 47.8% had 1–2. The frequency of having 3–5 risk factors increased with age and the frequency of having fewer than three decreased with age.

In addition to obtaining valuable information on NCD risk factors for people of different age groups, sex and regions, the results of the survey provide a significant input for policy-makers. The results obtained in the study show the current prevalence of NCD risk factors among the Turkish population. Repeated STEPS-based assessments of NCD risk factors can help policy-makers to monitor the progress of NCD policy in Turkey.

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ANNEX 1. FIELD TEAMS BY REGION

Supervisors	Health professionals	Data collectors
Istanbul region (İstanbul, Edirne, Kırklareli, Tekirdağ)		
Mr Mehmet Karagöz	Mr Mehmet Çakar	Ms Ebrar Akyüz
Ms Hatice Karagöz	Ms Özlem Çengel	Mr Esat Bekdemir
Ms Cemile Kis	Ms Menekşe Çinel	Mr Mehmet Bilecen
Ms Sema Üngör	Mr Eyüp Sabri Genç	Mr Batuhan Berk Karasu
	Mr Furkan Maden	Mr Murat Kurt
	Mr Serdar Murat	Ms Ebru Maden
	Ms Fatma Selbi	Mr Serdar Murat
	Ms Nesrin Tüysüz	Ms Tuğba Yavuz
		Mr Burak Yazgan
		Mr Gürkan Yüksel
Konya region (Konya, Karaman, Aksaray, Afyon)		
Ms Pınar Turan	Ms Dilek Aydın	
Mr Rıza Turan	Mr Ziya Emre Bosnalı	-
	Mr Akif Gezeroğlu	
İzmir region (İzmir, Aydın, Denizli, Manisa, Muğla, Uşak)		
Mr Hüseyin Mert Elik	Mr Yasin Aksoy	Mr Hüseyin Mert Elik
Mr Mehmet Karasu	Ms Nuray Çelik	Ms Rojda Erat
	Ms Aşkın Çevirgen	Mr Okan Öztürk
	Mr Turan Görkem Doğan	Ms Tuğçe Şivga
	Ms Nur Nisa Ögük	Mr Mert Solak
	Mr Furkan Özkan	Ms Gizem Yeliz Yücel
	Ms Habibe Seyman	
	Ms Mualla Turan	
Trabzon region (Trabzon, Giresun, Rize, Bayburt, Gümüşhane, Artvin)		
Ms Hülya Özdin	Ms Elvan Armutçu	Mr Vural Embiya
Ms Dilek Tomar	Ms Semiha Köse	Mr Mehmet Kerem Serin
	Mr Yetkin Samancı	Ms Berna Usta
Samsun region (Samsun, Ordu, Sinop, Amasya, Bartın, Zonguldak, Kastamonu, Tokat)		
Ms Mihri Arzu Kıyıcı	Mr Zeyd Güdül	Mr Arda Cermen
	Ms Esra Kalyoncu	Ms Derya Cermen
	Mr Ali Kemal Kul	Mr Temel Hakkı Yazıcı
	Ms Nazli Sarıoğlu	

Supervisors	Health professionals	Data collectors
Diyarbakır region (Diyarbakır, Batman, Bingöl, Bitlis, Elazığ, Mardin, Muş, Siirt, Tunceli, Van, Adıyaman, Gaziantep, Kahramanmaraş, Kilis, Malatya, Şanlıurfa)		
-	Mr Metin Bişkin Ms Didem Er Ms Dilan Uğurlu	Mr Mesut Ayberk Ms Havva Yüce
Erzurum region (Erzurum, Ağrı, Ardahan, Artvin, Bayburt, Erzincan, Kars, Iğdır)		
-	Mr Onur Korkmaz Mr Oğuzhan Turgut	Ms Nilay Kalaycı Mr Onur Turgut
Adana region (Adana – excluding Anamur, Mersin)		
Ms Nihal Bilgin	Ms Yeşim Çoşkun	Mr Niyazi Berk Mr Abdullah Demir
Antalya region (Antalya—including Anamur, Burdur, Isparta)		
Mr İbrahim Akkol	Ms Cansu Bulut Ms Fidan Tosun	Mr İbrahim Sarıkaş
Ankara region (Ankara, Afyon, Çankırı, Eskişehir, Kırıkkale)		
Mr Tolga Çomak Ms İlayda Urvaylıoğlu	Mr Hüseyin Altun Ms Esra Küçükoğlu Ms Necmiye Sarıyıldız Ms Merve Temizyürek	Mr Serkan Aytaş Ms Büşra Güdek Mr Murat Sarıyıldız
Hatay region (Hatay, Osmaniye)		
Ms Serap Miroğlu Koçak	Mr Oktay İnanç Mr Furkan Maden	-
Bursa region (Bursa, Balıkesir, Bilecik, Bolu, Çanakkale, Karabük, Düzce, Kocaeli, Kütahya, Sakarya, Yalova)		
Mr Gürcan Şenol Mr Serkan Şenol	Ms Damla Bilir Ms Hatice Dikmen Mr Muhammed Özkan Ms Aleyna Soytürk Mr Mücahit Yıldırım	Ms Saadet Açık Ms Nurcan Deleş Ms Ayşegül Duran Mr Talha Serkan Karagöz Ms Elif Şenbiçer
Kayseri region (Kayseri, Çorum, Sivas, Tokat, Yozgat)		
Mr Emre Yıldız	Mr Adem Altunbaş Ms Güler Ceylan	Mr Muzaffer Ali Ateş Ms Gamze Boynueğri Ms Sema Şahin

ANNEX 2. NATIONAL HOUSEHOLD HEALTH SURVEY IN TURKEY – PREVALENCE OF NONCOMMUNICABLE DISEASE RISK FACTORS, 2017 FACT SHEET

The WHO STEPwise approach to surveillance (STEPS) is a simple, standardized method for collecting, analysing and disseminating data on noncommunicable diseases (NCDs) and risk factors. Data are collected on the established risk factors and conditions that determine the major share of the NCD burden, including: tobacco use, use of alcohol, unhealthy diet, insufficient physical activity, overweight and obesity, raised blood pressure, raised blood glucose and abnormal blood lipids. Countries can use data from STEPS surveys to help monitor their progress in meeting the global voluntary targets related to specific risk factors such as tobacco, alcohol, diet and physical inactivity.

A STEPS survey in Turkey was carried out from April to September 2017 in three steps:

1. collection of sociodemographic and behavioural information;
2. collection of physical measurements, such as height, weight and blood pressure;
3. collection of biochemical measurements to assess blood glucose, haemoglobin A1c or glycated haemoglobin (HbA1c), total cholesterol levels, and mean daily salt consumption.

The population-based survey of adults aged ≥ 15 years used a multistage cluster sample design to produce representative data for the population in that age range in Turkey. A total of 6053 adults participated in the survey. The overall response rate was (70.0%). A repeat survey is planned for 2019 to assess changes.

Highlights

Tobacco use

- 43.6% of men, 19.7% of women and 31.6% overall were current tobacco users.
- 43.4% of men, 19.7% of women and 31.5% overall were current tobacco smokers.
- 3 in 10 current smokers had tried to quit in the previous 12 months.

Alcohol use

- 13.1% of men, 3.0% of women and 8.0% overall were current alcohol users.
- 1 in 20 current alcohol users engaged in heavy episodic drinking.

Diet

- 87.8% of men, 87.9% of women and 87.8% overall ate fewer than five servings of fruit and/or vegetables per day.
- mean daily salt consumption was 9.9 g overall, 11.0 g for men and 8.7 g for women.

Physical activity

- 4 in 10 adults had insufficient physical activity (< 150 minutes of moderate activity per week).

Cancer screening

- 5 in 10 women aged 30–65 years had ever had a cervical smear test.
- 6 in 10 women aged 40–69 years had ever had mammography.
- 1 in 10 adults aged 50–70 years had had a colonoscopy in the previous 10 years.

Obesity

- 62.8% of men, 66.0% of women and 64.4% overall were overweight (body mass index (BMI) ≥ 25 kg/m²).
- 21.6% of men, 35.9% of women and 28.8% overall were obese (BMI ≥ 30 kg/m²).

High blood pressure

- 26.1% of men, 29.3% of women and 27.7% overall had raised blood pressure.

High blood glucose

- 10.6% of men, 11.5% of women and 11.1% overall had raised blood glucose.

The following table gives the survey results for adults aged ≥ 15 years, including 95% confidence interval (CI). Adults refer to persons aged ≥ 15 years. The data were weighted to be representative of all men and women in that age group in Turkey.

Topics	Both sexes (95%CI)	Men (95%CI)	Women (95%CI)
Tobacco use			
Respondents who currently used tobacco (smoked or smokeless)(%)	31.6 (29.8–33.4)	43.6 (40.9–46.2)	19.7 (17.6–21.8)
Respondents who currently smoked tobacco (%)	31.5 (29.7–33.3)	43.4 (40.8–46.0)	19.7 (17.6–21.8)
Respondents who currently smoked tobacco daily (%)	29.2 (27.5–31.0)	40.4 (37.8–43.0)	18.2 (16.1–20.3)
Daily smokers	18.1	17.2	20.2
• Average age of starting smoking (years)	(17.8–18.5)	(16.9–17.5)	(19.5–20.9)
• Use of manufactured cigarettes (%)	97.3 (96.3–98.3)	97.3 (96.1–98.5)	97.2 (95.4–99.0)
• Mean number of manufactured cigarettes smoked per day (by smokers of manufactured cigarettes)	15.5 (14.8–16.2)	16.8 (16.0–17.7)	12.7 (11.6–13.7)

Topics	Both sexes (95%CI)	Men (95%CI)	Women (95%CI)
Respondents who currently used smokeless tobacco (%)	0.3 (0.1-0.6)	0.6 (0.1-1.0)	0.1 (0.0-0.3)
Current non-users of smoked and/or smokeless tobacco			
• Former tobacco smokers (%)	10.7 (9.7-11.8)	14.8 (13.1-16.5)	6.6 (5.5-7.8)
• Never smokers (%)	57.8 (55.9-59.7)	41.8 (39.0-44.5)	73.7 (71.4-75.9)
Current smokers who had tried to quit in the previous 12 months (%)	27.4 (24.5-30.4)	29.4 (25.8-33.1)	23.0 (18.5-27.6)
Current smokers advised by a health care provider to stop smoking in the previous 12 months ¹ (%)	22.3 (19.5-25.1)	21.2 (17.8-24.6)	24.7 (20.0-29.3)
Alcohol consumption			
Lifetime abstainers (%)	83.6 (82.1-85.1)	74.4 (72.0-76.8)	92.7 (91.3-94.1)
Abstainers for the previous 12 months (%)	4.3 (3.6-5.0)	6.5 (5.3-7.6)	2.1 (1.4-2.9)
Current drinkers (had drunk alcohol in the previous 30 days) (%)	8.0 (7.0-9.1)	13.1 (11.2-15.0)	3.0 (2.1-4.0)
Respondents engaging in heavy episodic drinking (≥ 6 drinks on any occasion in the previous 30 days) (%)	5.2 (4.2-6.2)	8.7 (7.0-10.3)	1.8* (1.0-2.6)
Diet			
Fruit consumption			
• Mean number of days in a typical week	4.6 (4.5-4.7)	4.5 (4.4-4.6)	4.8 (4.7-4.9)
• Mean number of servings on average per day	1.4 (1.3-1.5)	1.4 (1.3-1.5)	1.5 (1.3-1.6)
Vegetable consumption			
• Mean number of days in a typical week	5.1 (5.0-5.2)	4.9 (4.8-5.1)	5.2 (5.1-5.3)

Topics	Both sexes (95%CI)	Men (95%CI)	Women (95%CI)
• Mean number of servings on average per day	1.7 (1.5-1.8)	1.6 (1.4-1.8)	1.7 (1.6-1.9)
Respondents who ate ≤ 5 servings of fruit and/or vegetables on average per day (%)	87.8 (86.4-89.3)	87.8 (85.8-89.8)	87.9 (86.3-89.5)
Respondents who always or often added salt or salty sauce to their food before or during eating (%)	28.1 (26.3-29.9)	29.3 (26.7-31.9)	26.8 (24.6-29.0)
Respondents who always or often ate processed foods high in salt (%)	25.5 (23.7-27.4)	27.8 (25.3-30.3)	23.3 (21.0-25.6)
Respondents thinking lowering salt in diet is very important (%)	75.6 (73.7-77.6)	73.2 (70.0-76.0)	78.1 (75.9-80.3)
Physical activity			
Respondents with insufficient physical activity (< 150 minutes of moderate-intensity activity per week, or equivalent) ² (%)	43.6 (41.8-45.4)	33.1 (30.5-35.6)	53.9 (51.6-56.3)
Median time spent in physical activity on average per day (presented with interquartile range) (minutes)	30.0 (4.3-90.0)	51.4 (11.4-180.0)	17.1 (0.0-55.0)
Respondents not engaging in vigorous activity (%)	81.3 (79.7-82.8)	70.1 (67.5-72.6)	92.2 (90.8-93.6)
Cancer screening			
Women aged 30-65 years who had ever had a cervical smear test (%)			54.2 (51.2-57.1)
Women aged 40-69 years who had ever had mammography (%)			57.4 (54.1-60.7)
Respondents aged 50-70 years who had ever had a faecal occult blood test	25.5 (22.8-28.2)	23.5 (19.7-27.2)	27.6 (24.0-31.3)
Respondents aged 50-70 years who had had a colonoscopy in the previous 10 years (%)	12.1 (10.1-14.2)	11.1 (8.1-14.0)	13.2 (10.4-16.0)
Physical measurements			
Mean BMI (kg/m ²)	27.4 (27.2-27.6)	26.6 (26.3-26.8)	28.3 (28.0-28.6)
Overweight respondents (BMI ≥ 25 kg/m ²)(%)	64.4 (62.6-66.2)	62.8 (60.2-65.4)	66.0 (63.7-68.4)

Topics	Both sexes (95%CI)	Men (95%CI)	Women (95%CI)
Obese respondents (BMI \geq 30 kg/m ²)(%)	28.8 (27.3–30.4)	21.6 (19.5–23.8)	35.9 (33.8–38.0)
Average waist circumference (cm)	-	91.3 (90.5–92.2)	87.9 (87.1–88.8)
Average hip circumference (cm)	-	98.7 (97.9–99.4)	102.5 (101.8–103.2)
Mean systolic blood pressure (SBP), including those on medication for raised blood pressure (mmHg)	123.0 (122.1–123.8)	125.3 (124.2–126.3)	120.8 (119.7–121.8)
Mean diastolic blood pressure (DBP), including those on medication for raised blood pressure (mmHg)	78.4 (78.0–78.9)	78.2 (77.6–78.8)	78.7 (78.2–79.2)
Respondents with raised blood pressure (SBP \geq 140 and/or DBP \geq 90 mmHg) or currently on medication for raised blood pressure	27.7 (26.0–29.4)	26.1 (23.7–28.5)	29.3 (27.2–31.5)
Respondents with raised blood pressure (SBP \geq 140 and/or DBP \geq 90 mmHg) who were not on medication (%)	57.1 (53.8–60.3)	64.7 (60.3–69.1)	50.5 (46.4–54.6)
Proportion of all hypertensive people with controlled blood pressure in the population (%)	23.8 (21.0–26.5)	18.5 (15.2–21.7)	28.4 (24.5–32.3)
Biochemical measurement			
Mean fasting blood glucose, including those currently on medication for raised blood glucose (mg/dl)	97.8 (95.6–99.9)	96.2 (93.7–98.8)	99.3 (96.0–102.5)
Respondents with impaired fasting glycaemia (plasma venous value \geq 110 mg/dl and $<$ 126 mg/dl)	7.9 (6.3–9.5)	8.1 (5.9–10.4)	7.7 (5.5–10.0)
Respondents with raised fasting blood glucose (plasma venous value \geq 126 mg/dl) or currently on medication for diabetes	11.1 (9.4–12.8)	10.6 (8.3–13.0)	11.5 (9.1–13.9)
Respondents with HbA1c \geq 6.5%	12.0 (10.5–13.6)	11.9 (9.6–14.1)	12.2 (10.1–14.4)
Respondents with HbA1c \geq 6.5% or currently on medication for diabetes (%)	13.3 (11.6–14.9)	12.7 (10.4–15.1)	13.8 (11.5–16.1)
Mean total blood cholesterol, including those currently on medication for raised cholesterol (mg/dl)	161.2 (158.5–163.8)	154.9 (151.4–158.5)	167.3 (163.7–171.0)
Respondents with raised total cholesterol (\geq 190 mg/dl) or currently on medication for raised cholesterol (%)	24.7 (22.3–27.1)	20.9 (17.6–24.1)	28.5 (25.0–31.9)

Topics	Both sexes (95%CI)	Men (95%CI)	Women (95%CI)
Respondents with raised triglycerides (≥ 180 mg/dl) (%)	16.7 (14.6–18.9)	19.9 (16.4–23.4)	13.6 (11.2–16.0)
Respondents with suboptimal HDL cholesterol (< 40 mg/dl for men and < 50 mg/dl for women) (%)	52.3 (49.4–55.3)	55.6 (51.3–59.9)	49.1 (45.1–53.1)
Mean intake of salt per day (g)	9.9 (9.7–10.1)	11.0 (10.8–11.3)	8.7 (8.5–8.8)
Risk of CVD			
Respondents aged 40–69 years with a ten-year CVD risk $\geq 30\%$ or with existing CVD ³ (%)	10.5 (8.1–12.9)	13.3 (9.2–17.4)	7.8 (5.3–10.3)
The proportion of eligible persons who were receiving drug therapy and counselling to prevent heart attacks and strokes (%)	55.9 (45.3–66.6)	55.1 (39.6–70.7)	57.0 (44.3–69.8)
Summary of combined risk factors: current daily smokers, fewer than 5 servings of fruits and vegetables per day, insufficient physical activity, overweight, raised blood pressure			
Respondents (aged ≥ 15) with 0 risk factors (%)	1.3* (0.7–2.0)	1.9* (0.7–3.1)	0.8* (0.4–1.2)
Respondents (%) with ≥ 3 risk factors:			
• aged 18–44 years	42.2 (39.4–44.9)	45.6 (41.4–49.8)	38.9 (35.6–42.3)
• aged 45–69 years	65.9 (63.2–68.6)	61.5 (57.5–65.5)	70.0 (66.5–73.5)
• aged 18–69 years	51.0 (48.9–53.0)	51.5 (48.5–54.5)	50.5 (47.8–53.1)
• aged ≥ 15 years	51.2 (49.3–53.0)	50.3 (47.5–53.2)	51.9 (49.5–54.4)
Lifestyle advice on selected NCD risk factors			
Respondents who had received counselling or education from health workers on ≥ 1 subjects related to healthy living (healthy nutrition, weight reduction, smoking cessation or physical activity) during previous 12 months (%)	40.5 (38.4–42.5)	38.1 (35.3–40.9)	42.9 (40.4–45.3)
Awareness of health harm from selected NCD risk factors			
Adults (%) that can state ≥ 2 negative health effects of:			
• any of the selected NCD risk factors ⁵	87.3 (85.9–88.6)	89.1 (87.4–90.8)	85.5 (83.8–87.1)
• smoking tobacco	76.2 (74.4–78.1)	77.0 (74.3–79.6)	75.5 (73.4–77.6)

Topics	Both sexes (95%CI)	Men (95%CI)	Women (95%CI)
• high-salt diet	71.6 (69.8–73.5)	72.3 (69.8–74.9)	71.0 (68.8–73.2)
• high-fat diet	64.3 (62.2–66.3)	65.7 (63.0–68.4)	62.8 (60.3–65.4)
• low consumption of fruits and/or vegetables	33.2 (31.2–35.2)	32.8 (30.1–35.6)	33.6 (31.2–36.1)
• physical inactivity	58.3 (56.2–60.5)	59.6 (56.7–62.4)	57.1 (54.5–59.8)
• alcohol use	74.2 (72.3–76.1)	75.9 (73.4–78.4)	72.5 (70.3–74.7)
• substance abuse	73.4 (71.6–75.3)	75.5 (73.1–77.9)	71.4 (69.1–73.6)

¹ Among those who visited a health care provider in the previous 12 months.

² For complete definitions of insufficient physical activity, refer to the *Global Physical Activity Questionnaire (GPAQ) analysis guide* (Geneva: World Health Organization; 2018 (http://www.who.int/ncds/surveillance/steps/resources/GPAQ_Analysis_Guide.pdf?ua=1)) or the WHO global recommendations on physical activity for health (In: World Health Organization [website]. Geneva: World Health Organization; 2018 (http://www.who.int/dietphysicalactivity/factsheet_recommendations/en/index.html)).

³ A 10-years CVD risk $\geq 30\%$ is defined according to age, sex, blood pressure, smoking status (current smokers OR those who quit smoking less than 1 year before the assessment), total cholesterol and diabetes (previously diagnosed or a fasting plasma glucose concentration >126 mg/dl).

⁴ NCD risk factors include tobacco smoking, high salt diet, high fat diet, less consumption of fruits and/or vegetables, physical inactivity, alcohol use and substance abuse.

^{*} N < 50.

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ANNEX 3. WHO STEPS INSTRUMENT FOR NATIONAL HOUSEHOLD HEALTH SURVEY IN TURKEY: PREVALENCE OF NONCOMMUNICABLE DISEASE RISK FACTORS, 2017 (SURVEY INFORMATION QUESTIONNAIRE)

Survey Information

Participant Identification Number

Location and Date	Response	Code
Interview Number (first 4 digits cluster ID, next 2 digits household rank number, last digit is for substitution number) <i>Enter information from list provided.</i>	<input type="text"/>	IX1
Province name		IX2
Town name		IX3
Cluster/Centre/Village ID <i>Enter Cluster, Centre or Village ID from list provided.</i>	<input type="text"/>	I1
Cluster/Centre/Village name <i>Enter Cluster, Centre or Village name as appropriate.</i>	<input type="text"/>	I2
Interviewer ID (Name and Surname) <i>Enter interviewer's identification.</i>		I3
Date of completion of the instrument <i>Enter date when instrument actually completed.</i>	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> dd mm year	I4

Are your parents relatives? <i>Select the appropriate response.</i>	Yes 1 No 2	CC1
Which of the following best describes your main work status over the past 12 months? (USE SHOWCARD) <i>The purpose of this question is to help answer other questions such as whether people in different kinds of occupations may be confronted with different risk factors.</i> <i>Select appropriate response.</i>	Government employee 1 Non-government employee 2 Self-employed 3 Non-paid 4 Student 5 Homemaker 6 Retired 7 Unemployed (able to work) 8 Unemployed (unable to work) 9 Refused 88	C8
How many people live in your household including you?	Number of people <input type="text"/>	CC2
How many people older than 15 years, including yourself, live in your household? <i>Enter the total number of people living in the household who are 15 years or older. Definition of 15 years and older will be indicated as years</i>	Number of people <input type="text"/>	CC3
How many people older than 18 years, including yourself, live in your household? <i>Enter the total number of people living in the household who are 18 years or older. Definition of 18 years and older will be indicated as years</i>	Number of people <input type="text"/>	C9
What is the total average monthly income of your household, considering the last one-year period? Turkish Lira/month <i>Enter the average earnings of the household by month if refused to answer, skip to X7.</i>	per month <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> Go to X7	C10
	Refused 88	C10d
Do you have access to any means of social security?	Yes, Social Security Institution (Government Retirement Fund, Pension fund) 1 Yes, Green Card 2 Yes, Private Insurance 3 Other 4 No 5 Don't know 6	CC4

Health Status		
Question	Response	Code
What do you think about of your health status in general? <i>Read options</i>	Very Good 1	HS 1
	Good 2	
	Average 3	
	Bad 4	
	Very Bad 5	

Step 1 Behavioural Factors Affecting Health		
Tobacco Use		
Now I am going to ask you some questions about tobacco use.		
Question	Response	Code
Do you currently smoke any tobacco products such as cigarettes, hand-rolled cigarettes, pipes, cigars and water pipes/shisha? (USE SHOWCARD) <i>Ask the participant to think of any tobacco products he/she is smoking currently.</i>	Yes 1 No 2 If No, go to T8	T1
Do you currently smoke tobacco products daily? <i>This question is only for current smokers of tobacco products.</i>	Yes 1 No 2	T2
How old were you when you first started smoking? <i>For current smokers only. Ask the participant to think of the time when he/she started to smoke any tobacco products.</i>	Age (years) Don't know 77 <input type="text"/> <input type="text"/> <input type="text"/> If Known, go to T5a/T5aw	T3
Do you remember how long ago it was? (RECORD ONLY 1, NOT ALL 3) Don't know 77 <i>If the participant doesn't remember his/her age when smoking started, then record the time in years, months or weeks as appropriate.</i>	In Years <input type="text"/> <input type="text"/> <input type="text"/> If Known, go to T5a/T5aw	T4a
	OR in Months <input type="text"/> <input type="text"/> <input type="text"/> If Known, go to T5a/T5aw	T4b
	OR in Weeks <input type="text"/> <input type="text"/> <input type="text"/>	T4c

On average, how many of the following products do you smoke each day/week? (IF LESS THAN DAILY, RECORD WEEKLY) (RECORD FOR EACH TYPE, USE SHOWCARD) Don't Know 7777 <i>For current smokers only. Specify zero if no products were used in each category instead of leaving categories blank.</i> <i>Record daily consumption for daily smokers. If products are smoked less than daily by daily smokers, enter weekly consumption. Also enter weekly consumption for current, non-daily smokers.</i> <i>VERIFY THIS IS # OF CIGARETTES, NOT PACKS</i>	DAILY↓	WEEKLY↓	
	Manufactured cigarettes	<input type="checkbox"/>	<input type="checkbox"/>
Hand-rolled cigarettes	<input type="checkbox"/>	<input type="checkbox"/>	T5b/T5bw
Pipes full of tobacco	<input type="checkbox"/>	<input type="checkbox"/>	T5c/T5cw
Cigars, cheroots, cigarillos	<input type="checkbox"/>	<input type="checkbox"/>	T5d/T5dw
Number of Waterpipe/Shisha sessions	<input type="checkbox"/>	<input type="checkbox"/>	T5e/T5ew
Other	<input type="checkbox"/>	<input type="checkbox"/>	T5f/T5fw
Other (please specify):	<input type="checkbox"/>	<input type="checkbox"/>	T5other/ T5otherw
If you are using daily or weekly water pipe (Shisha) how old were you when you first started using?	Age <input type="checkbox"/>		TX1
During the past 12 months, have you tried to stop smoking ? <i>For current smokers only. Ask the participant to think of any quit attempt during the past 12 months.</i>	Yes 1	No 2	T6
During any visit to a doctor or other health worker in the past 12 months, were you advised to quit smoking tobacco? <i>For current smokers only. Ask the participant to think of visits to a doctor or other health worker during the past 12 months. If no visit, select "no visit during the past 12 months".</i>	Yes 1 If T2=Yes, go to T12; if T2=No, go to T9	No 2 If T2=Yes, go to T12; if T2=No, go to T9	T7
In the past, did you ever smoke any tobacco products? (USE SHOWCARD) <i>Ask the participant to think of the time when he/she may have been smoking tobacco products.</i>	Yes 1	No 2 If No, go to T12	T8
In the past, did you ever smoke daily ? <i>Ask the participant to think of the time when he/she may have been smoking tobacco products on a daily basis.</i>	Yes 1 If T1=Yes, go to T12, else go to T10	No 2 If T1=Yes, go to T12, else go to T10	T9

<p>How old were you when you stopped smoking?</p> <p><i>Ask the participant to think of the time when he/she stopped smoking tobacco products.</i></p>	<p>Age (years) <input type="text"/> <input type="text"/> <input type="text"/> <i>If Known, go to T12</i></p> <p>Don't Know 77</p>	T10
<p>How long ago did you stop smoking?</p> <p><i>(RECORD ONLY 1, NOT ALL 3)</i></p> <p>Don't Know 77</p> <p><i>If the participant doesn't remember his/her age when they stopped smoking, then record the time in weeks, months or years as appropriate.</i></p>	<p>Years ago <input type="text"/> <input type="text"/> <input type="text"/> <i>If Known, go to T12</i></p>	T11a
	<p>OR Months ago <input type="text"/> <input type="text"/> <input type="text"/> <i>If Known, go to T12</i></p>	T11b
	<p>OR Weeks ago <input type="text"/> <input type="text"/> <input type="text"/></p>	T11c
<p>What was the most important reason for quitting smoking tobacco?</p>	<p>In order to protect my family 1</p> <p>I was sick 2</p> <p>My family, friends wanted me to quit 3</p> <p>I was affected by Public Service Announcements 4</p> <p>I was advised by health personnel (doctors, nurses, pharmacists, etc.) 5</p> <p>Other 6</p>	TX2
<p>Do you currently use any smokeless tobacco products such as [<i>snuff, chewing tobacco, betel</i>]?</p> <p><i>(USE SHOWCARD)</i></p> <p><i>Ask the participant to think of any smokeless tobacco products that he/she is using currently.</i></p>	<p>Yes 1</p>	T12
	<p>No 2</p>	
<p>Do you currently use smokeless tobacco products daily?</p> <p><i>For current users of smokeless tobacco products only.</i></p>	<p>Yes 1</p> <p>No 2</p>	T13
<p>Do you currently use electronic cigarette?</p>	<p>Yes 1</p> <p>No 2</p>	TX3
<p>During the past 30 days, did someone smoke in your home?</p> <p><i>The participant should only think about other people, not about him-/herself. Smokers should exclude themselves.</i></p> <p><i>The question is asking about inside the participant's home. This only includes fully enclosed areas of the home.</i></p>	<p>Yes 1</p> <p>No 2</p>	T17

<p>During the past 30 days, did someone smoke in closed areas in your workplace (in the building, in a work area or a specific office)?</p> <p><i>For those not working in a closed area, record "don't work in a closed area". Ask the participant to think of seeing somebody smoke or smelling the smoke in indoor areas at work during the past 30 days.</i></p>	<p>Yes 1</p> <p>No 2</p> <p>Don't work in a closed area 3</p>	T18
<p>Do you support tobacco control laws imposing a ban on smoking in closed places and public areas such as restaurants, cafes, coffeehouses and bars?</p>	<p>Yes 1</p> <p>No 2</p> <p>Not sure/Don't know 3</p>	TX4

Alcohol Consumption

The next questions ask about the consumption of alcohol.

Question	Response	Code
<p>Have you ever consumed any alcohol such as beer, wine, raki, vodka, gin or spirits?</p> <p><i>(USE SHOWCARD OR SHOW EXAMPLES)</i></p> <p><i>Ask the participant to think of any drinks that contain alcohol, with the exception of alcohol-based medication that is taken due to health reasons.</i></p>	<p>Yes 1</p> <p>No 2</p>	A1
<p>Have you consumed any alcohol within the past 12 months?</p> <p><i>Ask the participant to think of any drinks that contain alcohol, with the exception of alcohol-based medication that is taken due to health reasons.</i></p> <p><i>Even if the participant has only consumed a few sips of alcohol in the past 12 months, the response should be "Yes".</i></p>	<p>Yes 1</p> <p>No 2</p>	A2
<p>Have you consumed any alcohol within the past 30 days?</p> <p><i>Select the appropriate response. Even if the participant has only consumed a few sips of alcohol in the past 30 days, the response should be "Yes".</i></p>	<p>Yes 1</p> <p>No 2</p>	A5
<p>During the past 30 days, how many times did you have six or more standard drinks in a single drinking occasion?</p> <p><i>Ask the participant to think of the past 30 days only, and to report the number of occasions when he/she had six or more standard drinks.</i></p>	<p>Number of times <input type="text"/></p> <p>Don't Know 77</p>	A9



Addictive Drug (Substance) Consumption for example: cannabis and derivatives, volatiles (glue, bally, thinner), stimulants (ecstasy, energy drinks) heroin, cocaine

The next questions are about the consumption of addictive (substance) and will be asked only to obtain information for your health status

Question	Response	Code
Have you ever used addictive drugs (substances) other than tobacco or alcohol?	Never used 1 Tried 2 Used, but quit on my own 3 Used, but quit with treatment 4 Currently using 5	ADD1
Have you been asked whether you use drugs (substances) by health workers or doctors at a health center during the last 12 months	Yes at a Family Health Center 1 Yes at a different health institution 2 No 3	ADD2
During the past 12 months Have you noticed any information about harms of drugs (substances) use through brochures/posters, training by professionals, informative meetings, public service announcements <i>(detailed explanation on interviewer guide that drugs (substances) should be other than alcohol or tobacco)</i>	Yes 1 No 2	ADD3
Have you heard about "Alo 191" Anti-Substance Abuse Counselling and Support Line?	Yes 1 No 2	ADD4

CORE: Diet

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

Question	Response	Code
In a typical week, on how many days do you eat fruit? <i>(USE SHOWCARD)</i> <i>Ask the participant to think of any fruit on the showcard. A typical week means a "normal" week when the diet is not affected by cultural, religious, or other events. Ask the participant to not report an average over a period.</i>	Number of days  If Zero days, go to Don't Know 77 D3	D1
How many servings of fruit do you eat on one of those days? <i>(USE SHOWCARD)</i> <i>Ask the participant to think of one day he/she can recall easily. Refer to the showcard for serving sizes.</i>	Number of servings  Don't Know 77	D2

<p>In a typical week, on how many days do you eat vegetables? (USE SHOWCARD)</p> <p><i>Ask the participant to think of any vegetable on the showcard. A typical week means a “normal” week when the diet is not affected by cultural, religious, or other events. Ask the participant to not report an average over a period.</i></p>	<p>Number of days <input type="text"/> If Zero days, go to Don't Know 77 D5</p>	<p>D3</p>
<p>How many servings of vegetables do you eat on one of those days? (USE SHOWCARD)</p> <p><i>Ask the participant to think of one day he/she can recall easily. Refer to the showcard for serving sizes.</i></p>	<p>Number of servings <input type="text"/> Don't know 77</p>	<p>D4</p>
<p>How often do you consume sugar added beverages (fizzy or unfizzy) such as juice, fruit nectars, concentrated juice, fruit syrup and sugar added tea or coffee etc.?</p>	<p>Always 1 Often 2 Sometimes 3 Rarely 4 Never 5 Don't know 77</p>	<p>DX1</p>
<p>How often do you consume processed food high in sugar? By processed food high in sugar, I mean foods that have been altered from their natural state, such as candies, sweets, jelly beans, hard/soft candies, all chocolate types (sold separately, or added; chocolate chips, creamy chocolate, chocolate drops etc.), desserts with sherbet or syrups; cake, pastry and cookies with cream or chocolate filling or jelly.</p>	<p>Always 1 Often 2 Sometimes 3 Rarely 4 Never 5 Don't know 77</p>	<p>DX2</p>

Dietary salt

With the next questions, we would like to learn more about salt in your diet. Dietary salt includes ordinary table salt, unrefined salt such as sea salt, iodized salt, salty stock cubes and powders, and salty sauces such as soya sauce or fish sauce (see showcard). The following questions are on adding salt to the food right before you eat it, on how food is prepared in your home, on eating processed foods that are high in salt, and questions on controlling your salt intake. Please answer the questions even if you consider yourself to eat a diet low in salt. *Read this opening statement out loud. Don't forget to use the showcard which will help the respondent when answering to the questions.*

<p>How often do you add salt or a salty sauce such as soya sauce to your food right before you eat it or as you are eating it?</p> <p>(SELECT ONLY ONE)</p> <p>(USE SHOWCARD)</p> <p><i>Read out all the answer options. Use the showcard that shows salt and salty sauces.</i></p>	<p>Always 1 Often 2 Sometimes 3 Rarely 4 Never 5 Don't know 77</p>	<p>D5</p>
<p>How often is salt, salty seasoning, meaty bullions, premade mixes with high spice and salt content etc. or a salty sauce added in cooking or preparing foods in your household?</p> <p><i>Read out all the answer options. Select the appropriate response.</i></p>	<p>Always 1 Often 2 Sometimes 3 Rarely 4 Never 5 Don't know 77</p>	<p>D6</p>

<p>How often do you eat processed food high in salt? By processed food high in salt, I mean foods that have been altered from their natural state, such as packaged salty snacks, canned salty food including pickles and preserves, salty food prepared at a fast food restaurant, cheese, pastrami, fermented sausage, sausage, fermented carrot juice and processed meat (USE SHOWCARD) <i>Read out all the answer options. Use the showcard that shows processed food high in salt.</i></p>	<p>Always 1 Often 2 Sometimes 3 Rarely 4 Never 5 Don't know 77</p>	<p>D7</p>
<p>How much salt or salty sauce do you think you consume?</p> <p><i>Read out all the answer options and select the appropriate response.</i></p>	<p>Far too much 1 Too much 2 Just the right amount 3 Too little 4 Far too little 5 Don't know 77</p>	<p>D8</p>
<p>How important to you is lowering the salt in your diet considering your health status?</p> <p><i>Select the appropriate response.</i></p>	<p>Very important 1 Somewhat important 2 Not at all important 3 Don't know 77</p>	<p>DX3</p>
<p>Do you do any of the following on a regular basis to control your salt intake?</p> <p>(RECORD FOR EACH)</p> <p>Limit consumption of processed food</p> <p>Look at the salt or sodium content on the food labels</p> <p>Buy low salt/sodium alternatives</p> <p>Use species other than salt when cooking</p> <p>Avoid eating food prepared outside of a home</p> <p>Do other things specially to control your salt intake</p> <p>Other (please specify)</p> <p>_____</p>	<p>Yes 1 No 2 Yes 1 No 2 Yes 1 No 2 Yes 1 No 2 Yes 1 No 2 Yes 1 (if yes go to D11other) No 2</p>	<p>D11a D11b D11c D11d D113e D11f D11 Other</p>



<p>What type of oil or fat is most often used for meal preparation in your household?</p> <p>(USE SHOWCARD)</p> <p>(SELECT ONLY ONE)</p> <p><i>Select the appropriate response.</i></p>	<p>Olive oil, nut oil 1</p> <p>Sunflower seed oil, soya oil, corn oil 2</p> <p>Lard 3</p> <p>Butter 4</p> <p>Margarine 5</p> <p>Other If Other, go to D12 other 6</p> <p>None in particular 7</p> <p>None used 8</p> <p>Don't know 77</p>	D12
	Other <input type="text"/>	D12other
<p>On average, how many meals per week do you eat that were not prepared at a home? By meal, I mean breakfast, lunch and dinner. <i>Record the number of meals. Ask the participant to think of</i></p> <p><i>meals those were not prepared at a home, including his/her own home, the home of other family members or friends.</i></p>	<p>Number <input type="text"/></p> <p>Don't know 77</p>	D13
<p>How many glasses of water you drink per day?</p>	<p>Number <input type="text"/></p> <p>Don't know 77</p>	DX4

Physical Activity

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

Think first about the time you spend doing work. Think of work as the things that you have to do such as paid or unpaid work, study/training, household chores, harvesting food/crops, fishing or hunting for food, seeking employment. *[Insert other examples if needed]*. In answering the following questions 'vigorous-intensity activities' are activities that require hard physical effort and cause large increases in breathing or heart rate, 'moderate-intensity activities' are activities that require moderate physical effort and cause small increases in breathing or heart rate.

Read this opening statement out loud. It should not be omitted. The respondent will have to think first about the time he/she spends doing work (paid or unpaid work, household chores, harvesting food, fishing or hunting for food, seeking employment [Insert other examples if needed]), then about the time he/she travels from place to place, and finally about the time spent in vigorous as well as moderate physical activity during leisure time.

Remind the respondent when he/she answers the following questions that 'vigorous-intensity activities' are activities that require hard physical effort and cause large increases in breathing or heart rate, 'moderate-intensity activities' are activities that require moderate physical effort and cause small increases in breathing or heart rate. Don't forget to use the showcard which will help the respondent when answering to the questions.

Question	Response	Code
Work		
<p>Does your work involve vigorous-intensity activity that causes large increases in breathing or heart rate like <i>[carrying or lifting heavy loads, digging or construction work]</i> for at least 10 minutes continuously?</p> <p><i>[INSERT EXAMPLES] (USE SHOWCARD)</i></p> <p><i>Ask the participant to think about vigorous-intensity activities at work only. Activities are regarded as vigorous intensity if they cause large increases in breathing and/or heart rate.</i></p>	<p>Yes 1</p> <p>No 2 If No, go to P 4</p>	P1
<p>In a typical week, on how many days do you do vigorous-intensity activities as part of your work?</p> <p><i>"Typical week" means a week when the participant is engaged in his/her usual activities. Valid responses range from 1-7.</i></p>	<p>Number of days <input type="text"/></p>	P2
<p>How much time do you spend doing vigorous-intensity activities at work on a typical day?</p> <p><i>Ask the participant to think of a typical day he/she can recall easily in which he/she engaged in vigorous-intensity activities at work. The participant should only consider those activities undertaken continuously for 10 minutes or more. Probe very high responses (over 4 hrs) to verify.</i></p>	<p>Hours : minutes <input type="text"/> : <input type="text"/></p> <p>hrs mins</p>	P3 (a-b)
<p>Does your work involve moderate-intensity activity that causes small increases in breathing or heart rate such as brisk walking <i>[or carrying light loads]</i> for at least 10 minutes continuously?</p> <p><i>[INSERT EXAMPLES] (USE SHOWCARD)</i></p> <p><i>Ask the participant to think about moderate-intensity activities at work only. Activities are regarded as moderate intensity if they cause small increases in breathing and/or heart rate.</i></p>	<p>Yes 1</p> <p>No 2 If No, go to P 7</p>	P4

<p>In a typical week, on how many days do you do moderate-intensity activities as part of your work?</p> <p><i>"Typical week" means a week when the participant is engaged in his/her usual activities. Valid responses range from 1-7.</i></p>	<p>Number of days</p> <p>┌┐</p>	<p>P5</p>
<p>How much time do you spend doing moderate-intensity activities at work on a typical day?</p> <p><i>Ask the participant to think of a typical day he/she can recall easily in which he/she engaged in moderate-intensity activities at work. The participant should only consider those activities undertaken continuously for 10 minutes or more. Probe very high responses (over 4 hrs) to verify.</i></p>	<p>Hours : minutes</p> <p>┌┐ : ┌┐</p> <p>hrs mins</p>	<p>P6 (a-b)</p>
<p>Travel to and from places</p>		
<p>The next questions exclude the physical activities at work that you have already mentioned.</p> <p>Now I would like to ask you about the usual way you travel to and from places. For example to work, for shopping, to market, to place of worship. <i>[Insert other examples if needed]</i></p> <p><i>The introductory statement to the following questions on transport-related physical activity is very important. It asks and helps the participant to now think about how they travel around getting from place-to-place. This statement should not be omitted.</i></p>		
<p>Do you walk or use a bicycle (pedal cycle) for at least 10 minutes continuously to get to and from places?</p> <p><i>Select the appropriate response.</i></p>	<p>Yes 1</p> <p>No 2 <i>If No, go to P 10</i></p>	<p>P7</p>
<p>In a typical week, on how many days do you walk or bicycle for at least 10 minutes continuously to get to and from places?</p> <p><i>"Typical week" means a week when the participant is engaged in his/her usual activities. Valid responses range from 1-7.</i></p>	<p>Number of days</p> <p>┌┐</p>	<p>P8</p>
<p>How much time do you spend walking or bicycling for travel on a typical day?</p> <p><i>Ask the participant to think of a typical day he/she can recall easily in which he/she engaged in transport-related activities. The participant should only consider those activities undertaken continuously for 10 minutes or more. Probe very high responses (over 4 hrs) to verify.</i></p>	<p>Hours : minutes</p> <p>┌┐ : ┌┐</p> <p>hrs mins</p>	<p>P9 (a-b)</p>
<p>Recreational activities</p>		
<p>The next questions exclude the work and transport activities that you have already mentioned.</p> <p>Now I would like to ask you about sports, fitness and recreational activities (leisure) <i>[Insert relevant terms]</i>.</p> <p><i>This introductory statement directs the participant to think about recreational activities. This can also be called discretionary or leisure time. It includes sports and exercise but is not limited to participation in competitions. Activities reported should be done regularly and not just occasionally. It is important to focus on only recreational activities and not to include any activities already mentioned. This statement should not be omitted.</i></p>		

<p>Do you do any vigorous-intensity sports, fitness or recreational (<i>leisure</i>) activities that cause large increases in breathing or heart rate like [<i>running or football</i>] for at least 10 minutes continuously?</p> <p>[INSERT EXAMPLES] (USE SHOWCARD)</p> <p><i>Ask the participant to think about recreational vigorous-intensity activities only. Activities are regarded as vigorous intensity if they cause large increases in breathing and/or heart rate.</i></p>	<p>Yes 1</p> <p>No 2 If No, go to P13</p>	<p>P10</p>
<p>In a typical week, on how many days do you do vigorous-intensity sports, fitness or recreational (<i>leisure</i>) activities?</p> <p><i>"Typical week" means a week when the participant is engaged in his/her usual activities. Valid responses range from 1-7.</i></p>	<p>Number of days <input type="text"/></p>	<p>P11</p>
<p>How much time do you spend doing vigorous-intensity sports, fitness or recreational activities on a typical day?</p> <p><i>Ask the participant to think of a typical day he/she can recall easily in which he/she engaged in recreational vigorous-intensity activities. The participant should only consider those activities undertaken continuously for 10 minutes or more. Probe very high responses (over 4 hrs) to verify.</i></p>	<p>Hours : minutes <input type="text"/> : <input type="text"/> hrs mins</p>	<p>P12 (a-b)</p>
<p>Do you do any moderate-intensity sports, fitness or recreational (<i>leisure</i>) activities that cause a small increase in breathing or heart rate such as brisk walking, [<i>cycling, swimming, and volleyball</i>] for at least 10 minutes continuously?</p> <p>[INSERT EXAMPLES] (USE SHOWCARD)</p> <p><i>Ask the participant to think about recreational moderate-intensity activities only. Activities are regarded as moderate intensity if they cause small increases in breathing and/or heart rate.</i></p>	<p>Yes 1</p> <p>No 2 If No, go to P16</p>	<p>P13</p>
<p>In a typical week, on how many days do you do moderate-intensity sports, fitness or recreational (<i>leisure</i>) activities?</p> <p><i>"Typical week" means a week when the participant is engaged in his/her usual activities. Valid responses range from 1-7.</i></p>	<p>Number of days <input type="text"/></p>	<p>P14</p>
<p>How much time do you spend doing moderate-intensity sports, fitness or recreational (<i>leisure</i>) activities on a typical day?</p> <p><i>Ask the participant to think of a typical day he/she can recall easily in which he/she engaged in recreational moderate-intensity activities. The participant should only consider those activities undertaken continuously for 10 minutes or more. Probe very high responses (over 4 hrs) to verify.</i></p>	<p>Hours : minutes <input type="text"/> : <input type="text"/> hrs mins</p>	<p>P15 (a-b)</p>
<p>Sedentary behaviour</p>		
<p>The following question is about sitting or reclining at work, at home, getting to and from places, or with friends including time spent sitting at a desk, sitting with friends, traveling in car, bus, train, reading, playing cards or watching television, but do not include time spent sleeping.</p> <p>(USE SHOWCARD)</p>		

How much time do you usually spend sitting or reclining on a typical day? <i>Ask the participant to consider total time spent sitting at work, in an office, reading, watching television, using a computer, doing hand craft like knitting, resting etc. The participant should not include time spent sleeping.</i>	Hours : minutes <table style="display: inline-table; vertical-align: middle;"><tr><td style="border: 1px solid black; width: 20px; height: 15px;"></td><td style="border: 1px solid black; width: 20px; height: 15px;"></td></tr><tr><td style="text-align: center;">hrs</td><td style="text-align: center;">mins</td></tr></table>			hrs	mins	P16 (a-b)
hrs	mins					
History of Raised Blood Pressure						
Question	Response	Code				
Have you ever had your blood pressure measured by a doctor or other health worker? <i>Ask the participant to only consider measurements done by a doctor or other health worker.</i>	Yes 1 No 2 <i>If No, go to H6</i>	H1				
Have you ever been told by a doctor or other health worker that you have raised blood pressure or hypertension? <i>Select the appropriate response.</i>	Yes 1 No 2 <i>If No, go to H6</i>	H2a				
Have you been told in the past 12 months? <i>Only for those that have previously been diagnosed with raised blood pressure.</i>	Yes 1 No 2	H2b				
In the past two weeks, have you taken any drugs (medication) for raised blood pressure prescribed by a doctor or other health worker? <i>Ask the participant to only consider drugs for raised blood pressure prescribed by a doctor or other health worker.</i>	Yes 1 No 2	H3				
Which of the following do you currently do for managing your hypertension? <i>(select one or more)?</i>	Regular medication 1 Irregular medication 2 Herbal medication 3 Physical activity 4 Diet 5 Nothing 6 Other 7	HX1				
History of Diabetes						
Question	Response	Code				
Have you ever had your blood sugar measured by a doctor or other health worker? <i>Ask the participant to only consider measurements done by a doctor or other health worker.</i>	Yes 1 No 2 <i>If No, go to H12</i>	H6				
Have you ever been told by a doctor or other health worker that you have raised blood sugar or diabetes? <i>Select the appropriate response.</i>	Yes 1 No 2 <i>If No, go to H12</i>	H7a				
Have you been told in the past 12 months? <i>Only for those that have previously been diagnosed with diabetes.</i>	Yes 1 No 2	H7b				

What is your diabetes type?	Type 1 1 Type 2 2 Other (gestational, etc.) 3 Don't know 4	HX2
In the past two weeks, have you taken any drugs (medication) for diabetes prescribed by a doctor or other health worker? <i>Ask the participant to only consider drugs for diabetes prescribed by a doctor or other health worker.</i>	Yes 1 No 2	H8
Are you currently taking insulin for diabetes prescribed by a doctor or other health worker? <i>Ask the participant to only consider insulin that was prescribed by a doctor or other health worker.</i>	Yes 1 No 2	H9
Which of the following currently do you do for managing your diabetes? <i>(select one or more)</i>	Regular medication 1 Irregular medication 2 Herbal medication 3 Physical activity 4 Diet 5 Nothing 6 Other 7	HX3
What is the result of your latest HbA1c test done in the last 3 months?	Not measured 1 Less than 6% 2 Between 6-8% 3 Between 8-10% 4 10% and above 5 Measured but do not remember 6	HX4
History of Raised Total Cholesterol		
Questions	Response	Code
Have you ever had your cholesterol (fat levels in your blood) measured by a doctor or other health worker? <i>Ask the participant to only consider measurements done by a doctor or other health worker.</i>	Yes 1 No 2 <i>If No, go to H17</i>	H12
Have you ever been told by a doctor or other health worker that you have raised cholesterol? <i>Select the appropriate response.</i>	Yes 1 No 2 <i>If No, go to H17</i>	H13a
Have you been told in the past 12 months? <i>Only for those that have previously been diagnosed with raised total cholesterol.</i>	Yes 1 No 2	H13b

In the past two weeks, have you taken any oral treatment (medication) for raised total cholesterol prescribed by a doctor or other health worker? <i>Ask the participant to only consider drugs for raised total cholesterol prescribed by a doctor or other health worker.</i>	Yes 1 No 2	H14
Which of the following do you currently do for managing your high cholesterol? <i>(select one or more)</i>	Regular medication 1 Irregular medication 2 Herbal medication 3 Physical activity 4 Diet 5 Nothing 6 Other 7	HX5
History of Cardiovascular Diseases		
Question	Response	Code
Have you ever had a heart attack or chest pain from heart disease (angina) or a stroke (cerebrovascular accident or incident)? <i>Select the appropriate response.</i>	Yes 1 No 2 Skip to H18	H17
At what age did you first have the heart attack or chest pain from heart disease (angina) or a stroke (cerebrovascular disease)?	Years]-- ----	HX6
Are you currently taking aspirin regularly to prevent or treat heart disease? <i>"Regularly" means on a daily or almost daily basis.</i>	Yes 1 No 2	H18
Are you currently taking statins (Lovastatin/Simvastatin/Atorvastatin or any other statin) regularly to prevent or treat heart disease? <i>"Regularly" means on a daily or almost daily basis.</i>	Yes 1 No 2	H19

Family History of Chronic Diseases		
Question	Response	Code
Do any of your parents or siblings have a known diagnosed chronic disease that requires medication?	Yes 1 No 2 SKIP to next section	FH1
Do your parents or siblings have which of the diagnosed chronic disease that requires medication? (check all the apply)	Type 2 Diabetes 1 Hypertension 2 Hypercholesterolemia 3 heart attack 4 chest pain from heart disease (angina) 5 stroke (cerebrovascular accident or incident) 6 Cancer 7 Other (please specify) 8 No 9	FH2
Do any of your parents or siblings have experienced any heart attack or chest pain from heart disease (angina) before the age for man 55 and for woman 65?	Yes 1 No 2	FH3

Asthma, Chronic Obstructive Pulmonary Disease (COPD), Cancer History		
Code	Response	Code
Have you been diagnosed with asthma (including allergic asthma) by a doctor?	Yes 1 No 2	CD1
Have you been diagnosed with Chronic Obstructive Pulmonary Disease (COPD/ emphysema/chronic bronchitis by a doctor)?	Yes 1 No 2	CD2
In the past 12 months, have you been diagnosed with any type of cancer?	Yes 1 No 2 skip to next section	CD3
Could you please specify which kind of cancer have you been diagnosed with?	Specify the name of the cancer	CD4

CORE: Lifestyle Advice		
Questions	Response	Code
How do you feel about your weight?	Thin (low weight) 1 Normal weight 2 Overweight 3 Obese 4 Morbid obese 5	BW1

During the past twelve months , has a doctor or other health worker advised you to do any of the following specific for your health condition?

(RECORD FOR EACH)

Select the appropriate response. Ask the participant to only consider advice from a doctor or other health worker.

Quit using tobacco or don't start	Yes 1 No 2	H20a
Reduce salt in your diet	Yes 1 No 2	H20b
Eat at least five servings of fruit and/or vegetables each day	Yes 1 No 2	H20c
Reduce fat in your diet	Yes 1 No 2	H20d
Start or do more physical activity	Yes 1 No 2	H20e
Maintain a healthy body weight or lose weight	Yes 1 No 2	H20f

Adverse Effects of Risk Factors on Health		
Note for the interviewer: one or more options can be selected		
Questions	Response	Code
Based on what you know or believe, smoking tobacco causes which the following health problems More than one response possible	Lung disease 1 Cancer 2 Heart attack 3 Stroke 4 High blood pressure 5 None 6 Don't know/Have no idea 77	RF1
Based on what you know or believe, using too much salt or salty sauces/ tomato paste in your diet causes which of the following health problems	Hypertension 1 Heart attack 2 Renal disease 3 Stroke 4 Stomach cancer 5 None 6 Don't know/Have no idea 77	RF2
Based on what you know or believe, does consuming less fruits or vegetables cause which of the following health problem?	Heart attack 1 Stroke 2 Cancer 3 Diabetes 4 None 5 Don't know/Have no idea 77	RF3

Based on what you know or believe, being physically inactive causes which of the following health problem?	Heart attack 1 Stroke 2 Cancer 3 Diabetes 4 None 5 Don't know/Have no idea 77	RF4
Based on what you know or believe consuming too much fat causes which of the following health problem?	Heart attack 1 Stroke 2 Cancer 3 Diabetes 4 None 5 Don't know/Have no idea 77	RF5
Based on what you know or believe alcohol consumption causes which of the following health problem?	Heart attack 1 Stroke 2 Cancer 3 Liver cirrhosis 4 Psychological damage and addiction 5 No 6 Don't know/Have no idea 77	RF6
Based on what you know or believe addictive drugs (substances) consumption causes which of the following health problem?	Liver failure 1 Brain damage 2 Psychiatric diseases (depression, schizophrenia etc.) 3 Sexual impotence 4 None 5 Don't know/Have no idea 77	RF7

Cancer Screening Tests

Question	Response	Code
Have you heard that the Cancer Screenings are available for free in Family Health Centers and Cancer Early Diagnosis Screening and Training Centers (KETEM)?	Yes 1 No 2	CA1
When you were last tested for guaiac faecal occult blood test? <i>Note for the interviewer: For ages between 50-70</i>	In the last 12 months 1 More than 1, less than 2 years ago 2 More than 2, less than 5 years ago 3 More than 5 years ago 4 Never 5	CA2
Have you had a colonoscopy In the last 10 years?	Yes 1 No 2	CA3

<p>When did you last have a mammogram?</p> <p>Note for the interviewer: X-rays of breasts, For females aged between 40-69</p>	<p>In the last 12 months 1</p> <p>More than 1, less than 2 years ago 2</p> <p>More than 2, less than 5 years ago 3</p> <p>More than 5 years ago 4</p> <p>Never 5</p>	CA4
<p>When did you last have a cervical smear test?</p> <p>Note for the interviewer: For females aged between 30-65)</p>	<p>In the last 12 months 1</p> <p>More than 1, less than 3 years ago 2</p> <p>More than 3, less than 5 years ago 3</p> <p>More than 5 years ago 4</p> <p>Never 5</p>	CA5

Accidents and Injuries

Question	Response	Code
<p>In the last 12 month, were you injured as a result of an accident?</p>	<p>Yes 1</p> <p>No 2 <i>If No, go to TRT1</i></p> <p>Don't know 77 <i>If don't know, go to TRT1</i></p> <p>Refused 88 <i>If Refused, go to TRT1</i></p>	AC1
<p>Please indicate which of the following was the cause of this injury.</p> <p>Note for the interviewer: Including poisoning and injuries caused by animal or insect bites Excluding the injuries stemming from others' deliberate actions</p>	<p>Traffic 1</p> <p>Household 2</p> <p>Occupational-work 3</p> <p>Other (please specify) 4</p>	AC2
<p>If you had any accident did you need medical care ?</p> <p>Note for the interviewer: If there are more than one occurrences in the type considered, the question covers the most serious one (serious injuries that require serious medical attention).</p>	<p>Yes, an ambulatory care 1</p> <p>Yes, inpatient treatment 2</p> <p>No, did not need medical help 3</p>	AC3

Ambulatory or Inpatient Care

Note for the interviewer: The interventions in scope of One-Day Treatment are treatments lasting less than 24 hours without having inpatient and discharge procedures. These interventions are chemotherapy treatment; radiotherapy treatment; all diagnostic and operational treatments done by general and local anesthesia, intravenous or inhalation sedation; capsule endoscopy; dialysis treatments; intravenous infusion of blood, blood product of medication etc. (Ministry of Health, Medical Enforcement Declaration)

This question should only be asked of the participants who have said yes to H2a, H7a, H13a, H17, CD1, CD2, CD3.

Question	Response	Code
In the past 12 months, did you visit a hospital for your treatment of hypertension, cardiovascular disease, stroke, diabetes, cancer, chronic obstructive respiratory disease or asthma?	Yes 1 No 2 skip to next section	TRT1
What kind of treatment did you have? Note for the interviewer: one or more options can be selected	an ambulatory care 1 a care lasting less than 24 hours 2 a care lasting longer than 24 hours 3	TRT2

Ambulatory Diagnosis, Treatment and Home Care

The following questions will be asked to you for hypertension, cardiovascular disease, stroke, diabetes, cancer, chronic obstructive respiratory disease or asthma

Note to interviewer: Home care is examination, tests, analysis, treatment, medical care, monitoring and rehabilitation services including social and psychological counselling services at home in family environment provided to individuals who need homecare due to various diseases (Ministry of Health offered home Application Procedures and Principles on Health Services Directive)

Question	Response	Code
When did you last go to the dentist for yourself (apart from accompanying your children or relatives)?	Within the last one month 1 Less than 6 months ago 2 More than 6, less than 12 months ago 3 12 months or more time ago 4 Never 5	ACH1
When did you last visit a general practitioner or your family doctor, for yourself?	Within the last one month 1 Less than 6 months ago 2 More than 6, less than 12 months ago 3 12 months more time ago 4 Never 5	ACH2
In the last 4 weeks, how many times have you visited a general practitioner or your family doctor, for yourself?	□□□ times	ACH3

When did you last visit a specialist physician for yourself?	Within the last one month 1 Less than 6 months ago 2 More than 6, less than 12 months ago 3 12 months ago or more 4 Never 5	ACH4
In the last 4 weeks, how many times have you visited a specialist physician for yourself?	<input type="text"/> times	ACH5
Have you visited any health personnel other than medical doctors for yourself in the last 4 weeks?	Yes 1 No 2	ACH6
Which of the following health personnel other than medical doctors have you visited for yourself with in the last 4 weeks?	Physical therapist 1 Psychologist 2 Dietician 3 Other 4 if other then go to ACH7other	ACH7
	Other (please specify) <input type="text"/>	ACH7other
Have you received medical care at home over the last 12 months?	Yes 1 No 2	ACH8

Step 2 Physical Measurements

Blood Pressure

Interviewer ID <i>Record interviewer ID (in most cases interviewer would be the same as for behavioural measurements).</i>	<input type="text"/>	M1
Device ID for blood pressure <i>Record device ID.</i>	<input type="text"/>	M2
Cuff size used <i>Select cuff size used.</i>	Small 1 Medium 2 Large 3	M3
Reading 1 <i>Record first measurement after the participant has rested for 15 minutes. Wait 3 minutes before taking second measurement.</i>	Systolic (mmHg) <input type="text"/>	M4a
	Diastolic (mmHg) <input type="text"/>	M4b
Reading 2 <i>Record second measurement. Ask the participant to rest for another 3 minutes before taking the third measurement.</i>	Systolic (mmHg) <input type="text"/>	M5a
	Diastolic (mmHg) <input type="text"/>	M5b
Reading 3 <i>Record third measurement.</i>	Systolic (mmHg) <input type="text"/>	M6a
	Diastolic (mmHg) <input type="text"/>	M6b

During the past two weeks, have you been treated for raised blood pressure with drugs (medication) prescribed by a doctor or other health worker? <i>Select appropriate response.</i>	Yes 1 No 2	M7
Height and Weight		
Question	Response	Code
For women: Are you pregnant? <i>Pregnant women skip over height, weight, waist and hip measurements.</i>	Yes 1 <i>If Yes, go to M16</i> No 2	M8
Interviewer ID <i>Record interviewer ID (in most cases interviewer would be the same as for behavioural and blood pressure measurements).</i>	_____	M9
Device IDs for height and weight <i>Record device IDs.</i>	Height _____	M10a
	Weight _____	M10b
Height <i>Record participant's height in cm with one decimal point.</i>	in Centimetres (cm) _____	M11
Weight <i>If too large for scale 666.6</i> <i>Record participant's weight in kg with one decimal point.</i>	in Kilograms (kg) _____	M12
Waist		
Device ID for waist <i>Record device ID.</i>	_____	M13
Waist circumference <i>Record participant's waist circumference in centimetres with one decimal point.</i>	in Centimetres (cm) _____	M14
Hip Circumference and Heart Rate		
Hip circumference <i>Record participant's hip circumference in centimetres with one decimal point.</i>	in Centimeters (cm) _____	M15
Heart Rate Record <i>the three heart rate readings.</i>		M16a
Reading 1	Beats per minute _____	
Reading 2	Beats per minute _____	M16b
Reading 3	Beats per minute _____	M16c

Step 3 Biochemical Measurements

Blood Glucose

Question	Response	Code
During the past 12 hours have you had anything to eat or drink, other than water? <i>It is essential that the participant has fasted.</i>	Yes 1 No 2	B1
Technician ID <i>Record ID of the person taking the measurement.</i>	_____	B2
Device ID <i>Record device ID.</i>	_____	B3
Time of day blood specimen taken (24 hour clock) <i>Enter time measurement started.</i>	Hours : minutes _____ : _____ hrs mins	B4
Fasting blood glucose <i>Double check that the participant has fasted.</i>	mg/dl _____ . _____	B5
Today, have you taken insulin or other drugs (medication) that have been prescribed by a doctor or other health worker for raised blood glucose? <i>Select appropriate response.</i>	Yes 1 No 2	B6

Blood Lipids

Device ID <i>Record device ID.</i>	_____	B7
Total cholesterol <i>Record value for total cholesterol.</i>	mg/dl _____ . _____	B8
During the past two weeks, have you been treated for raised cholesterol with drugs (medication) prescribed by a doctor or other health worker? <i>Select appropriate response.</i>	Yes 1 No 2	B9

Triglycerides and HDL Cholesterol

Triglycerides <i>Record value for triglycerides.</i>	mg/dl _____ . _____	B16
HDL Cholesterol <i>Record value for HDL cholesterol.</i>	mg/dl _____ . _____	B17
HbA1C <i>Record value for HbA1C</i>	mmol/mol _____ . _____	B18

The WHO Regional Office for Europe

The World Health Organization (WHO) is a specialized agency of the United Nations created in 1948 with the primary responsibility for international health matters and public health. The WHO Regional Office for Europe is one of six regional offices throughout the world, each with its own programme geared to the particular health conditions of the countries it serves.

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