

## EU for Development of Statistics in Serbia

European Health interview Survey (EHIS)

# THE 2019 SERBIAN NATIONAL HEALTH SURVEY



# **THE 2019 SERBIAN NATIONAL HEALTH SURVEY**

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**Editors:**

Prof. dr Nataša Milić

Prof. dr Dejana Stanisavljević

Spec. dr med. Maja Krstić

**Authors:**

Prof. dr Nataša Milić

Prof. dr Dejana Stanisavljević

Spec. dr med. Maja Krstić

Doc. dr Verica Jovanović

Dr sc. med. Jelena Brcanski

Dr sc med. Biljana Kilibarda

Spec. dr med. Miljan Ljubičić

Spec. dr med. Mirjana Živković Šulović

Dr sc. med. Katarina Boričić

Asist. dr Tatjana Živanović Radnić

Mr sc. Jasna Milanković

Mirjana Ogrizović Brašanac

Gordana Jordanovski

Mr sc. Gordana Bjelobrk

**Proofreading:**

Prof. dr Valerija Janićijević

**Reviewer:**

Prof. dr Slavica Đukić Dejanović

**Cover design:**

Nikola Milić

**Graphical display of data:**

Marko Savić, dipl. ing.

**Translation from Serbian to English:**

Nikola Milić

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The total value of the project *EU for development of statistics* is 29.750.000 euros, in which the EU participation is 20.000.000 euros.

The Project in Serbia consists in carrying out of the four “Components” that present highly important statistical surveys: 1. Population, households and dwellings Census 2021 (PC); 2. Agricultural Census 2021 (AC); 3. European Health Interview Survey (EHIS 2019); 4. Multiple Indicator Cluster Surveys (MICS 2019).

The implementation of the third component, European Health Interview Survey, was supported by the EU funds in the amount of 300.000 euros, which financed activities such as: field work, control of the coverage and quality of the conducted survey, data logical control, calculation of indicators, data analysis, production of statistical/press releases, and preparation of the final report on the Survey.

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## **PREFACE**

The study titled "The 2019 Serbian National Health Survey", prepared by a group of authors, is the latest comprehensive presentation of valuable data on how citizens experience their health, how they care about their health, the extent to which they use health care and adopt healthy lifestyles, while relying on preventive and other health services.

The study is based on the results of the Health Interview Survey, conducted by the Republic Bureau of Statistics at the end of 2019, in cooperation with the Institute of Public Health of Serbia "Dr Milan Jovanović Batut" and the Ministry of Health of the Republic of Serbia. Moreover, when possible from the methodological aspect, the data from the Health Interview Survey of 2006 and 2013 was used.

The Health Interview Survey of Serbia in 2019 was conducted in accordance with the methodology of the European Health Interview Survey (EHIS wave 3), which ensured the comparability of health indicators of our population with the health indicators of the European Union population.

The Survey was not conducted on the territory of AP Kosovo and Metohija.

We hope that this publication will contribute to the current situation in this area, as well as to further development of an efficient and quality health care system in the Republic of Serbia.

Director

Dr Miladin Kovačević

The European Health Interview Survey – EHIS is a comprehensive international study on the health of the population which is conducted in cycles in all countries of the European Union. It is also a representative survey for calculating a large number of core health indicators of the European Union, which allow comparing the health of the population among European countries, both in the year of the survey and over time.

The publication "Health Interview Survey of Serbia in 2019" shows the main results of the national health survey of the population of Serbia, which in accordance to the methodology of the European Health Interview Survey, with the financial support of the Government of the Republic of Serbia and the European Union, was conducted in 2019. The research was conducted on a nationally representative sample, in order to obtain a reliable assessment of the health status of the population, the use of health care and the assessment of population health indicators. The results of this research represents a valuable resource for planning and evaluating activities related to health promotion and disease prevention, organization of health care and rationalization of health spending.

Minister of Health

Assoc. Professor dr Zlatibor Lončar

The fourth national survey of the health of the population of Serbia, conducted in 2019, is an important source of information on the health of the population and enables the identification of priority health problems and the planning of preventive activities. Given its periodic implementation, health surveys are a good starting point for monitoring the health status of a population. The application of a unique international methodology provides an opportunity to compare national results with the results of European Union countries that have conducted research in this cycle.

The Institute of Public Health of Serbia "Dr Milan Jovanović Batut" thanks all participants, who took part in the process of planning and conducting this research that is of national interest, with the belief that the publication "Health Interview Survey of Serbia in 2019" will fulfil its basic role - informing professionals and the general public on health and health protection of the population of Serbia.

Director

Assoc. Professor dr Verica Jovanović



# Introduction



## Health survey

Health research using surveys is one of the most important sources of health information. When conducted on a representative sample, it provides insight into the health status of the population, the use of the health care system and enables the assessment of health indicators. There are two important characteristics of health research using surveys, providing health data as seen by the population and simultaneously collecting different data (health status, personal characteristics of respondents, health-related behavior and use of health care) for the same person. As a result, an overall picture of the health of the population is obtained, which enables the identification of priority health problems and the definition of needs for preventive activities. Periodic data collection enables monitoring of changes in the health of the population over time, as well as the effects of health policy and interventions on the health status of the population. The conclusions of the research can be used in planning and evaluating activities related to health promotion, disease prevention, organization of health care and rationalization of health spending.

## European Health Interview Survey

European Health Interview Survey (EHIS) represents a periodic survey on the health of the population, with the use of widely accepted standardized instruments (interview survey), to gather reliable data about the health condition, health protection and determinants of health of the population of the European Union (EU). It also represents a representative survey for calculating a large number of European Core Health Indicators,<sup>1</sup> known as ECHI indicators, which enable the comparison of population health among European countries, both in the year of the research and over time.

The first wave of EHIS was conducted in 17 EU member states in the period from 2006 to 2009. The second wave of EHIS was conducted in all 28 EU member states, as well as in Iceland, Norway and Turkey between 2013 and 2015. Work on the third wave of EHIS was launched at the European Union Statistical Office (EUROSTAT) in 2016. During the period from 2016 to 2018, detailed discussions and consultations were organized by various bodies of the European Statistical System (ESS) including

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<sup>1</sup> [https://ec.europa.eu/health/indicators/echi/list\\_en](https://ec.europa.eu/health/indicators/echi/list_en)

the EHIS Task Force, the Technical Group for Health Research, the Working Group on Public Health Statistics and the Group of Directors of Social Statistics - National statistical institutes. Regulations on the implementation of the third wave of EHIS were made by the European Commission in 2018 as the Commission Regulation for Implementation (EU) No. 255/2018.<sup>2</sup>

## Serbian National Health Survey

The 2019 Serbian National Health Survey is the fourth national health survey of the Serbian population using the European Health Interview Survey instruments, conducted by the Statistical Office of the Republic of Serbia in cooperation with the Institute of Public Health of Serbia and the Ministry of Health of the Republic of Serbia in 2019.

In the Republic of Serbia, the National Health Survey was conducted for the first time in 2000 with the financial and technical support of the World Health Organization and UNICEF. Research under the title "Health status, health needs and utilization of health services in Serbia", was conducted by the Institute of Public Health of Serbia in cooperation with a network of public health institutes and primary health care facilities. The results of the research represented one of the baselines in creation of the health policies in Serbia in 2002. Further research was conducted in 2006, funded by the loan of the World Bank, which the Republic of Serbia received for the implementation of the project "Development of Health of Serbia". In this research the protocol and the survey from 2000 represented the starting material on which improvements and additions were made. It was made sure not to jeopardize the comparability with the findings of previous research, but was made possible to obtain answers to standardized questions, which would be used in research in the EU, concluding with the assessment of health indicators recommended by the World Health Organization<sup>3</sup> and the European Commission.<sup>4</sup> The third Serbian National Health Survey was conducted in 2013 from the funds of the project "Decentralization of services at the local level" (DILS), financed from a loan from the World Bank. The research included additional harmonization of research instruments (methodology, questionnaires, and instructions) with the European Health Interview Survey instruments – the second wave (EHIS – wave 2).

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<sup>2</sup> <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32018R0255&from=EN>

<sup>3</sup> База података „Здравље за све“ СЗО (WHO Health For All database)

<sup>4</sup> European Health Interview Survey (EHIS wave 2) - Methodological manual, Eurostat, 2012.

A step forward was made when the Statistical Office of the Republic of Serbia, in accordance with the process of accession of the Republic of Serbia to the EU and the National Program for the Adoption of the EU Acquis, included statistical data obtained by conducting the European Health Interview Survey in the Official Statistics Program for 2016-2020. In research conducted in 2019, a new harmonization of research instruments was performed with the instruments of the European Health Interview Survey – the third wave (EHIS – wave 3).<sup>5</sup> Financial support was provided by the Government of the Republic of Serbia and the Instrument for Pre-Accession Assistance (IPA) 2018.

## Research goals

The main goal is to conduct a health survey, based on a representative sample of the population, to obtain an assessment of the health of the population at the level of the Republic and at the level of four statistical regions (Vojvodina region, Belgrade region, Sumadija and Western Serbia region, Southern and Eastern Serbia region). The research is based on the need to obtain information on how people perceive their health, to what extent they use health care and how they take care of their health, accepting certain lifestyles or relying on preventive and other health services.

In order to achieve the main goal of the research, the following specific goals have been defined:

- identification of major health problems;
- description of the health condition and health needs of the population;
- assessment of geographical distribution and quantitative distribution of health indicators;
- analysis of social (in) equality in health and availability of health services;
- study of the degree of use of health care and its determinants;
- predicting possible trends in the health status of the population.

The ultimate goal of research on the health of the population of Serbia is the integration of research instruments (interview survey) into the decision-making process when creating health policies.

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<sup>5</sup> European Health Interview Survey (EHIS wave 3) - Methodological manual, Eurostat, 2018.



## Ethical and legal aspects

Ethical standards in The 2019 Serbian National Health Survey were made in line with the international Declaration of Helsinki<sup>6</sup>, adopted at the General Council of the World Medical Society in 1964. It was broadened and improved further with amendments concluded in 2013, as well as with the legislation of the Republic of Serbia. With the aim of privacy protection of the research subject and the confidentiality of the information collected, necessary measures were made in accordance with the General Data Protection Regulation (*GDPR*)<sup>7</sup>, the new European framework, which provides a way of using data of one's person, as well as with the national law on the protection of data about one's person<sup>8</sup>, Personal Data Protection Strategy<sup>9</sup> and the Law on Official Statistics<sup>10</sup> with the principle of statistical confidentiality. Participants of the research were provided with a written document containing the necessary information about the purpose of the study, the scope of their rights and a phone number meant for additional information or possible complaints. An informed notice was acquired via written signature from every participant that accepted to take part in the study. The anonymity in the study was ensured by not taking data that could identify the participant (in accordance with the Law on Official Statistics, the necessary identification was removed and replaced by a code). Databases are located on servers with special access protection, and the results of the research are published in an aggregated form, which fully secures the secrecy of individual data.

## Data collection

Three methods of data collection were used in The 2019 Serbian National Health Survey:

- 1) "face to face" interview – the collection of responses to questions in the course of verbal communication between interviewers and interviewees,

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<sup>6</sup><https://www.wma.net/policies-post/wma-declaration-of-helsinki-ethical-principles-for-medical-research-involving-human-subjects>

<sup>7</sup><https://eur-lex.europa.eu/legal-content/EN/TXT/?qid=1528874672298&uri=CELEX%3A32016R0679>

<sup>8</sup> Сл. гласник РС, бр. 87/18

<sup>9</sup> Сл. гласник РС, бр. 58/10

<sup>10</sup> Сл. гласник РС, бр. 104/09

- 2) Self-completion of the questionnaire by the participant without the participation of the interviewers and
- 3) Measurement of basic anthropometric characteristics (height and body weight) and blood pressure.

Interview "face to face" with one person involved is that the interviewer fills in a structured and partially structured survey instrument (questionnaire) in the presence of the participant.

The application of the self-completing questionnaire meant that the participant received a structured questionnaire, instructions and filled it out themselves, without the help of interviewers. The questionnaire when filled in by the participant was then handed over to the interviewer according to a special procedure.

The procedure of computer-assisted interviewing was used to fill in the questionnaire (computer-assisted personal interviewing, CAPI) and the paper-and-pencil procedures (PAPI) for the self-complete questionnaire.

Measurement of basic anthropometric characteristics (height and body weight) was performed by members of the survey team.

## Sample plan

In accordance with the recommendations for conducting the European health Interview Survey,<sup>11</sup> a sample plan was defined. The sample plan includes the planned sample size, sample selection framework, domain selection, sample allocation, sample selection stages, stratification, and sample weight calculation.

## Target population

The primary target population consisted of all persons aged 15 and over living in private (non-institutional) households in the Republic of Serbia, who represent the usual<sup>12</sup> population. Excluded are persons in collective households (student

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<sup>11</sup> European Health Interview Survey – EHIS wave 3, Methodological manual

<sup>12</sup> In the 2011. Census for the first time the concept of "usual population" was used to determine the total number of residents in one area. According to this concept, a person is thought to be a resident of one area if they themselves or with other members of the family spend the majority of their time

dormitories, dormitories for children and youth with disabilities, homes for socially endangered children, homes for pensioners, the elderly and infirm, homes for adults with disabilities, monasteries, convents, etc.). The special target population consisted of children aged 5 to 14 years.

### **Domains of research and stratification**

The main goal of the research was to obtain statistically reliable estimates for most indicators, both at the national level and for urban and other settlements, as well as for four regions: Belgrade region, Vojvodina region, Sumadija and Western Serbia region, Southern and Eastern Serbia region.

Stratification was performed according to the type of area (urban and other) and the four regions: Belgrade region, Vojvodina region, Sumadija and Western Serbia region, Southern and Eastern Serbia region.

### **Sample type**

A stratified two – stage cluster sample was used. Random samples of census districts (group of households) were selected with a probability proportional to their size, in the first stage. A sample of households in each enumeration was chosen with an equal probability in the second stage.

### **Sample size and sample allocation**

The sample size was calculated on the basis of the requirements for the precision of estimates, to assess the standard error of the indicator "proportion of persons prevented from engaging in daily activities" in accordance with EUROSTAT recommendations for conducting European Health Interview Survey.<sup>13</sup>

It is planned to obtain statistically reliable estimates at the level of Serbia as a whole, then at the level of four regions: Belgrade region, Vojvodina region, Sumadija and Western Serbia region, Southern and Eastern Serbia region, as well

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in that place, regardless of their place of residence. The total number of residents of an area is determined by the residents that have lived there a minimum of a year preceding the Census, as well as residents who have lived there shorter than 12 months, but wish to stay there a minimum of a year. The 2011. Census was not conducted on the territory of Kosovo and Metohija.

<sup>13</sup> European Health Interview Survey – EHIS wave 3, Methodological manual, Precision requirements – Annex 2

as for the population of urban and other settlements. As a compromise between the required precision of estimates and the cost of conducting the research, a sample size of 6,000 households was determined, in which about 15,000 members are aged 15 and over and about 1,500 children aged from 5 to 14. In calculating the sample size children aged from 5 to 14 years have not been taken into account.

It was determined that 10 households should be selected in each census round, taking into account the costs of conducting the survey, as well as the time required to complete the survey in the census round. Reserve households were also provided for each census round in the case that a large number of households in the census round refused to cooperate. Dividing the total number of households by the number of households in the sample per census district, it was calculated that 600 census districts should be selected.

Sample allocation by region and type of settlement, is proportional to the number of persons aged 15 and over in these contingents, based on current demographic estimates of 2018. Table 1 shows the allocation of census districts and the planned number of households by strata.

A sample of 5,114 households was realized that counted 15,621 persons (Table 2), from which 13,589 aged 15 and over and 1,493 children aged 5 to 14.

Table 1. A location of census districts and number of households by strata

	Number of census districts			Number of households		
	Total	Urban	Other	Total	Urban	Other
Belgrade Region	143	116	27	1,430	1,160	270
Vojvodina	160	96	64	1,600	960	640
Sumadija and Western Serbia	166	80	86	1,660	800	860
Southern and Eastern Serbia	131	68	63	1,310	680	630
Total	600	360	240	6,000	3,600	2,400

Table 2. Distribution of sample and number of individuals

	Number of households			Number of individuals
	Urban	Other	Total	
Belgrade Region	960	238	1,198	3,648
Vojvodina	776	548	1,324	3,582
Sumadija and Western Serbia	696	807	1,503	4,892
Southern and Eastern Serbia	524	565	1,089	3,499
Total	2,956	2,158	5,114	15,621

## Sample selection frame and sample selection

The 2011 census of the Republic of Serbia was used as a framework for sampling. Census circles formed for the purposes of conducting the census, where they were defined as primary sample units and were selected from each stratum systematically with a probability of choice proportional to size, and the size measure was the number of households in each census circle based on the 2011 Census. Within each stratum, the census districts are sorted according to the municipality to which they belong and the ordinal number within the municipality. In this way, with systematic selection, a high level of implicit geographical stratification and effective sample distribution is ensured. Households within each census round were selected with equal probability (simple random) from the list of households recorded in the 2011 Census.

## Calculation of weights

In order for the estimates from the sample to be representative of the observed general population, each household and person from the sample was assigned a weight. The main component of the weight is the reciprocal value of the product of the probability of selection in each stage for each stratum and represents the basic weight (weight of the sample plan). The second weight component takes into account the level of non-response for the household. Upon completion of fieldwork, response rates were calculated for each stratum. They were used to correct the sample plan weights calculated for each census round.

The final weight for the person and the household was calculated on the basis of the adjusted weight for the household, using the calibration method. Adjusted household weights are multiplied by calibration factors so that population estimates are obtained in accordance with current demographic estimates for 2019. The conditions that were met when calculating the calibration factors are as follows: population distribution by sex (two groups) and by five years of age (16 groups), at the regional level (NSTJ level 2) and household distribution by number of household members (six groups), provided that the household and each person from the observed household have the same final weight, which provides consistent estimates on a household and person basis.

Sample weights were associated with all databases and analyses were performed by weighting the data for each household and individual.

## Time period of data collection

The survey was conducted during three months (October - December) in 2019, in accordance with the recommendations of the European Health Interview Survey – the third wave that suggests that the period of field data collection must last at least three months, of which at least one month must be in September–December i.e. in autumn.<sup>14</sup>

## Research instruments

Three types of questionnaires and a measurement form were used in the research:

- 1) A household info panel, which was used to collect information about all members of the household, i.e. socio-economic characteristics of the household itself;
- 2) A questionnaire was given to each member of the household aged 5 and over (two versions of this questionnaire were used, one for each adult member of the household ages 15 and older, and another for every child and adolescent aged 5 to 14); and
- 3) A self-completion questionnaire, which was filled in independently by each member of the household aged 15 and over. This type of questionnaire was used due to the sensitivity of the questions concerning the use of alcohol, drugs, sexual activities and other. It was not found suitable to fill in by the face to face method.
- 4) A form for objective measurement findings. Blood pressure, height and body weight were measured for all household members aged 15 and over. For children aged 5 to 14, only body height and weight were measured.

## Training process and field work

In order to achieve the appropriate quality of the collected data, high rates of household responses and to ensure the sample is representative, before the start of the field work, a selection of members was made. Proper training was given to the interviewers and guidelines were handed down to the supervisors. Seventy teams were formed for the immediate field realization of the research. Each team consisted of two members – one health worker, i.e. nurse/technician or doctor, and

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<sup>14</sup> <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32018R0255&from=EN>

one interviewer, with experience in conducting survey research. Sixteen field supervisors were in charge of supervising and controlling the field work. Each supervisor was on average in charge of supervising four teams. The supervisors responded directly to the coordinators. Eight coordinators were organized in four teams. Each team consisted of one expert, a member of the Research Implementation Team and one IT expert. Each of the team coordinators was in charge of the territory of one region and, on average, took charge over four supervisors, i.e. 16 teams of interviewers.

### **Media campaign**

In order to inform the public and motivate citizens to participate in the research, a media campaign was conducted through advertising in the print media and on the Internet. Immediately before the start of the field research, there was information about the implementation of the research throughout the country, via radio and television, especially on local radio and television stations. In order to inform the participants about the research, as well as to provide all the necessary ethical prerequisites for conducting the research, letters for households (prenotification of first contact) and respondents were prepared, which contained basic information related to the research. In addition, IDs and credentials were made that would be carried by the interviewers during the field research. The Ministry of Health developed and implemented a campaign that included the slogan and visual identity of the research, as well as a promotional film.

### **Monitoring and control of the research process**

The control procedure of the whole research process, during all its phases, included sampling control and field work control. Sampling control included monitoring the work of interviewers in the process of selecting households, i.e. the use of surrogate households. Control of field work meant control of completed surveys and the number of appropriate household members to be surveyed. Also, during the survey period, the Statistical Office of the Republic of Serbia conducted a control of work through direct contact of households on 25% of the total sample: 15% of households were contacted by phone, while 10% were contacted through field control, i.e. by visiting the household. The Control is implemented to include at least one household visited by each survey team. For the purposes of the control,



a special questionnaire was prepared and filled out by supervisors. The results of the control showed that the data collection procedure was completed adequately.

## Respondents' participation in the research and response rate

A total of 5,114 households and 15,621 respondents were included in the survey. Out of a total of 6,335 contacted households, 5,114 of them agreed to participate in the research. The response rate of the households was 80.7%.

Out of a total of 13,589 registered members of households aged 15 and over, 13,178 of them agreed or was able to be surveyed, which gives a response rate of 97.0%. Out of the number of people who agreed to be interviewed, 11,790 agreed to fill in the self-complete questionnaire (response rate 89.5%), while 11,474 agreed to have their measurements taken (response rate 87.1%).

Out of a total of 1,493 registered household members aged 5 to 14, 1,465 parents/guardians agreed to respond to the survey, hence the response rate for the age group of children of 98.1%. Out of the total number of children who participated in the research, 1,285 of them were given consent for the measuring of their height and weight (response rate 87.7%).

## Data presentation

The 2019 Serbian National Health Survey is presented through a wide range of health indicators grouped into several main categories: health status, determinants of health, health care, children's health and the health of elderly.

**Health status:** A number of indicators were used to obtain an overall picture of the health status of the population, such as: self-assessment of general health, frequency of specific diseases and conditions, presence of functional limitations, injuries, pain and mental health.

**Determinants of health:** In this section, indicators of positive and negative habits and behaviors that affect the health status of the population of Serbia are presented. Habits related to a healthy diet and regular physical activity are included, as determinants that have a positive impact, but also alcohol, tobacco abuse and drug use, as determinants that have a negative impact on health.

**Health care:** In this chapter, the use of outpatient and inpatient health care, the use of medications and the unmet needs for health care are presented. Also, indicators of preventive services are presented, such as screening for detecting the presence of risk factors for the development of chronic non-communicable diseases and screening for early detection of cancer.

**Children's health and the health of the elderly:** This chapter discusses a series of indicators of health status, determinants of health and use of health care in selected population groups, such as children and the elderly population. Among the elderly residents, issues of social support were especially analyzed.

In addition to the results of the research presented at the population level, the key indicators are presented in relation to the sex and age of the population of Serbia, then according to socio-economic characteristics – education and household income. In relation to household income, the respondents were classified from the lowest to the highest value of household income in 5 categories (quintiles), so that the poorest is in the first quintile, and the wealthiest in the fifth. The results of the research are also presented according to the regions and the type of settlements in which the respondents live. The results of this research were compared, where it was possible from the methodological aspect, with the results of the health surveys from 2006 and 2013.



# Socio-demographic characteristics



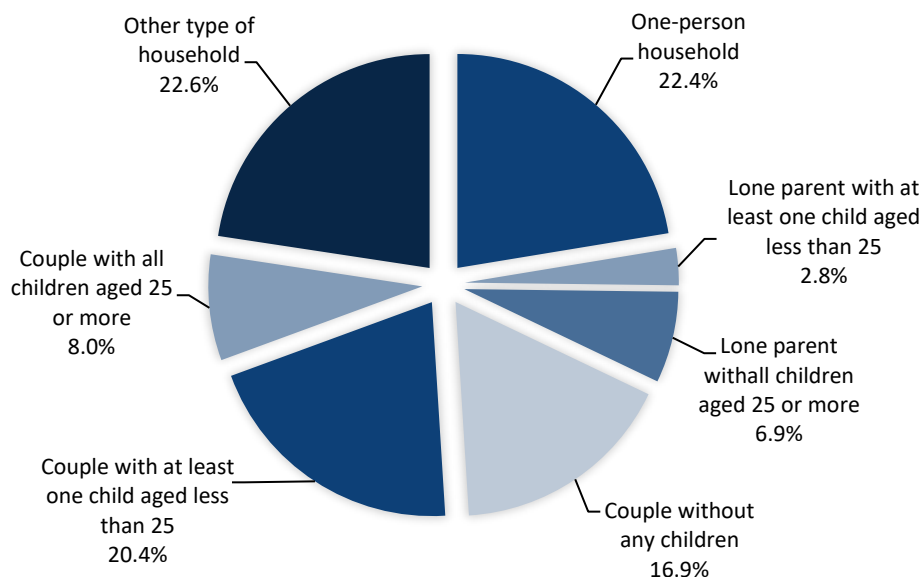
The health of the population is determined by the individual characteristics of individuals (gender, age, etc.) and environmental factors – social, economic, living and cultural environment and their mutual influence. Thus, unemployment or poverty are recognized as factors that have negative effects on health, and education as a factor that plays a significant role in developing the skills and knowledge needed for positive lifestyle changes. Health research makes it possible to identify differences in the health and health needs of the population that are related to socio-demographic characteristics and identify the most vulnerable categories of the population. Therefore, when studying the influence of social factors on health, great attention is paid to the demographic and socio-economic determinants of health. This enables the identification of the most vulnerable categories of the population, as well as differences in health and health needs as a basis for decision-making in health care at all levels of the state and society.

## Households

A total of 5,114 households were included in The 2019 Serbian National Health Survey, of which from Vojvodina 1,324, Belgrade region 1,198, Sumadija and Western Serbia 1,503, and Southern and Eastern Serbia 1,089 households. Urban areas belonged to 2,956 households, and other areas 2,158.

In 2019, the average surveyed household in Serbia consisted of three members (2.9), which is equal to the average number of household members from 2013 and 2006. The structure of households in Serbia in 2019 is shown in Graph 1.

Graph 1. Household structure by family composition

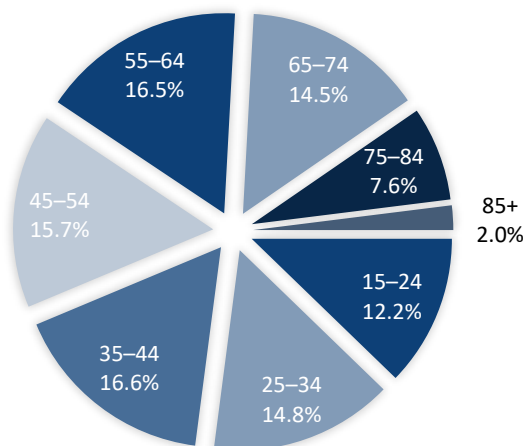


## Population aged 15 and over

A total of 13,178 respondents were interviewed in Serbia aged 15 and over, of which in Vojvodina 2,963, Belgrade region 3,061, Sumadija and Western Serbia 4,233 and Southern and Eastern Serbia 2,921. In urban settlements 7,215 persons were surveyed, and in other settlements 5,963.

According to gender, 51.2% are females and 48.8% of respondents are male. The distribution of respondents by age categories is shown in Graph 2.

Graph 2. Age structure of the study population



Observed by marital status, slightly more than half of the population (57.6%) aged 15 and over are married (or cohabiting), about 24% have never been married, while 13% are widows and widowers and 5.5% are divorced.

In Serbia, the largest percentage of the population aged 15 and over has secondary education (55.3%), a quarter have completed primary school or lower education than primary (24.8%), while 19.9% of the adult population has tertiary or higher level of education.

### Population aged 65 and over

Out of a total of 13,178 surveyed residents aged 15 and over, 3,705 were elderly people (65 years and older), of which 859 in Vojvodina, 854 in Belgrade region, Sumadija and Western Serbia 1,106, and Southern and Eastern Serbia 886. In urban settlements, 2,002 elderly people were surveyed, and in other settlements 1,703.

Of the total number of persons older than 65, 57.1% are women, while the share of men is 42.9%, mostly aged 65 to 74 (60.3%), then from 75 to 84 years (31.6%), while the person aged 85 and over was 8.2%



## Children aged 5 to 14 years

In the Survey, through health interviews with a parent/guardian, health data was collected for 1,465 children aged 5 to 14, of which 342 in Vojvodina, 358 in the Belgrade region, 457 in Sumadija and Western Serbia and 308 in Southern and Eastern Serbia. 799 children were surveyed in urban settlements, and 666 in other settlements. Slightly observed by gender there are more boys (51.5%) than girls (48.5%). Children aged 5 to 10 years were 58.4%, while the children aged from 11 to 14 represented 41.6%.

**Health status**



The central area of Survey is the estimation of the health status of the population as a whole and in relation to specific health problems. This section covers various aspects and dimensions of health: physical and mental health, chronic and temporary problems, specific conditions, as well as their general impact on functioning and limitations in the activities of the respondents' daily lives.

## Health status – Minimum European Health Module

Self-assessment of general health is a subjective assessment of the respondents about their own health and is often significantly related to the objective state of health and quality of life of the population.<sup>15</sup> This indicator contributes to the assessment of the health status and health needs of the population, health inequalities, aging and the burden of disease. In addition, it is a significant predictor of mortality, morbidity, functional limitation and the use of health care.<sup>16,17</sup> Self-assessment of health does not represent a substitute for an objective indicator of routine health statistics, but rather compliments them. From the aspect of health inequalities, the values of this indicator may indicate the need to create specific measures and activities aimed at mitigating differences between population groups of different sexes, ages, levels of education, property status, place of residence or other social and demographic characteristics.

In Serbia, in 2019, two thirds of the population (66.5%) perceived their general health as very good/good (significantly more in Belgrade – 72.8%) (Graph 3 ), 22.8% of the population considered their health to be fair, while every ninth resident rated their health as bad/very bad – 10.7% (significantly higher in Southern and Eastern Serbia – 13.5%). Men had a more positive picture of their own health than women: 71.3% of men rated their general health as very good/good, while among women the percentage was 62.1%. Also, significant differences were found in the self-assessment of health status (as very good/good) between residents of urban (70.1%) and other settlements (60.9%), residents in the category of the wealthiest (77.7%) and the poorest (55.7%), as well as between the most educated (80.2%)

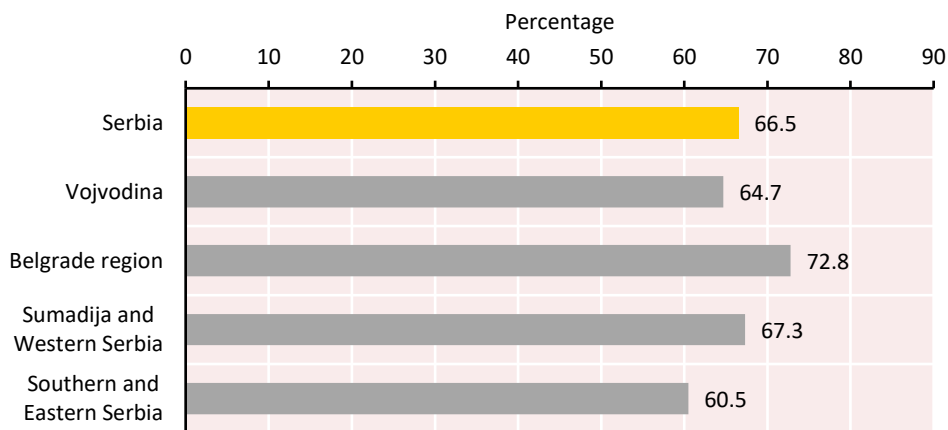
<sup>15</sup> Wu S, Wang R, Zhao Y, Ma X, Wu M, Yan X, He J. The relationship between self-rated health and objective health status: a population-based study. *BMC public health*. 2013;13(1):1-9.

<sup>16</sup> Verschuuren M, Achterberg PW, Gijzen R, Harbers MM, Vijge E, Van der Wilk EA, Kramers PG. ECHI indicator development and documentation. Joint Action for ECHIM Final Report Part II. 2012.

<sup>17</sup> Patrick D. L., Erickson P. *Health Status and Health Policy: Quality of Life in Health Care, Evaluation and Resource Allocating Resources*. Oxford University Press, 1993.

and residents of lower education (45.1%). In line with expectations, self-perceived health is related to the age of the individual: the older a person is, the more prone they are to a worse assessment of their health.

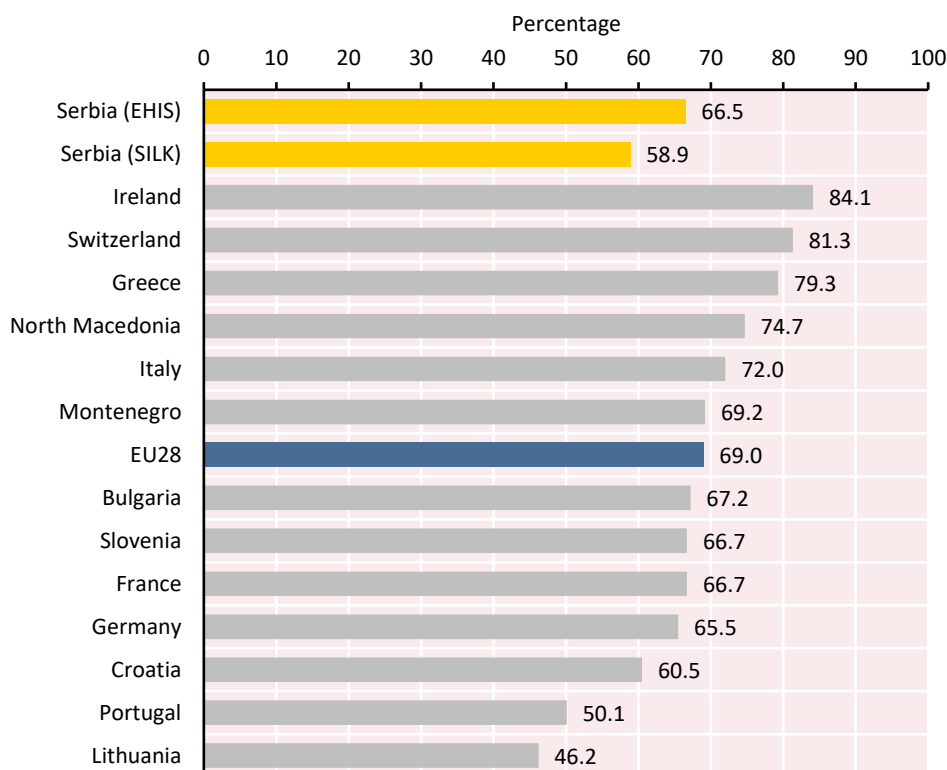
Graph 3. Percentage of population that perceived their own health as good/very good by region



Compared to the Surveys conducted in 2013 and 2006, when 57.8% and 49.8% of citizens rated their health as good/very good, in 2019, a significant improvement of this indicator was recorded. A slightly lower value of this indicator for Serbia (58.9%) was obtained in the SILK survey in 2019, in which an average of 69.0% of the EU population rated their health as good/very good,<sup>18</sup> on the basis of this indicator it can be said that Serbia is approaching the European average (Graph 4).

<sup>18</sup> Eurostat [database on the Internet]. Self-perceived health by sex, age and educational attainment level: European Commission [cited 2021 March 23<sup>rd</sup>]. Available from: <http://appsso.eurostat.ec.europa.eu/nui/submitViewTableAction.do>

Graph 4. Percentage of population that rates their own health as good/very good, Serbia (EHIS, SILK) and EU countries



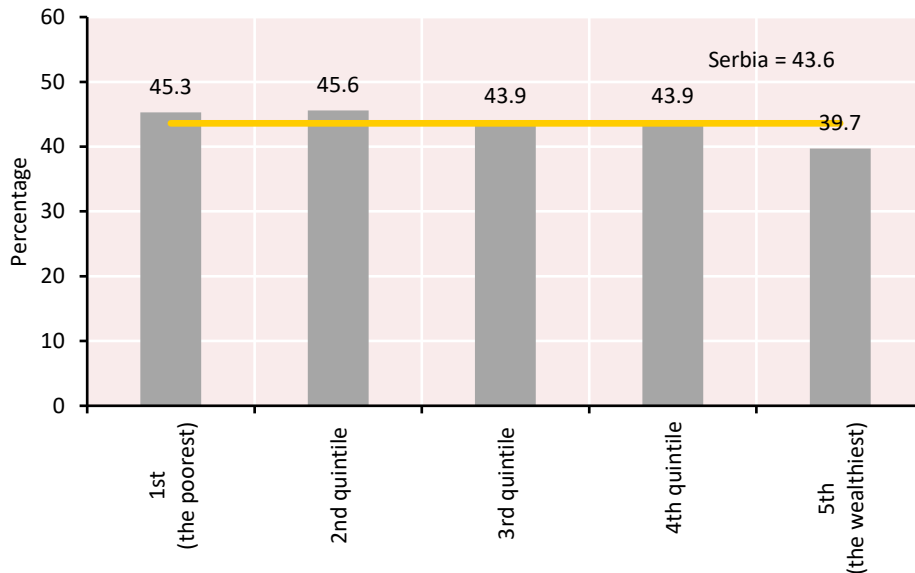
The share of the population suffering from a long-standing illness, i.e. illness or health problem lasting at least six months, is a widely used measure of general health, which contributes to the assessment of health status, disease burden and health needs of the population. The identification of this group of the population has an exceptional public health significance, considering that it is a population group that often uses the health service, which generates high costs of treatment, i.e. the engagement of significant resources of the health care system.<sup>19</sup>

The existence of an illness or health problem that lasts at least 6 months (or that is expected to last that long) was recorded in 43.6% of Serbian citizens, slightly more

<sup>19</sup> Verschuuren M, Achterberg PW, Gijsen R, Harbers MM, Vijge E, Van der Wilk EA, Kramers PG. ECHI indicator development and documentation. Joint Action for ECHIM Final Report Part II. 2012.

than in 2013 (40.0%). Differences relating to socio-demographic characteristics of respondents are similar to those of the self-perceived health: a significantly higher percentage of residents who have long-standing illness is in Vojvodina (46.1%), among women (47.4%), in lower education population (57, 4%) and in poorer material status (Graph 5).

Graph 5. Percentage of the population reporting a long-standing illness or health problem according to the quintiles of household income



Modern demographic trends, especially the increase in life expectancy and the aging of the population, have contributed to an increase in the number of people with disabilities in performing daily activities that are a consequence of health problems. Quality of life related to health is particularly significant for the population that is dependent on others to perform basic activities of daily living –the elderly and people with severe limiting restrictions and chronic conditions. The existence of physical and sensory limitations reduces the capacity to perform daily activities. Measuring activities of daily living, according to the International Classification of Functioning, Disability and Health (ICF), is the first basic assessment of disability in the population in terms of the possibility of

performing personal care and household activities, as well as assessing the provision of support and needs.<sup>20</sup>

Due to health problems, in the last 6 months preceding the Survey or longer, 20.3% of the population in Serbia has been limited in their daily activities, which is a significant decrease compared to 2013 (29.9%). Women were significantly more limited in performing daily activities (22.8%), and the residents of urban settlements (24.4%), population with the lowest education (37.1 %) and the population with the poorest financial status (28.2 %), while Belgrade residents in a smaller percentage (16.1%) were limited in everyday activities in the last 6 months or longer.

## Oral health

Oral health contributes to the overall health and quality of life of an individual. Although, in most cases, dental diseases are not life-threatening, they can often cause pain, disorders of chewing and speech, as well as psychological problems that can have a long-term adverse impact on the overall health and well-being.<sup>21</sup> The prevalence of oral diseases in the population is very high. Global Burden of Disease Study from 2017 showed that the prevalence of oral diseases is in front of other diseases and conditions and in all age groups and for both sexes.<sup>22</sup> However, the level of provision of dental health care is still not enough, and it is important to mention that a high percentage of the population in the Member States of the European Union still frequently report an unmet need for dental examinations, compared to other medical services.<sup>23</sup>

<sup>20</sup> Eurostat. European Health Interview Survey (Wave 3): Conceptual Guidelines and Interview Instructions. European Commission, 2018.

<sup>21</sup> Eurostat [homepage on the Internet]. Quality of life indicators - health: European Commission [cited 2021 March 23<sup>rd</sup>]. Available from: [https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Quality\\_of\\_life\\_indicators\\_health&oldid=489448#Access\\_to\\_healthcare\\_provision](https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Quality_of_life_indicators_health&oldid=489448#Access_to_healthcare_provision)

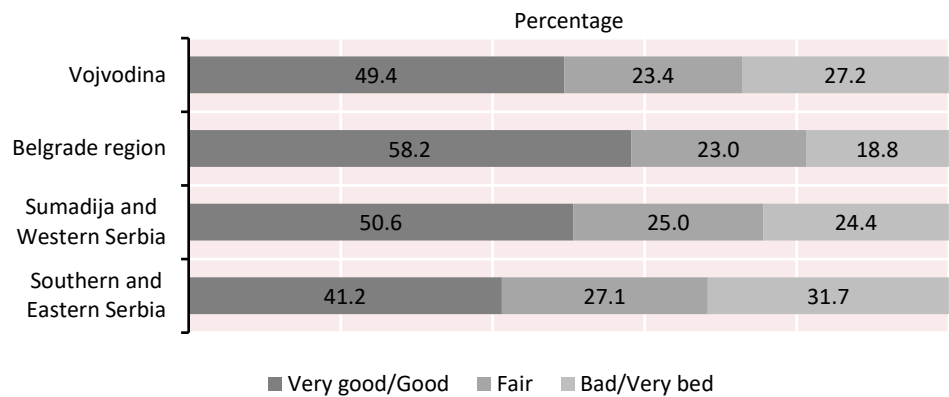
<sup>22</sup> James SL, Abate D, Abate KH, Abay SM, Abbafati C, Abbasi N, Abbastabar H, Abd-Allah F, Abdela J, Abdelalim A, Abdollahpour I. Global, regional, and national incidence, prevalence, and years lived with disability for 354 diseases and injuries for 195 countries and territories, 1990–2017: a systematic analysis for the Global Burden of Disease Study 2017. *The Lancet*. 2018;392(10159):1789-858

<sup>23</sup> Eurostat [homepage on the Internet]. Quality of life indicators - health: European Commission [cited 2021 March 23<sup>rd</sup>]. Available from: <https://ec.europa.eu/eurostat/statistics->



In 2019, 55.3% of the population in Serbia perceived the general oral health as good/very good (significantly higher in Belgrade – 58.2%) (Graph 6). Compared to the Surveys in 2013 and 2006, when this percentage was 45.6% and 27.8%, there was an improvement in the self-perceived oral health of the population of Serbia.

Graph 6. Percentage of the population that received the general oral health as good/very good by regions



The increase in the number of residents aged 25 and over who have all their teeth (from 5.6% in 2006 to 8.3% in 2013 and 16.5% in 2019) may be related to the improvement of habits related to oral hygiene. Namely, in 2019, 57.8% of the population stated that they brush their teeth more than once a day, which is significantly more than in 2013 and 2006, when it was 51.7% and 47.1% of the population, respectively. The benefit of further preservation of this trend points to the fact that the highest percentage of those who regularly brush their teeth (75.1%) is among young people aged from 15 to 24.

The frequency of the population with no natural teeth varies slightly over the years (10.2% in 2006, 12.4% in 2013 and 11.1% in 2019), as well as the frequency of use of dental prosthesis in this population subgroup (79% in 2006, 82.3% in 2013 and 80.1% in 2019). Women who have lost all of their teeth are in a higher percentage of using a dental prosthesis (83.8%) compared to men (73.4%).

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[explained/index.php?title=Quality\\_of\\_life\\_indicators\\_health&oldid=489448#Access\\_to\\_healthcare\\_provision](#)

A significant impact of socio-economic characteristics in relation to oral health indicators is still observed. In the group of residents with lower educational status and poorer material condition, there is a significantly higher percentage of those who assess their oral health as bad, who have lost all their teeth and who use a total denture, and a lower prevalence of regular brushing.

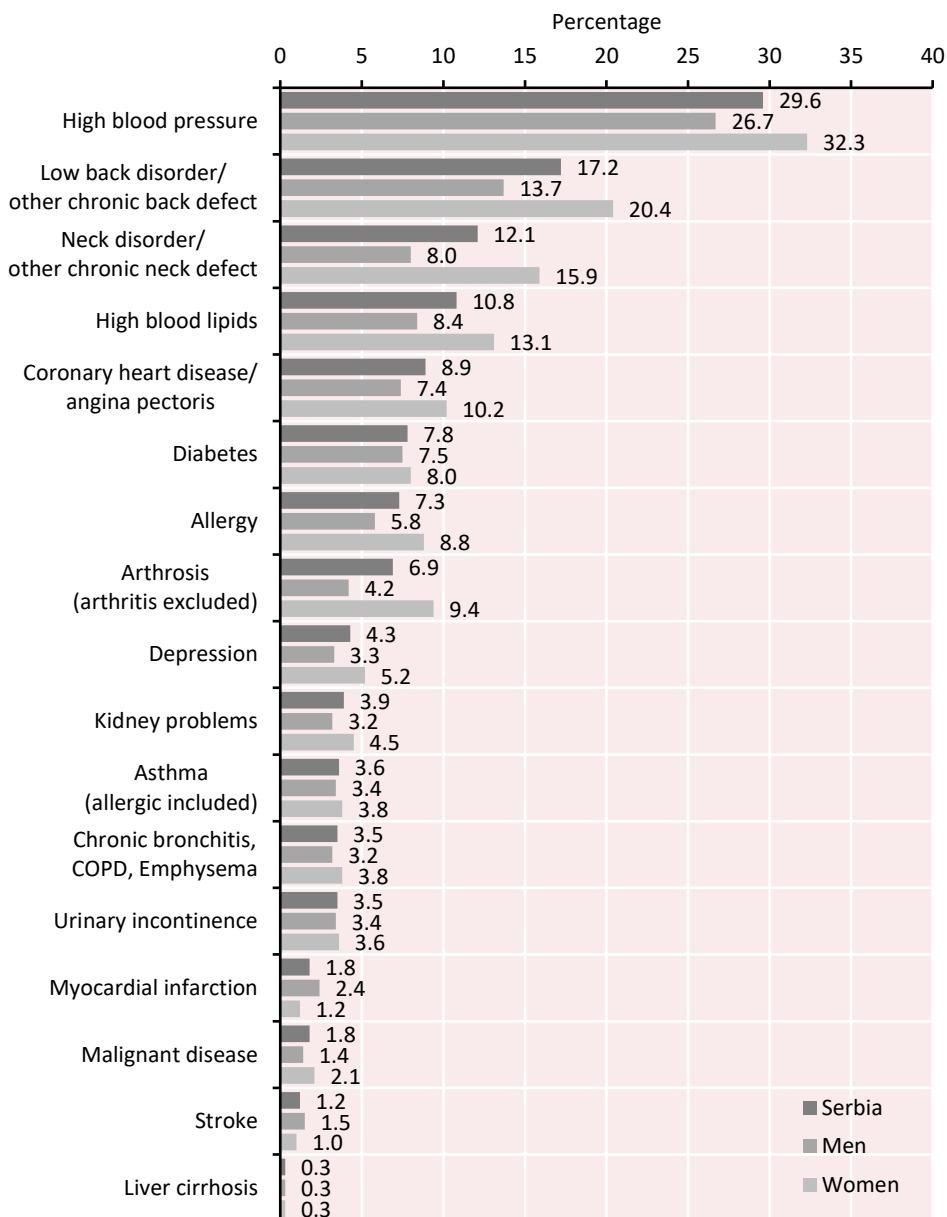
## Diseases and chronic conditions

Monitoring the prevalence of chronic non-communicable diseases is one of greatest public health importance, it is also a prerequisite for the assessment of the general health status of the population. Chronic non-communicable diseases whose treatment requires significant material costs, is the most common reason for the use of health care, which further justifies the need for their monitoring. The formulation of health policy and the assessment of health care needs significantly depend on the prevalence of these diseases.

Slightly less than half (48.8%) of Serbia's population aged 15 and over in 2019 has had at least one of 17 chronic diseases mentioned in the Survey, significantly more in the region of Southern and Eastern Serbia (52.4%), as well as Vojvodina (51.9%), women more than men (52.9% vs. 44.5%), persons older than 45 years (70.2%), residents with lower level of education (63.8%) and persons which belong to the category of the poorest (52.5%).

In the year preceding the Survey, the largest percentage of the population stated that they had high blood pressure (29.6%), followed by low back disorder or other chronic back defect (17.2%), neck disorder or other chronic neck defect (12.1%), high blood lipids (10.8%), coronary heart disease or angina pectoris (8.9%), diabetes (7.8%), allergies (7.3%), arthrosis (6.9%), depression (4.3%) and kidney problems (3.9%) (Graph 7).

Graph 7. Frequency of the most common selected diseases and chronic conditions of the population by sex and total



Diseases that were significantly more common in women in 2019 are: high blood pressure (32.3% in women and 26.7% in men), low back disorder or other chronic back defect (20.4% in women and 13.7% in men), neck disorder or other chronic neck defect (15.9% in women and 8.0% in men), high blood lipids (13.1% in women and 8.4% in men), arthrosis (9.4% in women and 4.2% in men), coronary heart disease or angina pectoris (10.2% in women and 7.4% in men) and allergies (8.8% in women and 5.8% in men). No significant difference in the incidence between the sexes was observed for the following chronic diseases and conditions: diabetes, asthma, urinary incontinence, chronic bronchitis, chronic obstructive pulmonary disease (COPD) or emphysema and liver cirrhosis. Myocardial infarction and stroke were significantly more common in men (Graph 7).

The results showed that the prevalence of the chronic diseases and conditions increased with age and that about every other person in Serbia had a chronic disease, almost every third citizen had high blood pressure, one in six a chronic problem with his back, every ninth high blood lipids, every eighth chronic problems with the neck, every eleventh coronary heart disease or angina pectoris and every fourteenth degenerative joint disease.

Table 3. Frequency of chronic diseases or conditions of the population aged 20 and over, Serbia, 2000, 2006, 2013 and 2019

<b>Disease/condition</b>	<b>2000.</b>	<b>2006.</b>	<b>2013.</b>	<b>2019.</b>
High blood pressure	19.7	23.1	33.2	31.4
Low back disorder/ other chronic back defect	18.0	/	20.3	18.2
Neck disorder/ other chronic neck defect	4.6	8.0	13.9	12.8
High blood lipids	5.7	8.0	13.0	11.5
Coronary heart disease/ angina pectoris	/	/	9.9	9.4
Diabetes	/	5.3	8.1	8.3
Allergy	/	5.3	8.9	7.5
Arthrosis (arthritis excluded)	5.0	/	11.0	7.3
Depression	4.6	6.0	6.7	4.5
Kidney problems	/	/	5.9	4.1
Urinary incontinence	3.6	/	4.4	3.7
Asthma (allergic included)	2.2	3.3	4.1	3.7
Chronic bronchitis, COPD, Emphysema	/	4.3	4.5	3.5
Myocardial infarction	/	3.3	2.6	1.9
Malignant disease	1.1	1.5	1.5	1.9
Stroke	2.0	2.7	3.6	1.3
Liver cirrhosis	/	/	0.3	0.3

For the purpose of a comparative presentation of the prevalence of the selected chronic non-communicable diseases in the period from 2000 to 2019, the morbidity of the population aged 20 and over (adult population) was specially analyzed. When monitoring the different frequency of the disease it should be taken into account the change in research methodology in 2013 and 2019 in accordance with the recommendations of the European Health Interview Survey in

which an answer to a crucial question was obtained: "Have you in the last 12 months had any of these diseases or conditions?", while the data from 2006 and 2000 mentions the number of citizens who were diagnosed with some of the mentioned diseases during their lifetime. In comparison to 2006, the year 2013 has observed an increase in the incidence of most diseases and conditions of the adult population, especially hypertension, depression, diabetes, high blood lipids and allergies. One of the reasons for the increase in the frequency of these diseases is the aging of the population, but also better coverage with preventive examinations in order to detect them in a timely manner. In 2019, however, there was a predominant decrease in the incidence of most chronic diseases and conditions in the adult population compared to 2013 (Table 3).

Hypertension is the leading cause of premature death worldwide. Due to its prevalence, it is considered one of the priority public health problems. It is estimated that 1.13 billion people in the world have hypertension. It is therefore one of the main objectives to reduce the prevalence of hypertension by 25% by 2025.<sup>24</sup>

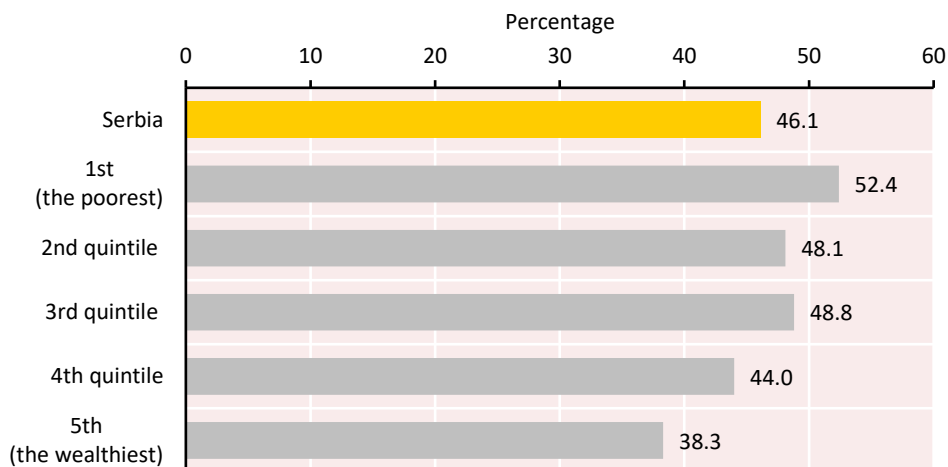
In Serbia, in 2019, 46.2% of the adult population aged 20 years or over, had hypertension or potential hypertension (when measured they had elevated systolic ( $\geq 140$  mmHg) or diastolic ( $\geq 90$  mmHg) blood pressure, or they were taking drugs for lowering blood pressure). Compared to the results of the Survey from 2013 and 2006 (47.5% and 46.5%, respectively), no significant change was registered, which indicates that the frequency of high blood pressure in the adult population remained the same.

High blood pressure was more present in the population older than 45 years (65.4%), in the region of Southern and Eastern Serbia (52.3%), in the population with a lower level of education (68.0%) and in the poorest (52.4%) (Graph 8).

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<sup>24</sup> WHO [homepage on the Internet]. Hypertension: Key facts. World Health Organization [cited 2021 March 23<sup>rd</sup>]. Available from: <https://www.who.int/news-room/fact-sheets/detail/hypertension>

Graph 8. Percentage of adult population with hypertension and potential hypertension according to household income quintiles



When measured, 31.5% of the adult population had an elevated value of systolic blood pressure, while 19.6% had an elevated value of diastolic blood pressure. In the 2013 survey, 30.7% had high systolic pressure and 19.9% had high diastolic blood pressure. Every seventh adult resident (15.1%) had elevated values of both systolic and diastolic blood pressure, which is also unchanged compared to the 2013 Survey (15.5%).

The average value of measured systolic blood pressure in the adult population of Serbia was 134.5 mmHg, and diastolic 81.6 mmHg. Significantly lower mean values of both systolic and diastolic blood pressure were measured in the female population.

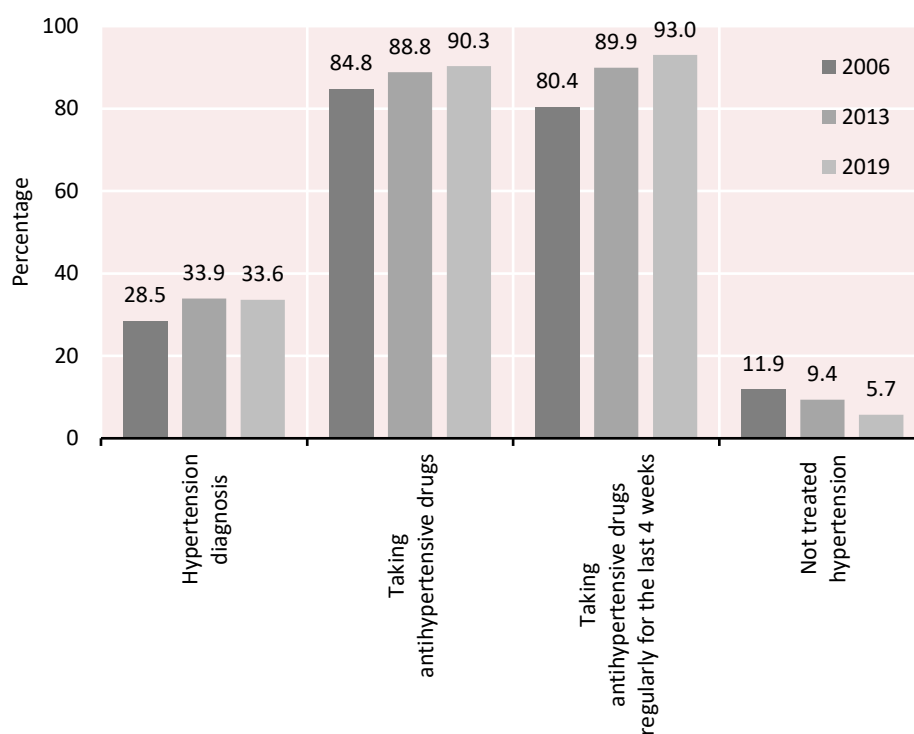
The average values of measured systolic and diastolic blood pressure in the Surveys of the adult population are shown in Table 4.

Every third adult resident of Serbia (33.6%) stated that he was diagnosed with hypertension by a doctor, similar to the value of the research from 2013 (33.9%), and more than in 2006 (28.5%) (Graph 9).

Table 4. Average values of measured systolic and diastolic blood pressure of the adult population, Serbia, 2000, 2006, 2013 and 2019.

Blood pressure	2000.	2006.	2013.	2019.
Systolic, mmHg	133.7	134.2	134.7	134.5
Diastolic, mmHg	82.7	82.0	81.4	81.6

Graph 9. Frequency and treatment of hypertension in the adult population, Serbia, 2006, 2013 and 2019.



Compared to 2013, the percentage of the adult population diagnosed with hypertension that was not treated (did not take medication nor had a special diet) decreased significantly (from 9.4% in 2013 to 5.7% in 2019). The percentage of those taking antihypertensive drugs in 2019 was 90.3%, compared to 88.8% in the 2013 survey (Graph 9).



The population of residents who were taking antihypertensive medication regularly in the month preceding the survey was 93.0% (Graph 9).

The percentage of the population that has been, for the four weeks preceding the study, taking medication regularly for lowering blood pressure and when measured had normal blood pressure was 42.3%, which is significantly higher than the 2013 and 2006 years (37.4 % and 20 .9%).

## Accidents and injuries

Injuries are a significant public health problem. Each year in the European Union about 38 million injuries occur, of which about 0.6% are fatalities, 13% required hospital treatment, while about 87% are taken care of in an outpatient setting.<sup>25</sup> Two-thirds of all injuries occur at home and in leisure time.<sup>26</sup> Injuries are the leading cause of death for residents under the age of 45.<sup>27</sup> In addition, they represent a major burden in terms of the use of health services and rehabilitation costs.

Data on injuries obtained in the National Health Survey allow the development of measures to prevent, monitor trends, set priorities of health policy and evaluate the effectiveness of the measures and interventions implemented to reduce injury of the population.

In Serbia, during 2019, 4.9% of the population had an injury (in traffic, at home or during leisure activities), more in Southern and Eastern Serbia (5.5%), and less in Sumadija and Western Serbia (4.1%). Significantly more people were injured in the age group 65 and older (7.4%), as well as persons with the lowest education (7.0%) (Graph 10). The percentage of injured is slightly lower than in 2013 (5.2%).

According to the respondents, in a home setting 2.3% were injured, when taking part in a leisure activity 2.3 % and 0.7% were in traffic.

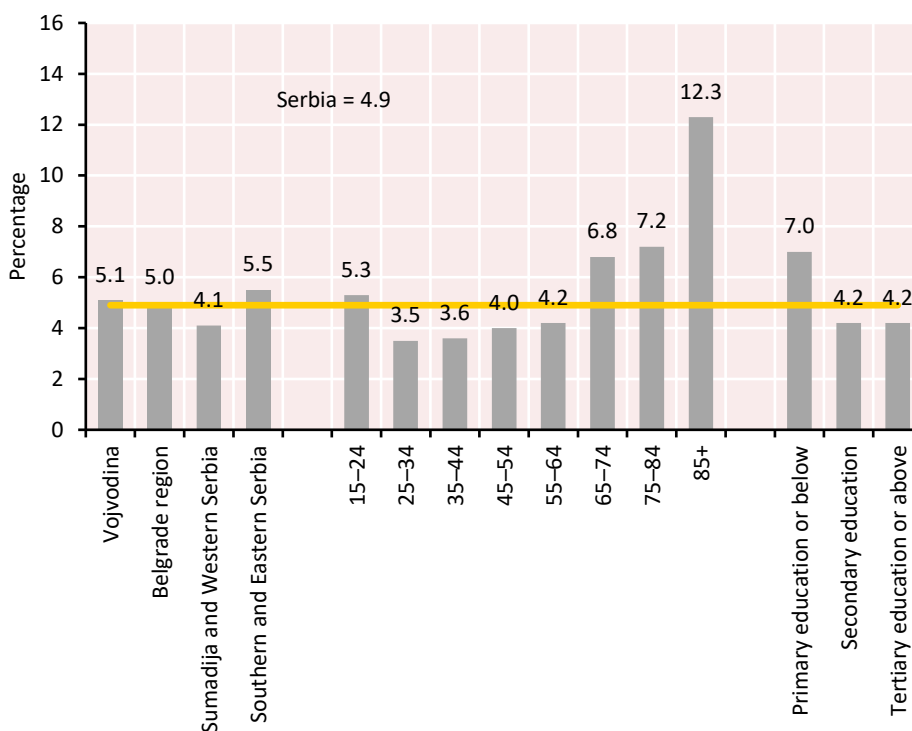
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<sup>25</sup> World Health Organization. Violence and injuries in Europe: burden, prevention and priorities for action. World Health Organization, Geneva; 2020.

<sup>26</sup> <sup>26</sup> Verschuuren M, Achterberg PW, Gijzen R, Harbers MM, Vijge E, Van der Wilk EA, Kramers PG. ECHI indicator development and documentation. Joint Action for ECHIM Final Report Part II. 2012.

<sup>27</sup> Krug EG, Sharma GK, Lozano R. The global burden of injuries. 1. J Public Health 2000;90:523-6.

Graph 10. Frequency of injuries of the population according to regions, age groups and level of education

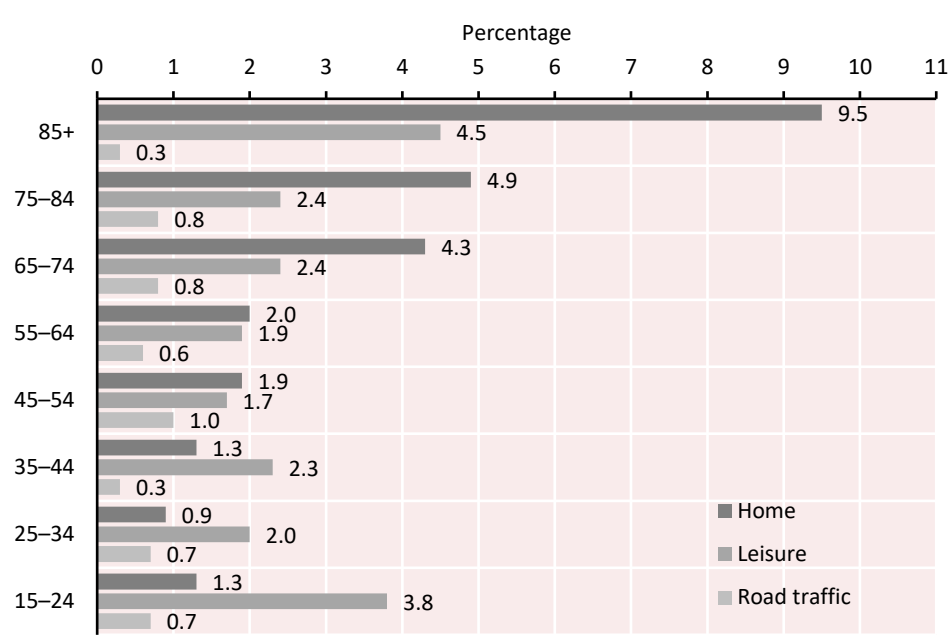


Women were significantly more often injured at home (2.7%), and men during leisure activities (2.7%).

The percentage of injuries in the home increased with age, so these injuries were significantly more common after the age of 65 (4.9%). The youngest and oldest residents were injured significantly more frequently (3.8% and 4.5%), while doing leisure activities (Graph 11). Injuries at home occurred more frequently in other settlements (3.0%) and injuries during leisure activities in urban settlements (2.6%).

Medical assistance was provided to 75.0% of the injured.

Graph 11. Frequency of injuries of the population according to the place of injury and age groups



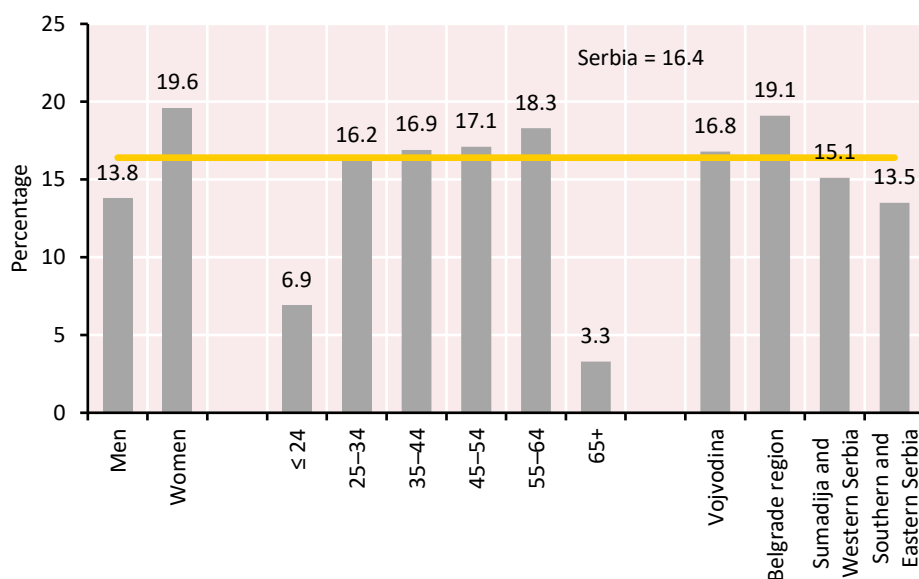
## Absence from work (due to health problems)

Absence from work due to health problems reflects the picture of the health of the working population and is an objective indicator of the illness of this population. Absence from work due to health problems causes significant financial costs for individuals, employers and the state. The analysis of the prevalence of absences from work is important because many causes can be successfully prevented, and sick leave can be significantly reduced, while at the same time preserving and improving the health of employees.<sup>28</sup>

<sup>28</sup> Marmot M, Feeney A, Shipley M, North F, Syme SL. Sickness absence as a measure of health status and functioning: from the UK Whitehall II study. *Journal of Epidemiology & Community Health*. 1995;49(2):124-30.

In Serbia, in the year preceding the Survey, every sixth (16.4%) resident was absent from work due to health problems (Graph 12). Women (19.6%) were significantly more often absent from work than men (13.8%), residents of the Belgrade region (19.1%), urban settlements (17.3%) and lower education (23.6%), while employees under the age of 24 did so in a significantly lower percentage (7.0%).

Graph 12. Percentage of population absent from work due to health problems by gender, age groups and regions



The average absence from work due to health problems was 37 days, while the average absence from work due to health problems in 2013 was 34.5 days, which is significantly less than in the 2006 survey (51.3 days). In 2019, employees with a lower level of education were absent from work for the longest time (48.1 days).

## Pain

The existence of pain is a subjective feeling associated with the well-being of an individual. The intensity and prevalence of physical pain significantly affects the performance of daily activities and the working ability of the population. Also, due to the significant impairment of the patient's quality of life, chronic pain, in addition to physical suffering, is accompanied by somatic and psychosocial consequences, which affects both the patient and those who live in their environment.<sup>29</sup> The presence of pain is one of the most common reasons for the use of health care and absence from work, representing a significant problem for society as a whole.

In Serbia, 35.4% of the population in the four weeks preceding the Survey had bodily pain, of which every sixth (15.7%) had severe or very severe pain, while in 7.2% of the population the presence of pain greatly affected their normal work. Pain was significantly more common in the population of Vojvodina (41.3%), among women (41.7%) and residents older than 55 years (50.2%). There is also a significantly higher frequency of pain among residents with lower educational status (47.5%) and the worst financial situation (39.0%), which can be partly explained by the type of work performed by members of these population groups, which usually requires physical effort.

## Mental health

Mental health is one of the basic components of an individual's health and has a significant share in the burden of diseases. Due to the high frequency of mental health problems, as well as the significant burdens that these diseases cause in health, social and economic terms, mental health should be considered as one of the priorities of public health. The economic costs caused by the presence of mental disorders make up more than 4% of GDP worldwide, depression is the leading cause of disability, and more than 800,000 suicides are committed worldwide each year.<sup>30,31,32</sup>

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<sup>29</sup> Niv D, Kreitler S. Pain and quality of life. *Pain practice*. 2001;1(2):150-61.

<sup>30</sup> OECD. *Making Mental Health Count: The Social and Economic Costs of Neglecting Mental Health Care*. Organization for Economic Co-operation and Development, Paris; 2014.,

<sup>31</sup> WHO, World Bank. *World Report on Disability*. World Health Organization, Geneva; 2011.

<sup>32</sup> *Preventing suicide: A global imperative*. World Health Organization, Geneva; 2014.

In The 2019 Serbian National Health Survey, the Patient Health Questionnaire (PHQ-8) was used to categorize the population with depressive symptoms (from minimal to symptoms of major depression), which determined that 2.1% of the population shows current depressive symptoms (Table 5), which is lower than in 2013 (4.1%).

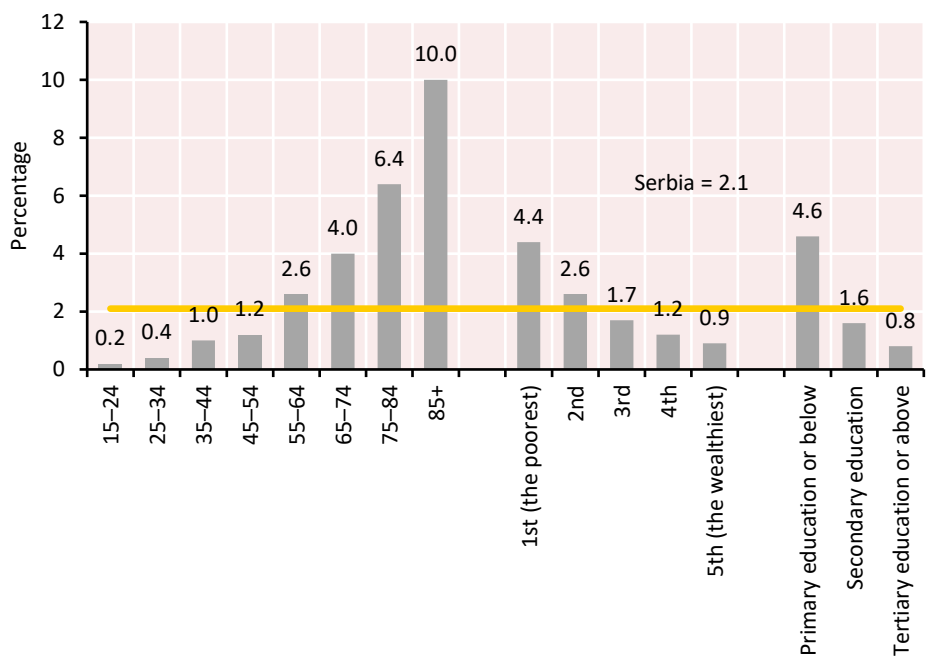
Table 5. Categorization of the population according to the symptoms of depression

Severity of current depressive symptoms	%
No depressive symptoms (PHQ-8 score 0-9)	97.9
Depression (PHQ-8 score 10-24)	2.1
Mild depression	1.4
Moderate depression	0.5
Heavy depression	0.2

A slightly higher percentage of respondents with depression was obtained based on the self-reported prevalence of depression (4.3%). In 2019, the WHO estimates that 4.3% of the population in Europe has depression.<sup>33</sup> Symptoms of depression were present in a significantly higher percentage in women (2.8%) than men (1.5%), as well as in the population older than 75 years (7.1%), the poorest (4.4%) and the lowest level of education (4.6%) (Graph 13).

<sup>33</sup> WHO [homepage on the Internet]. Depression. World Health Organization [cited 2021 March 23<sup>rd</sup>]. Available from: <https://www.euro.who.int/en/health-topics/noncommunicable-diseases/mental-health/areas-of-work/depression>

Graph 13. Percentage of population with current depressive symptoms by age groups, household income quintiles and education



# Health determinants





Determinants of health include genetic and biological determinants, behavioral (behavior, lifestyle), environmental (air quality, water, working environment) and socio-economic determinants (demographic characteristics). Health survey in this chapter predominantly study behaviors and lifestyles that affect health. The general focus is on the analysis of the representation of certain lifestyles or behaviors that have a positive or negative impact on the state of health. Desirable lifestyles are the main potential source of improving the health of the population. For public health actors in health promotion, it is necessary to regularly measure the frequency and patterns of specific health-related behaviors and their trends at the level of the population and in specific population groups. Such measurement is necessary to assess the effectiveness of programs and policies aimed at improving the health of the population, as well as to plan interventions that are in line with the needs of the population of Serbia.

## Body mass index

Malnutrition, obesity and related non-communicable diseases represent not only a health, but also an economic and social burden for individuals, families, the community and society as a whole.<sup>34</sup> Overweight affects life expectancy<sup>35</sup> and quality of life<sup>36</sup> and is associated with an increased risk of leading non-communicable diseases such as type 2 diabetes, cardiovascular disease and malignancies,<sup>37,38</sup> and an increase in overweight prevalence is a major public health issue. In the last two decades, the prevalence of obesity in Europe has tripled. In

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<sup>34</sup> WHO Regional Office Europe. European Food and Nutrition Action Plan 2015–2020 Available at [https://www.euro.who.int/\\_\\_data/assets/pdf\\_file/0003/294474/European-Food-Nutrition-Action-Plan-20152020-en.pdf](https://www.euro.who.int/__data/assets/pdf_file/0003/294474/European-Food-Nutrition-Action-Plan-20152020-en.pdf)

<sup>35</sup> Grover SA, Kaouache M, Rempel P, Joseph L, Dawes M, Lau DC, Lowensteyn I. Years of life lost and healthy life-years lost from diabetes and cardiovascular disease in overweight and obese people: a modelling study. *Lancet Diabetes Endocrinol*. 2015;3(2):114-22.

<sup>36</sup> Taylor VH, Forhan M, Vigod SN, McIntyre RS, Morrison KM. The impact of obesity on quality of life. *Best Pract Res Clin Endocrinol Metab*. 2013;27:139-146.

<sup>37</sup> Guh DP, Zhang W, Bansback N, Amarsi Z, Birmingham CL, Anis AH. The incidence of co-morbidities related to obesity and overweight: a systematic review and meta-analysis. *BMC Public Health*. 2009;9:88.

<sup>38</sup> Lauby-Secretan B, Scoccianti C, Loomis D, Grosse Y, Bianchini F, Straif K; International Agency for Research on Cancer Handbook Working Group. Body Fatness and Cancer--Viewpoint of the IARC Working Group. *N Engl J Med*. 2016;375(8):794-8.

2016, the percentage of overweight population over the age of 18 in the world was 39%.<sup>39</sup>

In the Survey, body mass index (BMI), defined as the body weight in kilograms divided by the square of body height in meters ( $\text{kg/m}^2$ ), was used as a measure of body mass assessment. Although BMI is not a diagnostic tool, it is considered to be a very useful for assessing nutrition at the population level. According to the definition of the World Health Organization, normal weight is in the range of 18.5 to 24.9  $\text{kg/m}^2$ , BMI below 18.5  $\text{kg/m}^2$  indicate malnutrition, and values of 25  $\text{kg/m}^2$  and more indicate overweight, namely pre-obesity if the BMI is from 25 to 29.9  $\text{kg/m}^2$  and obesity when the BMI is 30  $\text{kg/m}^2$  or more.<sup>40</sup>

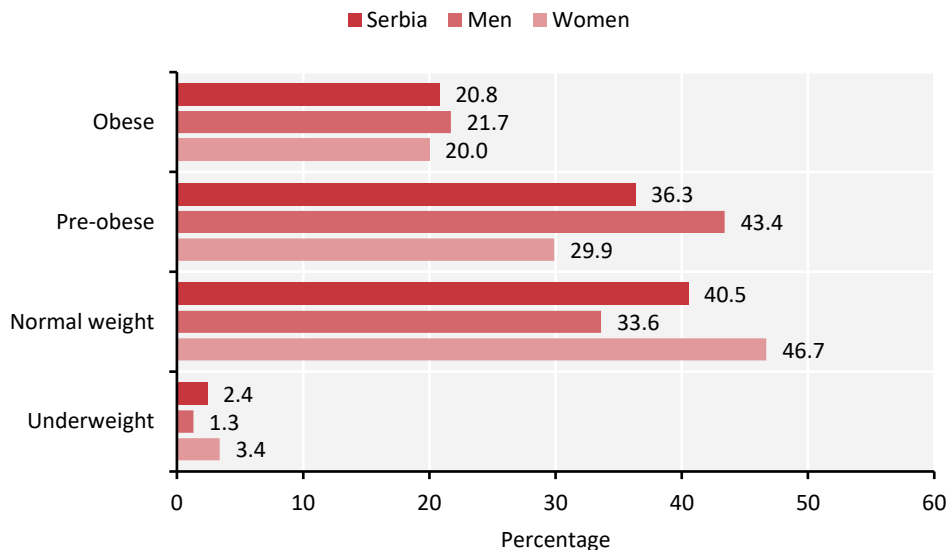
Based on the BMI calculation, in Serbia in 2019, there were 40.5% of the normal weight population aged 15 and over, while more than half (57.1%) were overweight – pre-obese (36.3%) and obese (20.8%) (Graph 14).

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<sup>39</sup> World Health Organization. Obesity and overweight – Key Facts. Available at <https://www.who.int/news-room/fact-sheets/detail/obesity-and-overweight>

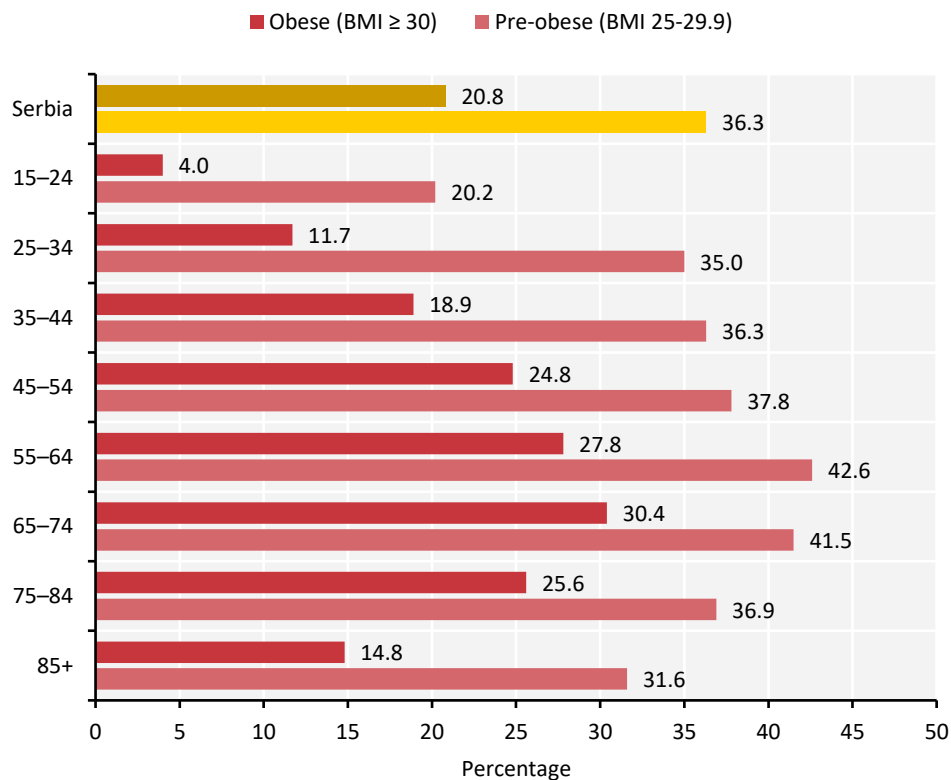
<sup>40</sup> World Health Organization. Body Mass Index – BMI. Available at <https://www.euro.who.int/en/health-topics/disease-prevention/nutrition/a-healthy-lifestyle/body-mass-index-bmi>

Graph 14. Population aged 15 and over by BMI categories and sex



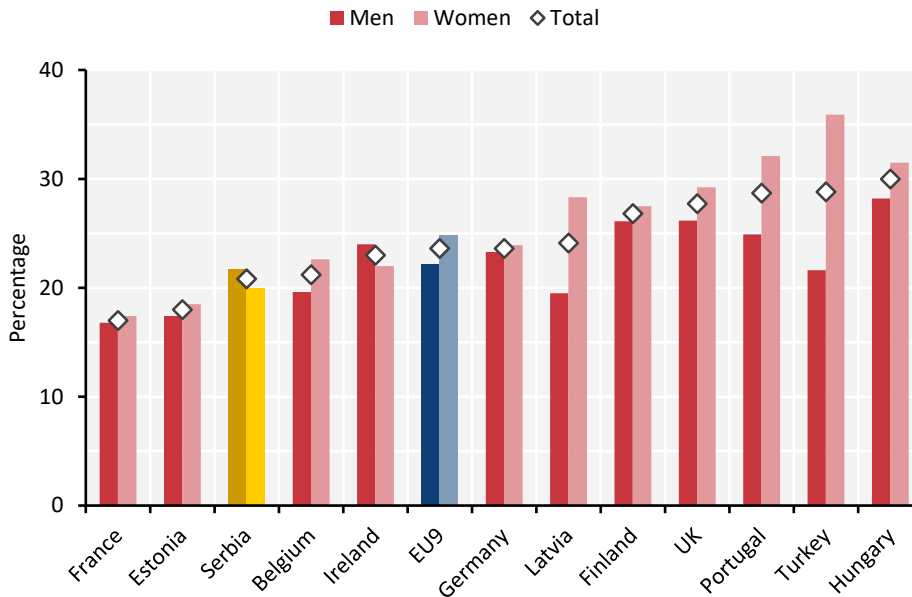
Significantly higher percentage of obese people was recorded in the population of Vojvodina (25.4%) and Southern and Eastern Serbia (23.1%), in all age groups from 45 to 84 years (Graph 15), among the poor population (25.7%), the least educated (26.6%), as well as those living in suburban settlements (23.6%). In contrast to obesity, which was approximately the same in both sexes (men 21.7%, women 20.0%), being pre-obese was more common in men (43.4%) than in women (29.9%).

Graph 15. Obese and pre-obese population by age groups



The percentage of obese residents in 2019 differs slightly compared to 2013 (21.2%), but is significantly higher compared to 2006 (17.3%). The percentage of obese inhabitants in 2019 in Serbia by sex in relation to EU countries is shown in Graph 16.

Graph 16. Obese population, Serbia (2019) and selected countries<sup>41</sup> (2018 or last available)



## Diet

Proper nutrition ensures the intake of the optimal mixture of all nutrients necessary for good health and, among other things, implies a daily balanced intake of all types of food divided into several meals during the day (breakfast, lunch, dinner and two snacks). In addition to the choice of food, the frequency of their intake is also important, as well as the way food is prepared. Energy intake should be in line with energy consumption. Malnutrition is one of the leading risk factors for many diseases such as diabetes, heart and blood vessel diseases, malignant diseases and oral diseases.<sup>42,43</sup>

<sup>41</sup> OECD Health Statistics 2020

<sup>42</sup> World Health Organization. Healthy diet – Key facts. Available at <https://www.who.int/news-room/fact-sheets/detail/healthy-diet>

<sup>43</sup> Diet, nutrition and the prevention of chronic diseases: report of a Joint WHO/FAO Expert Consultation. WHO Technical Report Series, No. 916. Geneva: World Health Organization; 2003

National Health Survey examined eating habits such as daily intake of fruits and vegetables, milk and/or dairy products, bread, fish, types of fats used in food/food preparation, the prevalence of breakfast and the habit of adding salt to food.

In Serbia, in 2019, 83.8% of the population had the habit of having breakfast every day. Residents over 65 (89.3%) and residents of Sumadija and Western Serbia (90.5%) ate breakfast significantly more often. The smallest percentage of breakfast prevalence is represented among the inhabitants of Vojvodina (73.9%).

At least one cup of milk and/or dairy products was consumed daily by 41.8% of the population, which is significantly less than in 2013, when it was 51.7%. The poorest (35.9%), residents with lower education level (38.0%) and residents of suburban settlements (36.8%) did it the least.

In Serbia, in 2019, 86.2% of the population used bread on a daily basis, significantly more often men (89.4%), older than 65 years (90.4%), residents of Southern and Eastern Serbia (93.0%), the poorest (89.2%) and the lowest level of education (89.9%).

The use of animal fats for meal preparation increased in 2019 (39.2%) compared to 2013 and 2006 (25.9% and 33.6%, respectively). According to the results of the Survey, animal fats for food preparation were mostly used in Vojvodina (51.3%), and least in Belgrade (26.4%) and significantly more often in suburban (53.9%) compared to urban settlements (29.7%). The prevalence of this habit decreased with the increase in the level of education and household income, so that it was most present among the less educated (46.2%) and the poorest population (43.7%).

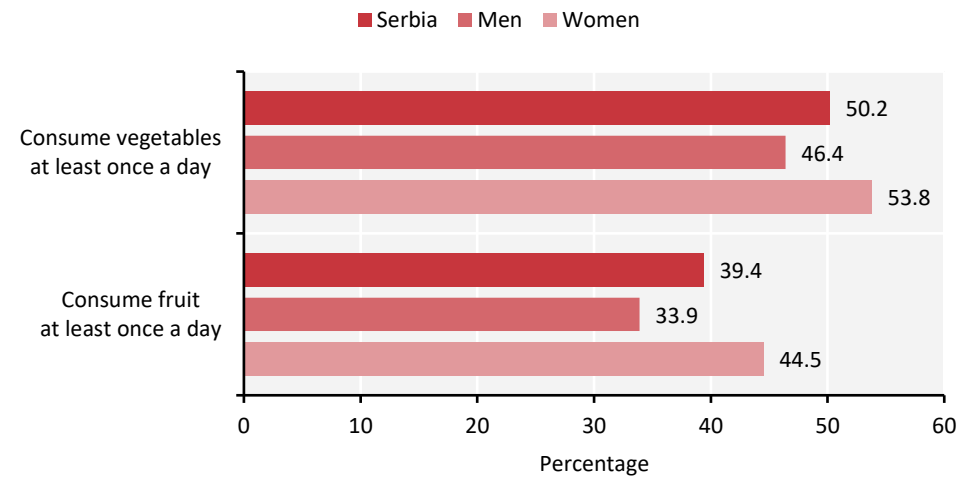
In Serbia in 2019, every eleventh inhabitant is adding salt to food before trying it (9.5%), and this habit did not change significantly from the 2013 and 2006 Surveys.

6.6% of the population of Serbia ate fish at least four times a week, 33.3% did it once to three times a week, while 6.0%, according to their own statement, never eat fish. A larger percentage of residents of urban settlements, of higher education ate fish, the use of fish grew with the increase of household income.

Fruit (fresh, frozen, canned, dried, excluding freshly squeezed juices) was consumed at least once a day by 39.4% of the population of Serbia. The smallest percentage ate fruit at least once a day from the inhabitants of Sumadija and Western Serbia (27.8%), as opposed to the inhabitants of Belgrade (51.5%). Also, women consumed fruit more often on a daily basis (44.5%), as well as the most educated (50.1%) (Graphs 17 and 18).

In 2019, 50.2% of the population of Serbia consumed vegetables or salad (fresh, frozen, dried, canned, excluding vegetable juices and soups) at least once a day. Residents of Belgrade (57.3%) did it significantly more often than residents of Sumadija and Western Serbia (41.7%). In this case, too, women showed healthier habits, as they consumed vegetables more often (53.8%) than men (46.4%). It is also noted that the use of vegetables and fruits is more prevalent among the population with higher education (58.0%) and better material status (58.9%) (Graphs 17 and 18).

Graph 17. Percentage of the population that consumes vegetables and fruits at least once a day according to sex

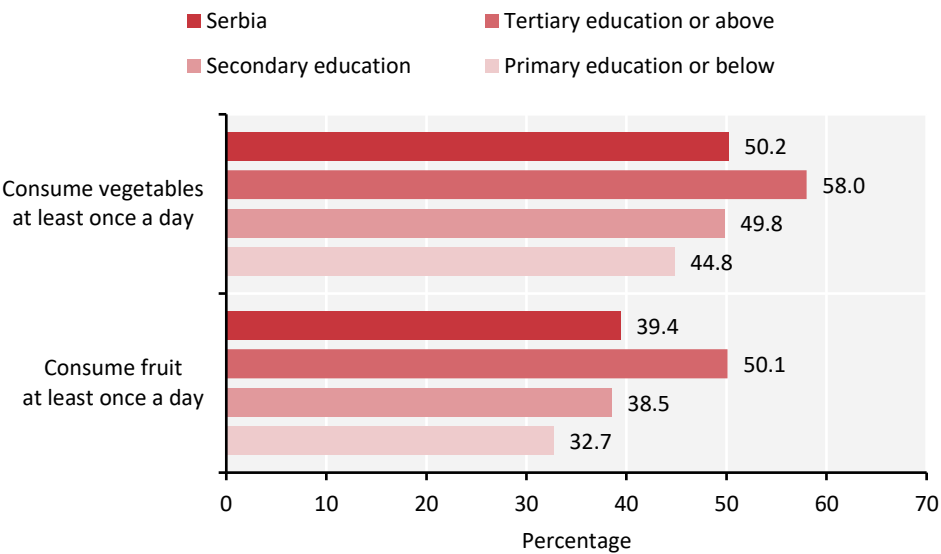


Juices of 100% pure fruits or vegetables, excluding juices made from concentrate or sweetened juices, were consumed at least once a day by 5.4% of the population of Serbia. Sweet soft drinks were consumed at least once a day by 9.3% of the population. Residents of Belgrade, women, the most educated and wealthiest, consumed more juices of 100% pure fruits or vegetables, and less sweet soft drinks. Sweet soft drinks were used daily by the largest percentage of residents aged 15 to 24 (18.7%).



According to data from 2017, 64.0% of the EU population (28) consumed fruit every day, and 63.6% of the population consumed vegetables.<sup>44</sup> In both cases, the percentage of the population is higher, especially in fruit consumption, than recorded in Serbia in 2019.

Graph 18. Percentage of the population that consumes vegetables and fruits at least once a day according to the level of education



## Physical activity

The concept of physical activity includes any movement of the body that leads to energy consumption and includes leisure activities, as well as physical activities during work at home and at work.<sup>45</sup> Physical inactivity is one of the leading risk factors for chronic non-communicable diseases, and people who are insufficiently physically active have a 20-30% higher risk of premature death compared to people

<sup>44</sup> Eurostat [database on the Internet]. European Core Health Indicators (ECHI): European Commission [cited 2021 March 23th]. Available from: [https://ec.europa.eu/health/indicators\\_data/indicators\\_en](https://ec.europa.eu/health/indicators_data/indicators_en)

<sup>45</sup> WHO. Global recommendations on physical activity for health. Geneva: World Health Organization; 2010.

who are physically active. Physical activity contributes to better health and reduces the risk of overweight, chronic non-communicable diseases such as breast and colon cancer, heart and blood vessel diseases, diabetes and has positive effects on mental health and quality of life. Worldwide, one in four adults and three in four young people aged 11 to 17 are not physically active enough based on World Health Organization recommendations, which recommend at least 150 minutes per week of moderate-intensity physical activity (total paid or unpaid work including housework, walking, cycling and some form of recreation including sports activities), and for adolescents 60 minutes of moderate or intense physical activity per day. Physical inactivity is twice as prevalent in high-income countries compared to low-income countries.<sup>46,47</sup>

Health Survey enables the assessment of physical activity related to work and non-work activities, transportation/commuting and leisure activities.

In 2019, the largest percentage of the population of Serbia (46.3%) was exposed to moderate physical effort during their work activities (which include paid and unpaid work, work at home or around the house, family care or studying), i.e. was performing mostly tasks that involve moderate physical effort or walking. During their work activities, 41.1% of the population of Serbia was exposed to light physical effort (mostly sitting or standing) (Graph 19). 9.8% of the population was exposed to heavy physical effort (mostly heavy labor or physically demanding work), while 2.9% of the population did not perform any working tasks.

Significantly more residents mostly sat or stood during work tasks in the Belgrade region (54.9%), more often women (45.6%), as well as residents of higher education (57.7%), the wealthiest (51.8%) and residents of urban settlements (47.1%).

Performing physical activity that is non-work related, lasting 10 minutes continuously, at least once a week, was reported by 93.8% of the population of Serbia in the 2019 survey (walking to get to and from places 93.2%, cycling to get to and from places 23.2%, sports 13.8% and muscle-strengthening activity 7.2%).

In 2019, in Serbia, 75.2% of the population walk to get to and from places continuously for at least 10 minutes every day. Daily cycling for at least 10 minutes was present in 9.0% of the population, significantly more in Vojvodina (23.5%)

<sup>46</sup> World Health Organisation. Key facts - Physical activity. Available at <https://www.who.int/news-room/fact-sheets/detail/physical-activity>

<sup>47</sup> Global action plan on physical activity 2018–2030: more active people for a healthier world. Geneva: World Health Organization; 2018. Licence: CC BY-NC-SA 3.0 IGO

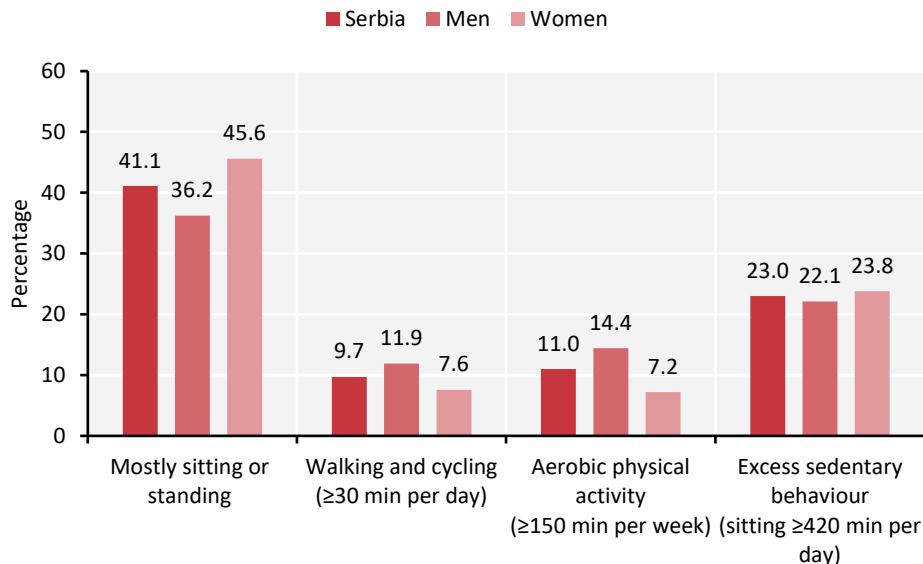
compared to residents of other regions, where the percentage ranged from 1.8% in Belgrade up to 6.2% in Southern and Eastern Serbia. 8.8% of the population of Serbia did fitness, sports or recreation for at least 10 minutes at least three times a week. The habit of playing sports and recreation is more common in men (11.0% recreate at least three times a week) than in women (6.9%).

The average weekly time that residents of Serbia spend to get to and from places was 75 minutes (65 minutes for walking and 10 minutes for cycling). The metabolic equivalent (MET) of oxygen consumption during physical activity related to getting to and from places averaged 274 MET minutes per week (for walking 213 and for cycling 61 MET minutes per week).

9.7% of the population of Serbia spent at least 30 minutes a day walking or cycling (Graph 19), significantly more men (11.9%), and the least in the Belgrade region (6.8%).

In performing aerobic physical activity (which includes fitness, sports, recreation or cycling), at least 150 minutes per week, spent 11.0% of the population of Serbia aged 18 to 64 years (Graph 19), significantly more men (14.4%) ) and in the Belgrade region (19.7%). In 2019, 7.5% of the population aged 18 to 64 engaged in muscle-strengthening activity at least twice a week. The percentage of the population of Serbia in 2019 that meets the recommendations of the World Health Organization to perform health-enhancing aerobic physical activity (non-work related) is 4.4% - significantly more men (6.7%), in the Belgrade region (7.1%), among most educated (6.9%) and the highest household income population (8.7%). This percentage decreases linearly with age (11.2% in the age group 18 to 24, 0.6% in the age group 55 to 64).

Graph 19. Population of Serbia by physical activity



In 2019, almost two thirds (64.6%) of the population of Serbia aged 18 to 64 meet the recommendations of the World Health Organization to perform health-enhancing physical activity, which includes non-work related aerobic physical activity or at least moderate work activity.

Residents of Serbia aged 15 and over sat on average for 4.7 hours during a typical day, residents of the Belgrade region the most (5.8 hours), urban settlements (5 hours), people aged 75 and over (6.1 hours), as well as those with higher education (5.5 hours). Excess sedentary behavior (sitting 420 and more minutes during a usual day) was exposed to 23.0% of the population of Serbia aged 15 and over (Graph 19), significantly more in the Belgrade region (34.9%), the youngest (28.3 %) and older than 75 years (35.1%), residents of urban settlements (26.2%), with the highest incomes (30.2%) and the most educated (32.2%).

## Smoking

Exposure to tobacco smoke is associated with eight million premature deaths worldwide each year.<sup>48</sup> In Serbia, 15.000 people die prematurely every year due to tobacco use.<sup>49</sup> Tobacco use is associated with an increased risk of illness and death from respiratory diseases, heart and blood vessel diseases, malignant and other diseases.<sup>50</sup> Tobacco addiction is recognized as a disease in the WHO International Classification of Diseases (ICD 10). Tobacco control has led to a reduction in the frequency of smoking in many countries, but despite that, every fifth (21%) adult in the world still smokes.<sup>51</sup> In previous years, new tobacco and nicotine products have appeared on the market and their popularity is growing. Heated tobacco products and electronic cigarettes represent a new challenge in global efforts to protect the population from the effects of tobacco use and exposure to tobacco smoke.

In Serbia, the use of tobacco has been one of the most common health risk factors for many years, which is confirmed by the results of the 2019 Survey.

A study in 2019 showed that the prevalence of tobacco products smoking habit, including heated tobacco products (daily or occasionally) in the population aged 15 and over was 31.9%. 30.5% of the population used cigarettes, cigars or pipe tobacco (daily or occasionally). 24.8% smoked cigarettes (daily or occasionally), 6.6% cigars, 0.7% heated tobacco products, 0.5% hookahs/bottles, 0.3% pipe tobacco and 0.2% other tobacco products. Electronic cigarettes or similar electronic devices (daily or occasionally) were used by 3.3% of the population.

As before, a higher percentage of smokers of tobacco products was recorded in men (33.9%) than in women (30.1%) (Table 6). In terms of geographical distribution, the region of Sumadija and Western Serbia stands out with a lower percentage of daily smokers (23.9%), while in Vojvodina and Southern and Eastern Serbia there is

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<sup>48</sup> WHO. WHO Report on the Global Tobacco Epidemic 2019. World Health Organization: Geneva; 2019.

<sup>49</sup> Kilibarda B, Mitov Scekcic S, Stankovic L, Vitrai J, Bojovic A, Pusztai Z, Mauer-Stender K. Smoking-attributable number of deaths in Serbia. Abstract book ECTOH Berlin, 2020.

<sup>50</sup> WHO. WHO Report on the Global Tobacco Epidemic, 2008: The MPOWER Package. World Health Organization: Geneva; 2008.

<sup>51</sup> Reitsma MB, Fullman N, Ng M, Salama JS, Abajobir A, Abate KH, et al. Smoking prevalence and attributable disease burden in 195 countries and territories, 1990–2015: a systematic analysis from the Global Burden of Disease Study 2015. *The Lancet*. 2017. 389(10082): p. 1885-1906.

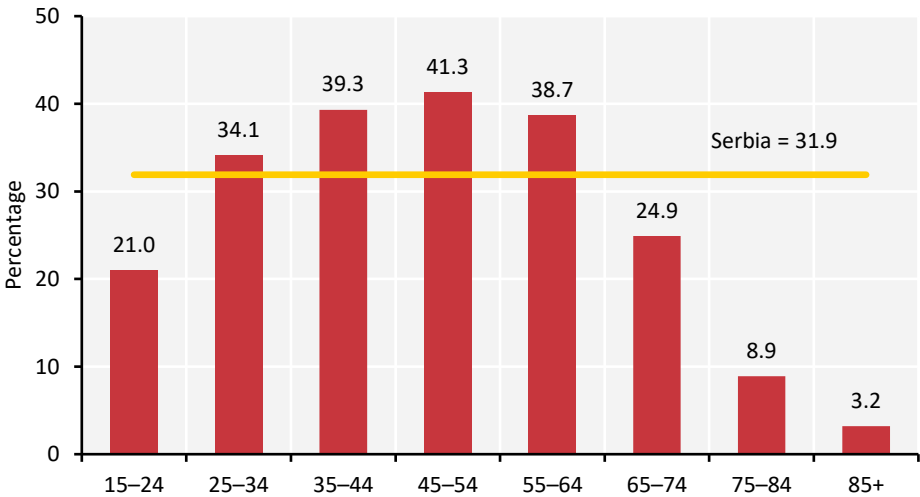
a higher percentage of smokers belonging to the age group of 15 to 19 years (21.4%, i.e. 17.5%).

Table 6. Frequency of smoking of tobacco products (daily or occasionally) by sex and age

	Smoking 15+	Smoking 15-19	Smoking 20+	Smoking 18-64
Female, %	30.1	12.9	31.1	35.1
Male, %	33.9	16.1	35.0	38.8
Serbia, %	31.9	14.4	32.9	36.9

The highest percentage of smokers of tobacco products was in the age group of 45 to 54 years (41.3%) (Graph 20). In the population of young people aged 15 to 19, every seventh (14.4%) stated that they consume some of the tobacco products. Also, this percentage is higher (35.5%) in the population with the lowest household income.

Graph 20. Frequency of smoking tobacco products (daily or occasionally) by age groups



Every fourth inhabitant of Serbia smoked tobacco products every day (27.1%). There were 26.5% of daily cigarette smokers, and 15.8% smoked 20 or more cigarettes per day (Table 7).

Table 7. Frequency of daily smoking by gender

	<b>Daily smokers of tobacco products 15+</b>	<b>Daily smokers of cigarettes 15+</b>	<b>Daily smokers smoking 20 or more cigarettes per day</b>
Female, %	25.3	24.7	12.3
Male, %	29.2	28.6	19.7
Serbia, %	27.1	26.5	15.8

The percentage of daily smokers of cigarettes, cigars or pipe tobacco in 2019 is lower compared to 2013. The frequency of daily smoking of cigarettes, cigars or pipe tobacco by sex and during the study period is shown in Table 8.

Table 8. Frequency of daily smoking of cigarettes, cigars or pipe tobacco by sex and year of research

	<b>2000. (20+)</b>	<b>2006. (20+)</b>	<b>2013. (15+)</b>	<b>2019. (15+)</b>
Female, %	26.1	22.6	26.0	25.0
Male, %	40.6	30.7	32.6	29.4
Serbia, %	33.0	26.2	29.2	27.1

The percentage of smokers (daily or occasional) of cigarettes, cigars or pipe tobacco among the population in Serbia is above the average of EU countries (Graph 21).

Considering that exposure to tobacco smoke causes harmful consequences for non-smokers and that there is no safe level of exposure to tobacco smoke, in 2010 the Law on Protection of the Population from Exposure to Tobacco Smoke was passed in the Republic of Serbia. This Law regulates measures restricting the use of tobacco products in order to protect the population from exposure to tobacco smoke,

controlling of the smoking ban and the supervision of the implementation of this law.<sup>52</sup>

The results of the 2019 Survey indicate the need to improve legislation and its implementation. This, among other things, stems from the finding that almost half of the population (48.9%) over the age of 15 was exposed to tobacco smoke indoors every day, and almost as many (49.1%) non-smokers were concerned about the harmful consequences of exposure to tobacco smoke for one's own health.

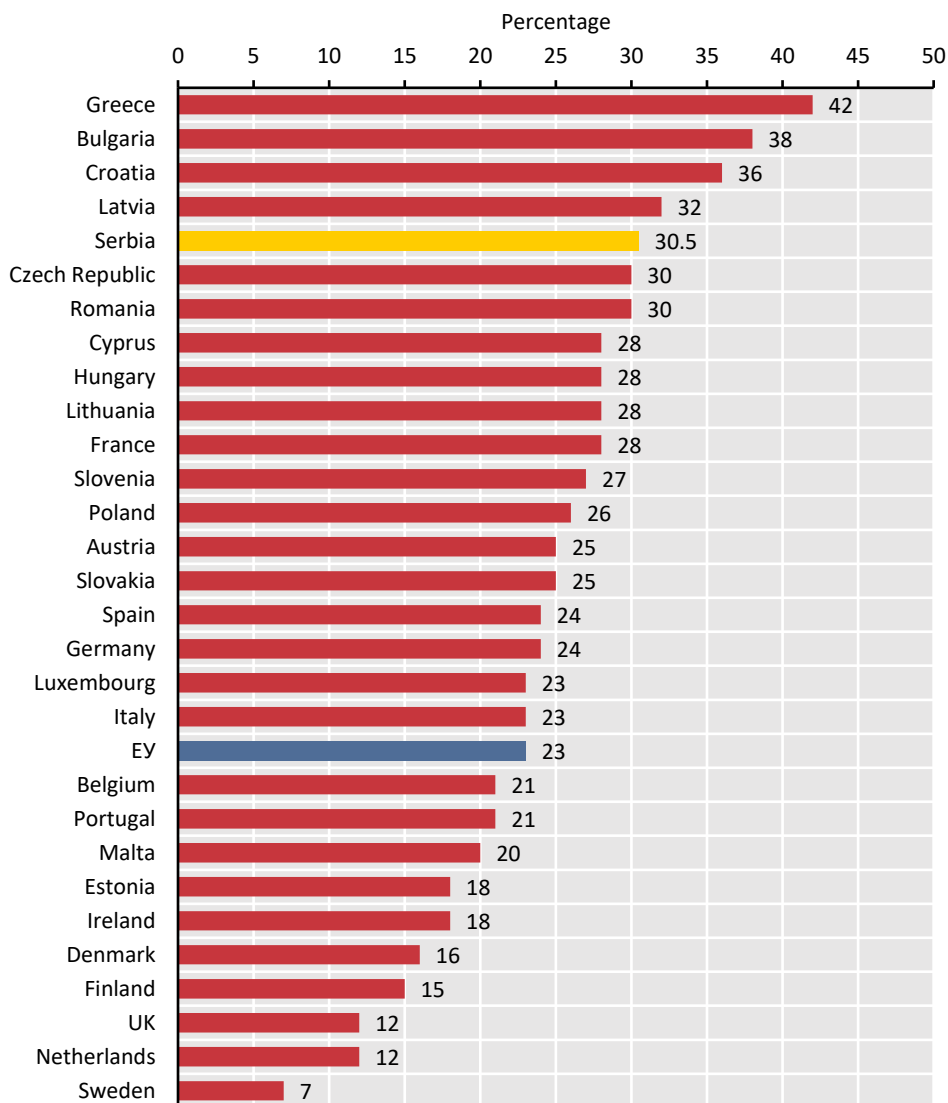
In the year preceding the Survey, every fourth smoker (24.3%) tried to quit smoking, while every second smoker (58.6%) was worried about their own health due to the harmful consequences of smoking. Advising the population by health workers on the harmful effects of smoking is one of the important measures to combat tobacco use. The fact that in Serbia in 2019, 30.1% of smokers received advice from a health worker to quit smoking indicates the need to intensify education and motivate health workers to give advice on the harmfulness/cessation of smoking.

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<sup>52</sup> Закон о заштити становништва од изложености дуванском диму, Службени гласник РС, бр. 30/2010



Graph 21. Percentage of smokers (daily or occasional) of cigarettes, cigars or pipe tobacco, Serbia and EU countries,<sup>53</sup> 2019



<sup>53</sup> Special Eurobarometer 506 - Wave EB93.2 - Kantar Attitudes of Europeans towards tobacco and electronic cigarettes, Report

## Alcohol Consumption

Alcohol use is a significant health, social and economic problem. Alcoholism is one of the most common addictive diseases. Alcohol use is a common cause of traffic and other accidents, violence, liver disease and other chronic diseases, and is one of the leading risk factors for premature death. It is associated with three million deaths per year in the world, in the age group of 15 to 49 it is the cause of 10% of all deaths.<sup>54</sup> Alcohol use has consequences not only on its consumers, but also on people from their immediate or wider environment.<sup>55</sup> The development and occurrence of the disease, as a consequence of alcohol use, in addition to the frequency of consumption, is also influenced by the amount of alcohol consumed. A special health risk is the so-called excessive drinking, i.e. consuming large quantities of alcohol (more than six alcoholic beverages) in one occasion (binge drinking). Studying frequency and patterns of alcohol use is important for planning and evaluating the implemented measures.

The results of the Survey showed that in Serbia 50.7% of the population does not consume alcohol (39.3% have never tried alcohol and 11.4% have not consumed alcohol in the previous 12 months). In the population of young people aged 15 to 19, 52.7% did not consume alcohol, significantly more by the girls (57.2%) than the boys (48.1%).

In the year preceding the Survey, 49.3% of the population consumed alcohol. 3.1% of the population drank every day, which is a decrease compared to 2013 (4.7%) and 2006 (3.4%). Residents of Southern and Eastern Serbia (4.0%), as well as Vojvodina (3.9%), consume significantly more alcohol on a daily basis, unlike residents of Sumadija and Western Serbia, where this percentage is the lowest (2.1%). It is not surprising that a higher percentage of men in Serbia drink every day, as much as eight times more than women (Table 9). Also, the habit of daily alcohol consumption is most prevalent among the least educated (3.4%) and the suburban population (3.8%).

<sup>54</sup> Global status report on alcohol and health 2018. Geneva: World Health Organization; 2018. License: CC BY-NC-SA 3.0 IGO

<sup>55</sup> Laslett AM, Room R, Waleewong O, Stanesby O, Callinan S, editors. Harm to others from drinking: patterns in nine societies. Geneva: World Health Organization; 2019. License: CC BY-NC-SA 3.0 IGO.

Table 9. Alcohol consumption by age groups and gender

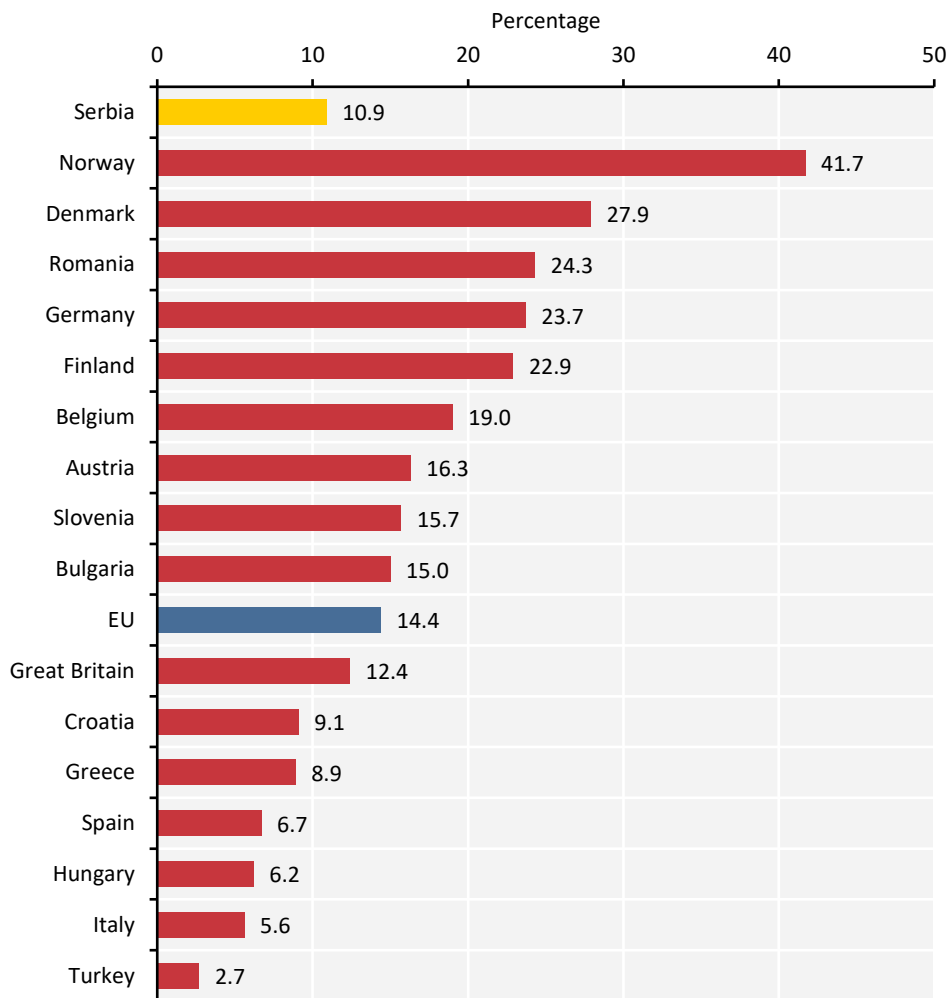
Variable	Have never tried alcohol (%)	Consumed alcohol in the last 12 months (%)	Daily alcohol consumers (%)
Age			
15–24	40.3	55.2	0.4
25–34	32.3	58.0	0.6
35–44	35.4	55.1	1.5
45–54	30.7	52.4	3.6
55–64	39.9	40.6	5.5
65–74	45.2	39.0	4.8
75–84	54.8	30.0	6.0
85+	50.4	23.7	7.7
Sex			
Male	21.8	65.0	5.7
Female	55.1	35.2	0.7
Serbia	39.3	49.3	3.1

In the 2019 Survey, the defined criterion for hazardous alcohol consumption was the average daily amount of alcohol consumed of more than 20 grams of ethanol for women and more than 40 grams of ethanol for men, while the value of ethanol used in a standard beverage was 13 grams. According to the results of the Research, this amount of alcohol was consumed by 1.1% of the population of Serbia aged 15 and over, significantly more often by men (2.0%) than by women (0.3%).

At least once a week, in the last 12 months, 1.7% of the population of Serbia (3.2% of men and 0.3% of women) drank risky on a single occasion – heavy episodic drinking (equivalent of 60g of pure ethanol or more). Every month, 18.3% of men and 4.5% of women drank risky on a single occasion, i.e. a total of 10.9% of the population, which according to available data is a lower percentage than the EU average (Graph 22).

It is worrying that every sixth (15.1%) adolescent aged 15 to 19 drank risky on a single occasion every month, regardless of gender.

Graph 22. Percentage of population according to heavy episodic drinking every month in the last year, Serbia (2019) and selected countries<sup>56</sup> (2014)



To determine the frequency of high-risk and problematic drinking, the RAPS4 questionnaire was used, which includes questions related to remorse/feeling guilty, amnesia, reduced performance due to alcohol consumption, as well as the need to

<sup>56</sup> [https://ec.europa.eu/eurostat/databrowser/view/hlth\\_ehis\\_al3i/default/table?lang=en](https://ec.europa.eu/eurostat/databrowser/view/hlth_ehis_al3i/default/table?lang=en)

start the day with alcohol use.<sup>57</sup> According to the RAPS4 test, 10.7% of alcohol consumers during the previous 12 months (13.2% of men and 6.3% of women) had at least one positive answer, which indicates a possible alcohol dependence and the need to consult with physician.

## Use of drugs

The abuse of psychoactive substances and its consequences affect all social strata across the world. Drug abuse has negative consequences for people's health and lives, encourages crime and threatens sustainable development. In 2018, 5.4% of the population aged 15 to 64 in the world used illegal drugs at least once in the previous 12 months.<sup>58</sup>

Studying the use of psychoactive substances in the general population provides significant information on the extent and patterns, as well as on factors related to drug use.<sup>59</sup> When interpreting, it should be borne in mind that the results of this Survey do not relate to the identification of high-risk patterns of drug use that include complex and often hidden behaviors whose analysis requires targeted research.

According to the results of the Survey, some of the illegal drugs included (amphetamine/methamphetamine, cannabis, cocaine, ecstasy, heroin, glue or other volatile psychoactive substances) have ever been used by 4.2% of the Serbian population, while in the previous 12 months that percentage was 1.4% (Graph 23). The most commonly used illegal drug is cannabis, which was used by 1.2% of the population in the previous year. The use of other illegal drugs ranged from 0.1% to 0.2% (Table 10).

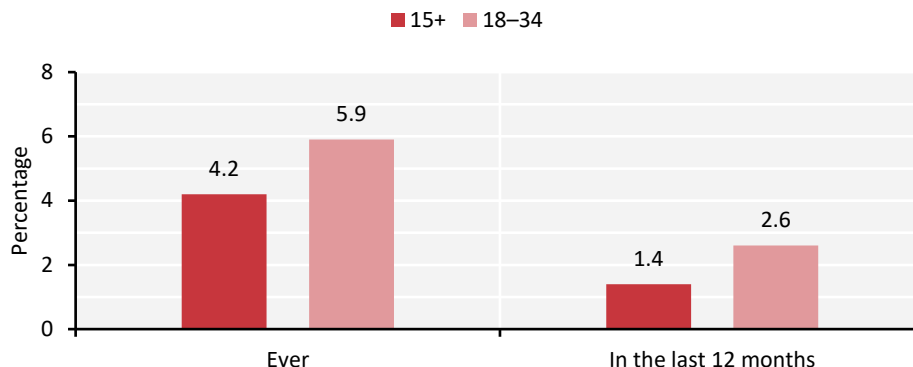
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<sup>57</sup> Cherpitel CJ. A brief screening instrument for problem drinking in the emergency room: the RAPS4. Rapid Alcohol Problems Screen. J Stud Alcohol. 2000;61(3):447-9.

<sup>58</sup> World Drug Report 2020 (United Nations publication, Sales No. E.20.XI.6)

<sup>59</sup> European Monitoring Centre for Drugs and Drug Addiction. An overview of the general populations survey (GPS) key indicator. Available at [https://www.emcdda.europa.eu/publications/methods/gps-overview\\_en](https://www.emcdda.europa.eu/publications/methods/gps-overview_en)

Graph 23. Illegal drug use, ever in life and in the last 12 months



\*any drug of the following: amphetamine/methamphetamine, cannabis, cocaine, ecstasy, heroin, glue or other volatile psychoactive substances

Table 10. Illegal drug use by type of drug and time frame of use

Illegal drug	Ever 15+	In the last 12 months 15+	Ever 18-34	In the last 12 months 18-34
Amphetamine/Methamphetamine	0.4	0.2	0.7	0.4
Cannabis	4.0	1.2	5.6	2.4
Cocaine	0.6	0.2	1.0	0.6
Ecstasy	0.7	0.2	0.9	0.3
Heroin	0.4	0.1	0.3	0.1
Glue or other volatile psychoactive substances	0.3	0.1	0.4	0.2

Cannabis use in the year preceding the survey was significantly more common in the age group of 18 to 34 years (2.4%), among men (1.6%), urban residents (1.5%), residents of higher education (1.8%) and those belonging to the wealthiest households (2.1%).

## Sexual behavior

Risky sexual behaviors are those that can have long-lasting, unintended and severe consequences for health, and include early sexual intercourse, non-use of contraceptive methods and non-use of condoms to protect against sexually transmitted infections. Risky sexual behavior can lead to unwanted pregnancies, the development of sexually transmitted diseases and consequences for physical and mental health. Knowledge of sexuality, physiology of reproduction, methods of contraception, consequences of intentional termination of pregnancy and sexually transmitted diseases is important for the formation of correct attitudes about family planning and acceptance of responsibilities related to sexual behavior.<sup>60,61,62</sup>

According to the 2019 Survey, 26.8% of young people in Serbia between the ages of 15 and 19 have had sexual intercourse, more boys than girls (29.5% vs. 24.5%). Compared to 2013 (33.1%), there was a decrease in the percentage of young people aged 15 to 19 who had sexual intercourse.

The median age of first sexual intercourse among young people aged 15 to 24 was 18, while in the 2013 Survey it was 17. Girls enter into sexual relations somewhat later than boys (18 to 17 years). Based on the results of the research, 2.9% of young people had sexual intercourse before the age of 15.

In the population of young people aged 15 to 19 who had sexual intercourse with an occasional partner in the year preceding the research, 55.6% used a condom during the last sexual intercourse. Boys were more likely to report using a condom during their last sexual intercourse with an occasional partner than girls (61.0% vs. 48.2%).

In the adult population aged 20 and over, condom use with an occasional partner decreased with age and was significantly less prevalent among residents with lower educational status and lower household income. Compared to 2013, there is an increase in the use of condoms during the last sexual intercourse with an occasional partner (50.5% vs. 43.3%).

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<sup>60</sup> World Health Organization. Sexual health. Available at [https://www.who.int/health-topics/sexual-health#tab=tab\\_1](https://www.who.int/health-topics/sexual-health#tab=tab_1)

<sup>61</sup> Global health sector strategy on sexually transmitted infections 2016–2021. Towards ending STIs. Report No.: WHO/RHR/16.09. Geneva: World Health Organization; 2016

<sup>62</sup> Rowley J, Vander Hoorn S, Korenromp E, et al. Chlamydia, gonorrhea, trichomoniasis and syphilis: global prevalence and incidence estimates, 2016. *Bull World Health Organ.* 2019;97(8):548-562P.

The analysis of indicators that measure progress in the field of prevention of exposure to human immunodeficiency virus (HIV) among persons with multiple sexual partners<sup>63</sup> showed that in the population aged 15 to 49, who had sexual relations with multiple partners in the previous year, only slightly more than one half (60.6%) used a condom during their last sexual intercourse. More frequent use of condoms during the last sexual intercourse of persons aged 15 to 49 who had more than one sexual partner was registered among young people aged 15 to 24, among persons with the highest household income and in urban settlements (Graph 24).

Two-fifths of women aged 15 to 49 (40.4%) who were sexually active in the observed period used one of the contraceptive methods (pill, intrauterine device, hormone injection, hormone implant, diaphragm, foam or gel, female or male condom, female or male sterilization). Contraception was significantly less used by women with lower education and women from the poorest households (24.7% and 26.3%, respectively). In the same age group of women who are married or living in an extramarital union, the percentage of those who used contraceptives is lower and amounted to 34.8%.

Unreliable methods of contraception (which include infertile days, interrupted intercourse, "day after" pills) were used by 17.1% of women aged 15 to 49. Women aged 15 to 34 used unreliable methods of contraception significantly less often.

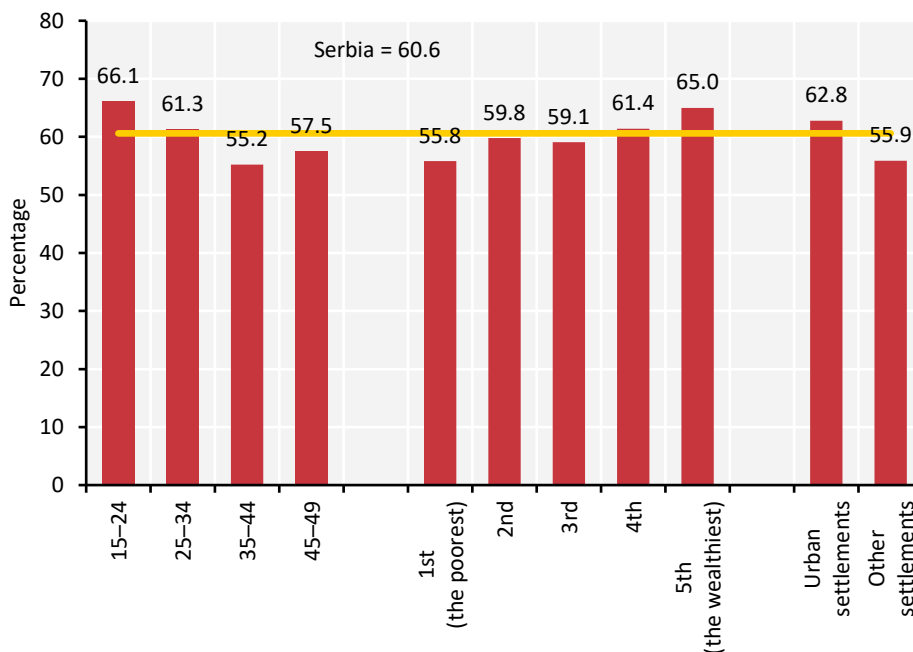
Of the total number of women aged 15 to 49, 1.1% had intentional termination of pregnancy in the year preceding the 2019 Survey (0.9% of girls aged 15 to 19). Intentional termination of pregnancy was higher in women with lower education (2.0%).

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<sup>63</sup> UNAIDS. Global AIDS Response Progress Reporting 2013. Construction of Core Indicators for monitoring the 2011 UN Political Declaration on HIV/AIDS. Available at [http://www.unaids.org/en/media/unaids/contentassets/documents/document/2013/GARPR\\_2013\\_guidelines\\_en.pdf](http://www.unaids.org/en/media/unaids/contentassets/documents/document/2013/GARPR_2013_guidelines_en.pdf)



Graph 24. Condom use during the last sexual intercourse (residents aged 15 to 49 who had more than one sexual partner in the last 12 months) by age groups, household income quintiles and type of settlement



## HIV/AIDS

Acquired immunodeficiency syndrome (AIDS) is a severe, life-threatening, clinically manifest condition caused by the human immunodeficiency virus (HIV). If it is not diagnosed in time and not treated, it leads to a decline in immunity and the inability of the body to fight infections and diseases. In 2019, the estimated number of people living with HIV was 38 million.<sup>64</sup> Prevention and control of the HIV infection, AIDS and support for people living with HIV in the Republic of Serbia has been recognized as priority activities of public health importance.<sup>65</sup>

<sup>64</sup> World Health Organization. Available at HIV/AIDS Key facts. Available at <https://www.who.int/news-room/fact-sheets/detail/hiv-aids>

<sup>65</sup> Стратегија за превенцију и контролу HIV инфекције и AIDS-a у Републици Србији, 2018–2025. године. Службени гласник РС, број 61 од 8. августа 2018.

In 2019, 83.3% of the population aged 15 and over knew about the existence of HIV (AIDS) in Serbia (90.7% in 2013 and 90.8% in 2006) and significantly more in urban settlements (85.8%) and in the population younger than 55 (88.7%). Residents of Vojvodina have heard about the existence of HIV and the disease caused by this virus in the largest percentage (86.9%). Residents of Sumadija and Western Serbia (79.1%), persons with lower education (70.4%) and those living in the poorest households (79.0%) were significantly less informed.

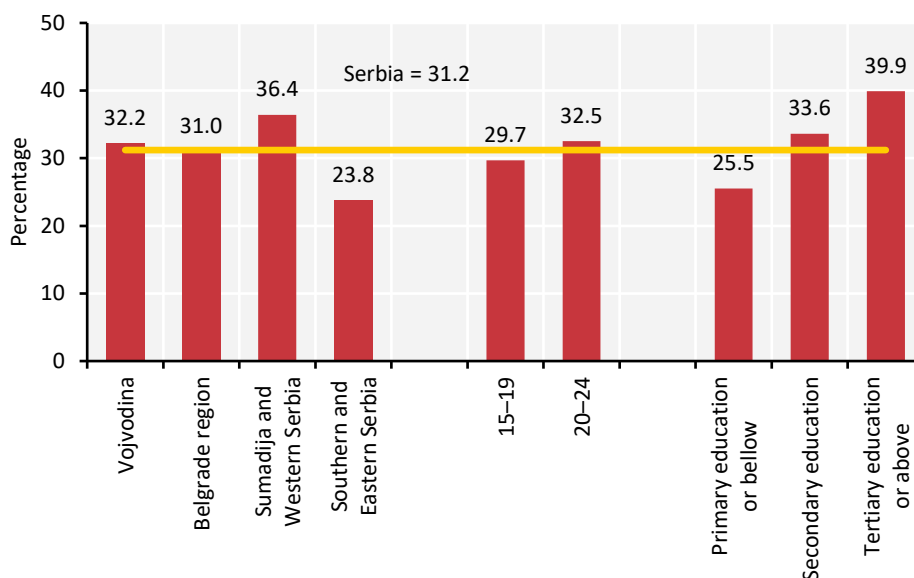
31.2% of young people aged 15 to 24 had enough acquired knowledge about HIV/AIDS, so that they could correctly identify ways to prevent sexual transmission of HIV and at the same time recognize misconceptions related to HIV transmission. A significantly lower percentage of young people aged 15 to 19 had sufficient knowledge about HIV/AIDS (29.7%), in Southern and Eastern Serbia (23.8%), in other settlements (26.1%) and with lower education (25.5%) (Graph 25).

Slightly more than half of the population of Serbia aged 15 and over (58.5%) correctly identifies ways to prevent sexual transmission of HIV, while slightly more than a third (37.7%) reject misconceptions regarding HIV transmission, i.e. know how HIV can not be transferred. A significantly higher percentage of residents who correctly identify ways to prevent sexual transmission of HIV, i.e. reject misconceptions related to HIV transmission, are registered in Belgrade (44.7%), in the group under 55, in urban settlements (37.7%), as well as in the group of residents with the highest education (49.0%) and the best material status (44.3%).

Half of the population of Serbia aged 20 and over (47.7%) in 2019 knew where they could be counseled and tested for HIV: 8.3% were tested, while in 2013 these indicators were 50.1% and 6.9%, respectively. Awareness and the number of tested are significantly lower in suburban settlements, among those older than 55, as well as among residents with lower educational status and lower household income, in Sumadija and Western Serbia.

Of the total number of inhabitants in Serbia aged 15 to 49, 2.1% were tested for HIV during the 12 months preceding the 2019 Survey, and were informed about the test results. There are significantly fewer tested in suburban settlements (1.1%) and among people with lower education (0.6%), and significantly more in Vojvodina (3.2%), among the wealthiest (3.5%) and in the population of ages 25 to 34 (3.9%).

Graph 25. Knowledge of young people aged 15 to 24 about HIV/AIDS by regions, age groups and level of education



Based, on Survey results it can be concluded that knowledge about HIV/AIDS and attitudes towards people living with HIV are closely linked to their level of education. People with higher education levels have a better knowledge of how to transmit and protect against HIV infection, as well as positive attitudes towards people living with HIV.

## Social support

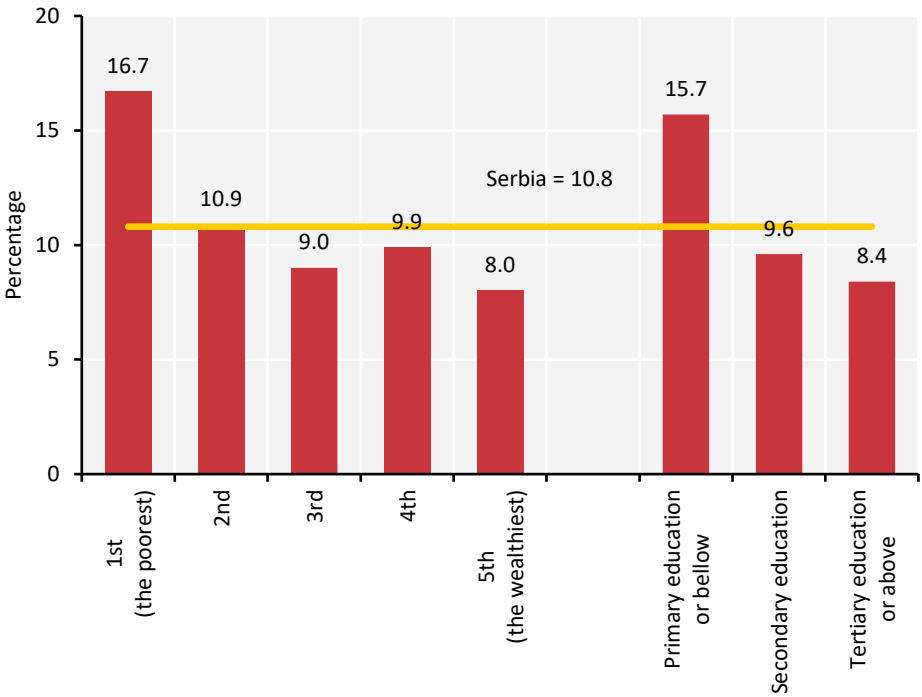
Social support implies that the individual is cared for, loved, respected and valued in society. In itself, it represents a cooperation between individual factors and the social environment. It is a strategic concept, in the domain of health promotion and in the prevention of health problems.<sup>66</sup>

In Serbia, almost a third of the population (30.4%) stated that they have strong social support, slightly more than half intermediate (58.7%), while every ninth

<sup>66</sup> European Health Interview Survey (EHIS wave 3) - Methodological manual, Eurostat, 2018.

inhabitant assessed social support as poor (10.8%). Residents of lower level of education (15.7%), lower household income (16.7%), living in suburban settlements (11.8%) and older more commonly rated social support as poor (15.4%) (Graph 26).

Graph 26. Social support according to the level of education and household income quintiles



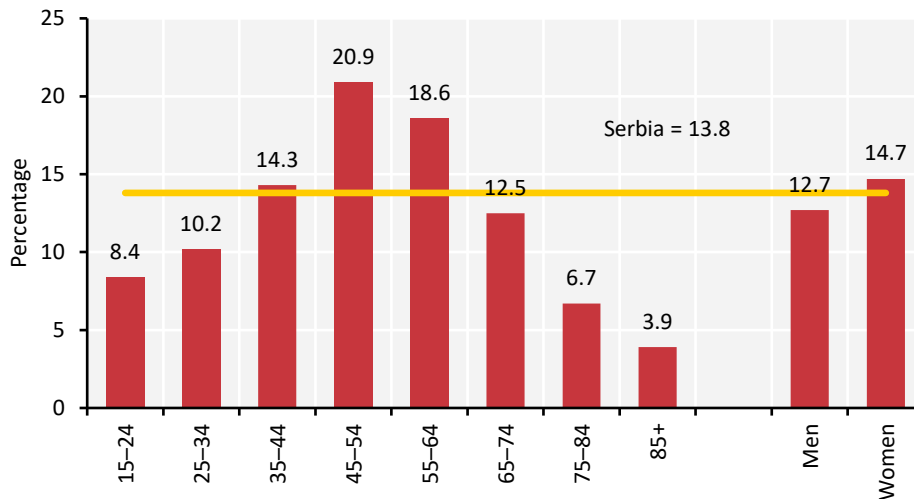
## Provision of informal care or assistance

Informal care implies taking care of another, most often a close person, which is provided free of charge by family members, friends, neighbors, and not by trained, licensed health and social workers. Informal care is becoming an increasingly more important link in solving public health problems caused by demographic changes and a significant part of the long-term care system, in conditions of limited health

care resources where community care is favored over institutional care when possible.<sup>67</sup>

In Serbia, almost every seventh resident (13.8%) provided informal care or assistance at least once a week, most often to family members (10.1%). Informal care or assistance was more often provided by women (14.7%), residents aged 45 to 64 (19.7%), secondary and tertiary education (14.7%) (Graph 27). The largest number of residents provided informal care or assistance less than 10 hours per week (59.7%), 17.7% between 10 and 20 hours and slightly more than a fifth 20 hours per week or more (22.5%).

Graph 27. Provision of informal care or assistance according to age groups and gender



<sup>67</sup> Riedel, M., & Kraus, M. (2016). Differences and similarities in monetary benefits for informal care in old and new EU member states. *International Journal of Social Welfare*, 25(1): 7-17.

**Health care**



Reliable data regarding the use of health care services at national level are necessary for the assessment of the population health care needs and the planning of resources in the health care system. Routine data collection provides a range of reliable indicators on health care use, which are not necessarily comparable between different countries. The advantage of collecting data in Health Survey is in 1) providing comparable data based on same methodology for data collection and 2) linking data to the use of health care services with health status, health determinants and socio-economic characteristics of the population. All of the above enables the analysis of the association between the use of health care and health status, lifestyle or socio-demographic characteristics, as well as the association between different health care services. These data allow the comparison of health care needs and the use of health care, thus enabling the assessment of the concept of vertical and horizontal equality in health care.

## Use of ambulatory and home care

Ambulatory health care includes health services provided to patients who have not been admitted to hospital. These services are provided by selected doctors at the primary level of health care (general practitioners, pediatricians, gynecologists, dentists), as well as specialists at all levels of health care.

A general practitioner or pediatrician is usually the first health worker that the person meets when need health care and who implements all the necessary measures to solve health problems in the continuous treatment and monitoring of patients. In a health system based on efficiency, the general practitioner has the role of a gatekeeper who regulates access to other parts of the system. Access to health care at the primary health care level is a key prerequisite for equality in the use of health care.

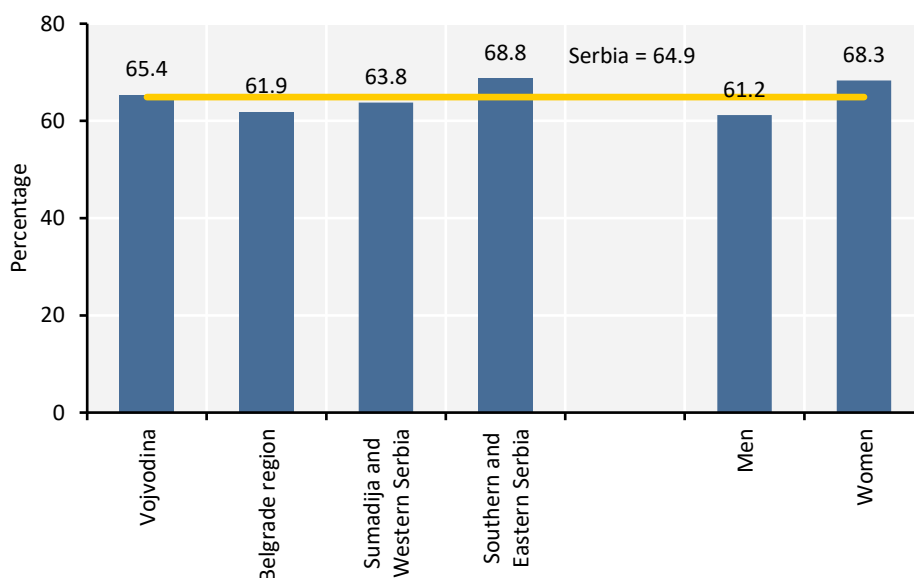
91.1% of the population over the age of 15 stated that they had their general practitioner or pediatrician, unchanged compared to 2013, where 91.7% of the population had their general practitioner or pediatrician. Females had a significantly higher percentage of their general practitioner or pediatrician (93.1%), compared to males (89.0%). The largest number of residents stated that they have their doctor or pediatrician in a state health care institution (89.3%), which is a slightly lower percentage compared to 2013 (91.0%). The fact that almost every eighth resident (12.5%) in the region of Southern and Eastern Serbia do not have a general practitioner or pediatrician in a state health care institution is worrying.



Having general practitioner or pediatrician in a private practice was stated by 5.6% of the population, mostly in Belgrade (10.0%), in urban areas (6.4%), in the group of highest educated (11.2 %) as well as in the group of the wealthiest (11.0%). This is a significantly higher percentage than in 2013, when 2.5% of the population had their general practitioner or pediatrician in private practice.

Slightly less than two thirds of the population of Serbia (64.9%) visited a general practitioner or pediatrician in the year preceding the Survey, significantly more women than men (68.3% and 61.2%, respectively), mostly in the South and East Serbia (68.8%), and the least in Belgrade (61.9%) (Graph 28). The average number of visits to a general practitioner or pediatrician in the period of four weeks preceding the Survey per capita was 0.6 (0.5 in a state health institution and 0.1 in a private practice), unchanged compared to the 2013 Survey (0.6).

Graph 28. Percentage of population who visited a general practitioner or pediatrician in the last year by region and gender

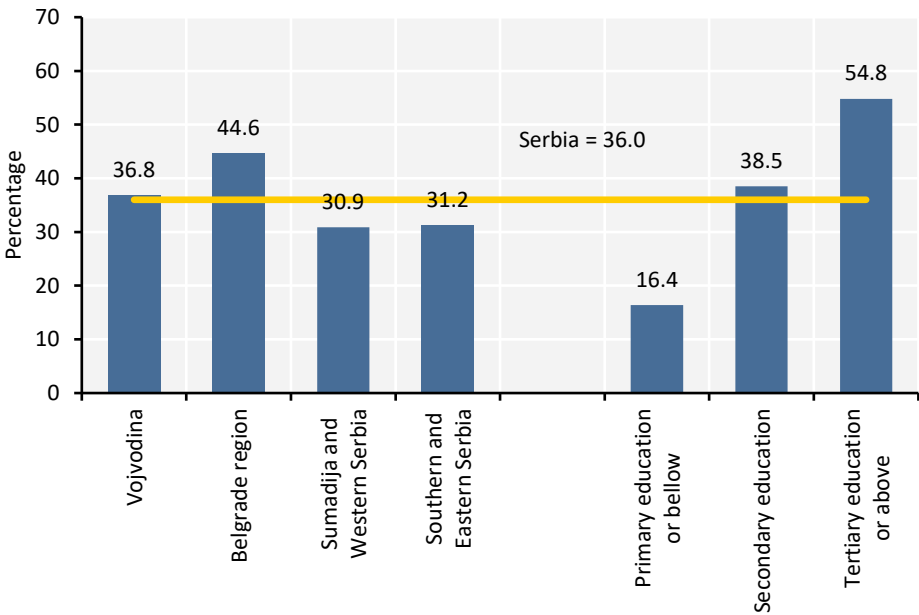


69.3% of women (57.7% in a state health care institution and 19.5% in a private practice) stated that they had their gynecologist, which is significantly more than in 2013 (60.9%). Significantly more women have their gynecologist in Belgrade

(85.2%), in the age group of 25 to 54 years (more than 80.0%), in the group of most educated (86.3%) and the wealthiest (80, 8%).

One third of women in Serbia (36.0%) visited gynecologists in the year preceding the Survey, significantly more in Belgrade (44.6%), urban settlements (39.6%), in the group of the most educated (54.8%) and the wealthiest (50.2%) (Graph 29). This percentage is slightly higher compared to 2013 (34.9%). Half (51.0%) of women of childbearing age (15–49 years) visited a gynecologist in the period of one year before the Survey, which is significantly more than in 2013 (47.5%) and 2006 (45, 8%). In the 2019 Survey, women were significantly younger at the first visit to the gynecologist (19.8 years) compared to 2013 (20.5 years) and 2006 (21.3 years).

Graph 29. Percentage of women who visited a gynecologist in the last year by regions and education

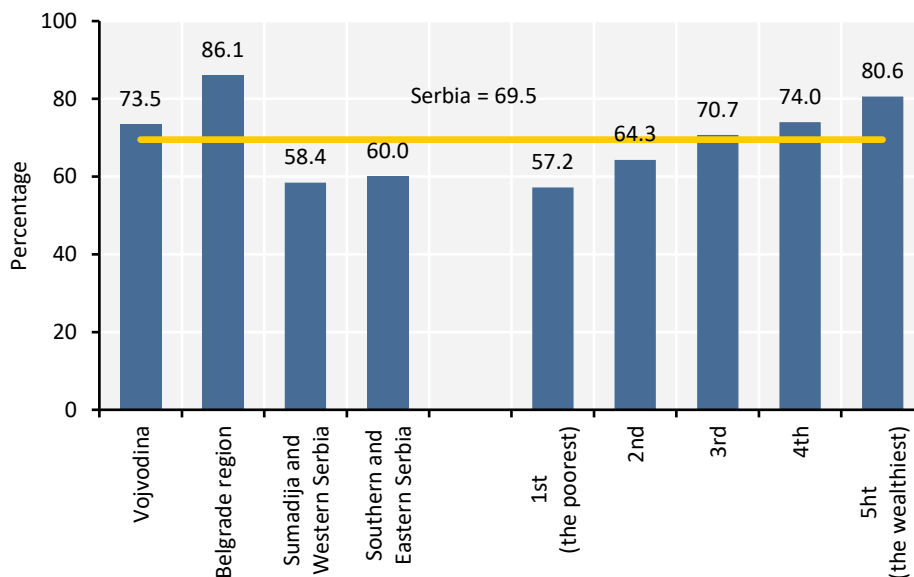


Two thirds of the population over the age of 15 (69.5%) stated that they have dentist (27.9% of the population in a state health care institution, and 45.4% in a private practice), which is significantly more than in 2013. (54.2%). The largest number of residents had their dentist in Belgrade (86.1%), urban settlements

(75.4%), in the group of the most educated (86.2%) and the wealthiest (80.6) as well as women (72.2%) (Graph 30).

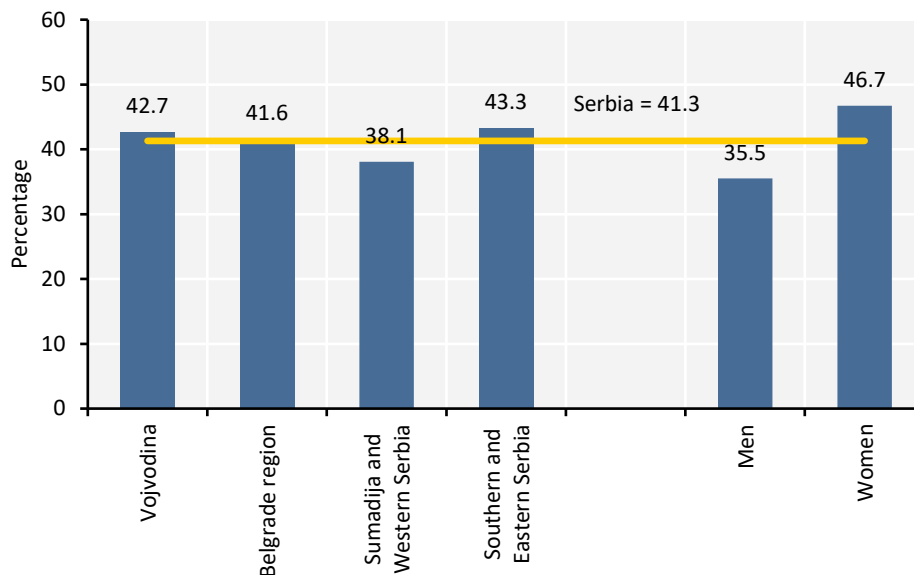
In the period of 12 months preceding the Survey, every third inhabitant (39.4%) visited a dentist, with more women (42.1%), inhabitants of urban settlements (43.4%), highly educated (56, 5%) and the wealthiest (49.8%).

Graph 30. Percentage of population that has their dentist by regions, education and household income quintiles



Two-fifths of the population of Serbia (41.3%) visited a medical or surgical specialist in the period of 12 months before the Survey, while in 2013 that percentage was 40.1%. A higher percentage of medical or surgical specialist were visited by women (46.7%), residents of Southern and Eastern Serbia (43.3%), older population groups, the most educated (46.7%) and the wealthiest (44.7%) (Graph 31). In that period, a rehabilitative care professional (physiotherapist or kinesiologist) was consulted by 8.5% of the population, while a mental healthcare professional (psychologist, psychotherapist or psychiatrist) was visited by 4.7% of the population. The average number of visits to a medical or surgical specialist in the period of four weeks before the Survey per capita was 0.4, of which 0.3 in state health care institutions, and 0.1 in private practice, slightly more than in 2013 (0.3).

Graph 31. Medical or surgical specialist utilization in the year before the Survey, by regions and gender



In 2019, 1.9% of the population of Serbia stated that they used home care and assistance services. As expected, these services were mostly used by the elderly (17.7% over the age of 85).

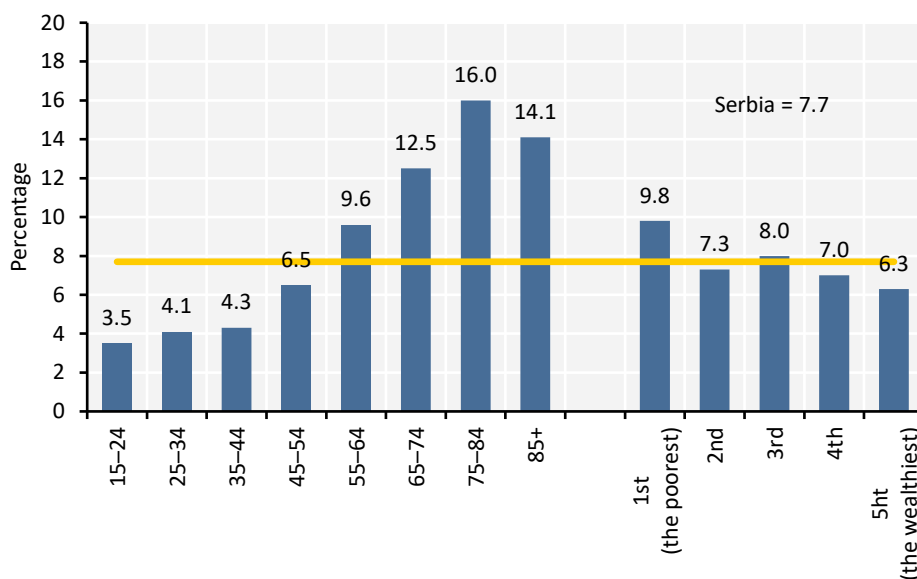
## Use of inpatient and day care

Hospital health care is an integral part of the health care system, and the services provided in hospitals are among the most complex and expensive health services. Improving the quality of hospital work is one of the priorities in creating health policies.

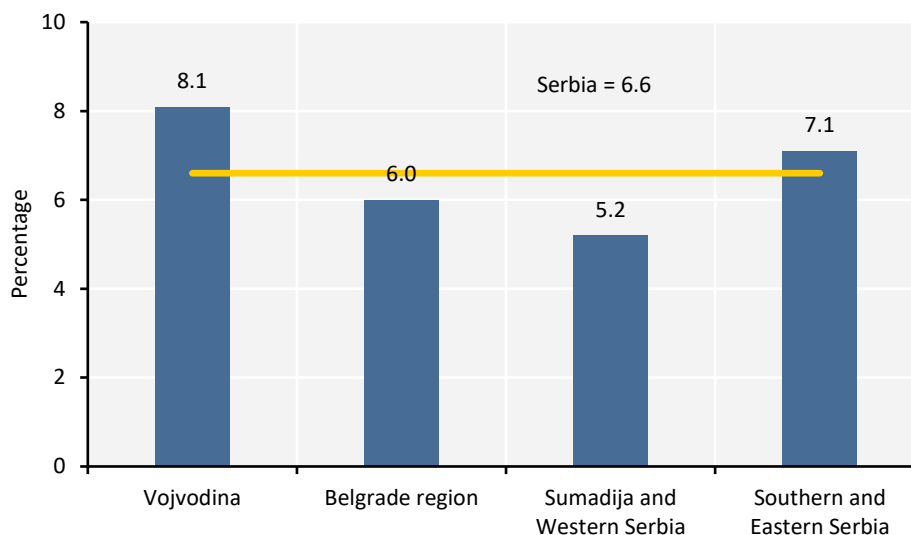
In the 2019 Health Survey, 7.7% of residents over the age of 15 stated that they had been hospitalized as inpatient in the past 12 months, similar to the results of the 2013 Survey (7.8%). Significantly more hospitalized were in the older age groups (16.0% in the age group from 75 to 84 years), among the population with the lowest level of education (primary and lower - 10.2%) and the poorest (9.8%) (Graph 32).

In the year preceding the Survey, 6.6% of the population of Serbia were hospitalized as day patient, who had 4 stays on average, which is significantly less than in 2013, when according to the results of the Survey, 10.4% were hospitalized as day patient, with an average of 5 stays. A significantly higher percentage was recorded in Vojvodina (8.1%) (Graph 33), among the elderly population, especially in the age group 65 years and older (9.9%) and the population with the lowest level of education (8.1%).

Graph 32. Percentage of population hospitalized as inpatient by age groups and household income quintiles



Graph 33. Percentage of population hospitalized as day patient by regions

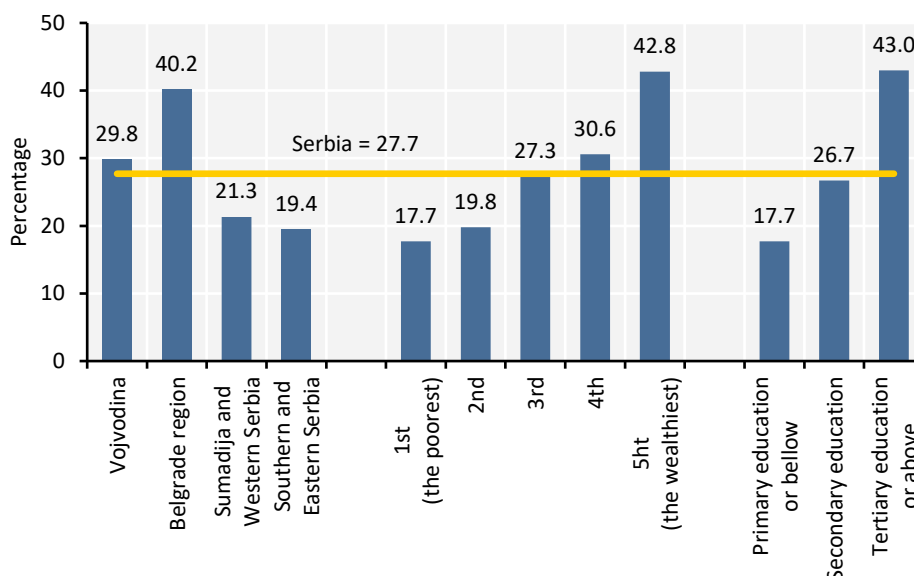


## Use of private practice

Although private practice, according to the Law on Health Care, is part of the health care system, it is still not fully included in the process of mandatory health statistical reporting. Health survey is a valuable source for obtaining data on the utilization of private practice.

In the year preceding the survey, 27.7% of the population of Serbia used the health care services of a private practice. Private practice was more often used by residents of the highest educational status (43.0%), the wealthiest (42.8%), residents of Belgrade (40.2%) and urban settlements (31.9%) (Graph 34). In the 12 months preceding the study, the most frequently used services were the private practices of dentists (16.1%), laboratory analyzes (15.5%), radiological diagnostics (7.0%), internists (6.1%), ophthalmologists (4.4%), and in a small percentage surgeons (0.9%) and psychiatrists (0.8%).

Graph 34. Private practice utilization in the year preceding the study by regions, education and household income quintiles



In the population over the age of 19, there is a significant increase (28.3%) in the use of private practice services compared to 2013 and 2006 (15.8% and 19.4%, respectively).

## Medicine use

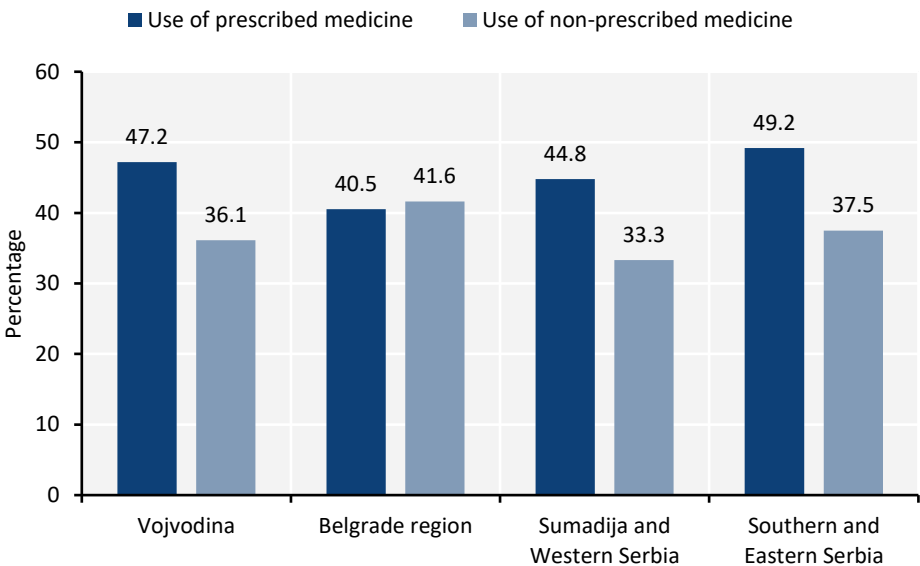
The use of medicines and medical devices has greatly increased in the last few decades, which can also be a problem of an aging society, and indicates aspects of accessibility, quality, but also the increasing health care costs.

According to the results of the Survey conducted in 2019, in Serbia, 45.3% of the population used medicines prescribed by a doctor in the past two weeks.

A significantly higher percentage of women (50.9%) used prescribed medicines compared to men (39.2%). Observed by regions, the highest use of prescribed medicines is represented in Southern and Eastern Serbia (49.2%), residents with lower education (60.8%), from the group of the poorest (48.4%) and suburban settlements (47.2%) (Graph 35).

In Serbia, in 2019, 37.0% of the population stated that in the period of two weeks before the survey, they used medicines, herbal remedies or vitamins that were not prescribed by a doctor. The habit of taking medicines not prescribed by a doctor was most common in the Belgrade region (41.6%), among women (43.2%), highly educated (44.1%) and wealthier population (44.2%), as well as by the residents of urban settlements (39.6%).

Graph 35. Percentage of the population who took medications prescribed by a doctor in the previous two weeks and medicine, herbal remedies or vitamins not prescribed by a doctor by regions



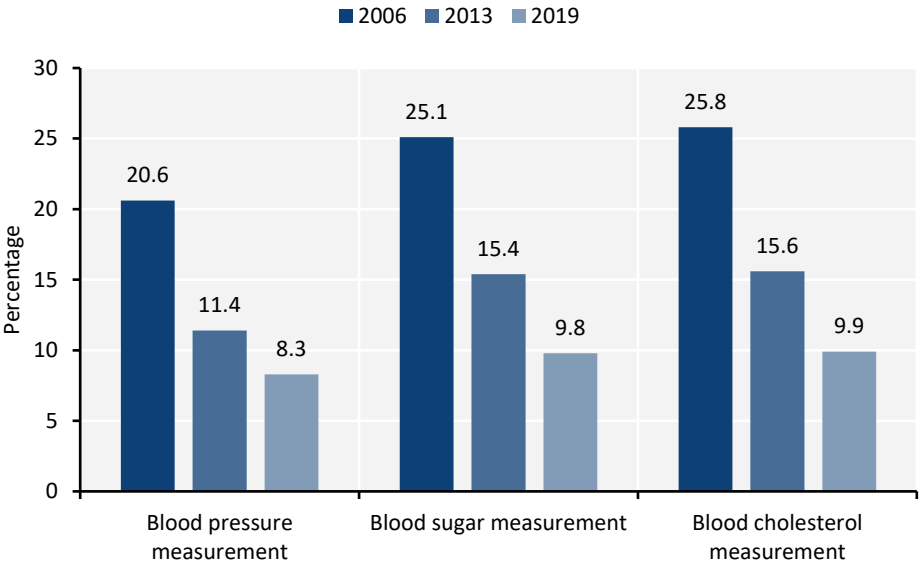


# Preventive services

Preventative check-ups are important in order to identify health problems at an early stage, enable more efficient treatment and reduce overall health care costs.

In 2019, in the adult population (aged 20 and over), the percentage of those who did not undergo preventative examinations in the last five years was significantly reduced compared to 2013 and 2006 (Graph 36).

Graph 36. Percentage of population aged 20 and over who has not undergone a preventative examination in the last five years, Serbia, 2006, 2013, and 2019



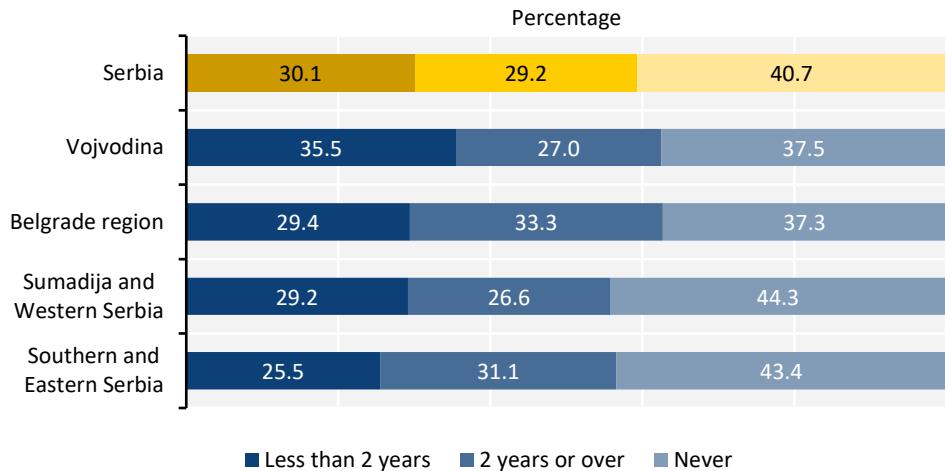
## Breast cancer screening

According to the results of the 2019 Survey, slightly more than one third of women in Serbia (34.6%) stated that they had a mammogram at one point in their life.

In the target population for early detection of breast cancer, 30.1% of women aged 50 to 69 years underwent mammography examination in the period up to two years preceding the study, and 42.5% in the period up to three years, which is an improvement in contrast to 2013 (22.7% and 30.6%, respectively).

The largest percentage of women went for a mammogram on the advice of a doctor (50.3%), then on their own initiative (34.9%) and at the invitation of a doctor within an organized screening (14.7%).

Graph 37. Percentage of women aged 50 to 69 who underwent mammography in less than two years by region



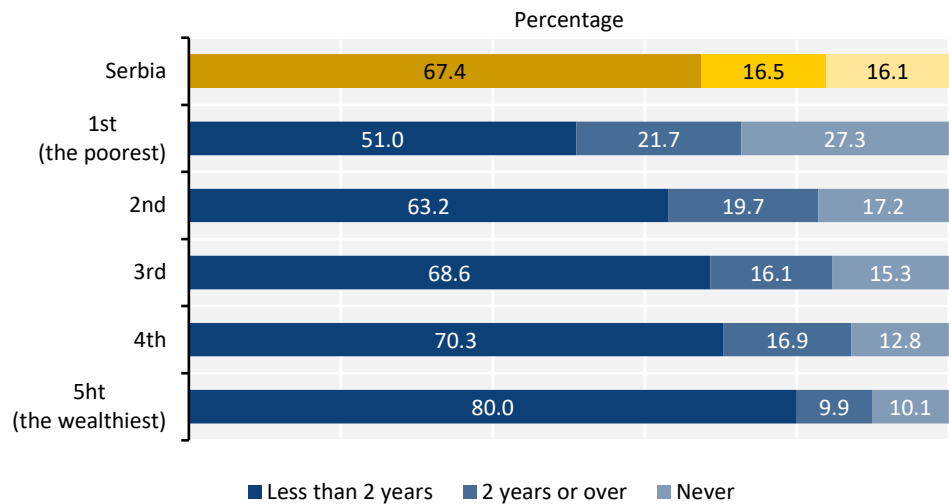
In the target population of women, the highest percentage of those who underwent mammography examination in less than two years was among the most educated (39.3%) with the highest household incomes (35.3%) and in urban settlements (32.7%), while a significantly lower percentage was registered among the least educated (23.4%) and in households with the lowest income (22.9%). Observed by regions, the largest coverage of women who had this examination was recorded in the Region of Vojvodina (35.5%) (Graph 37).

### Breast cancer screening

Screening for early detection of cervical cancer (Papanicolaou test) in the less than three years preceding the study was done by two thirds of women (67.4%) aged 25 to 64 years (target population for early detection of cervical cancer). The highest percentage of women who underwent the Papanicolaou test was recorded in Belgrade (80.5%), in urban settlements (71.8%), among women aged 25 to 44 (74.2%), residents from the wealthiest strata (80.0%) (Graph 38) and among highly educated women (79.0%), the lowest was recorded in Southern and Eastern Serbia

(58.7%). The largest percentage of women stated that they did the Papanicolaou test on their own initiative (49.6%), on the advice of a doctor (45.9%) and on the call of a doctor within an organized screening (4.5%).

Graph 38. Percentage of women aged 25 to 64 who underwent Papanicolaou test in less than three years according to household income quintiles



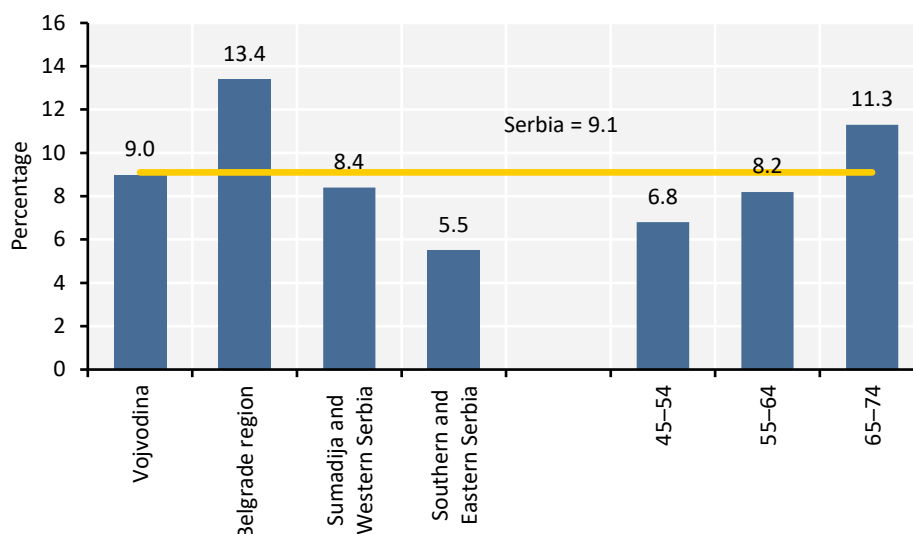
The percentage of women aged 25 to 69 who took the Papanicolaou test in less than three years prior to the Survey increased from 38.5% in 2006 to 57.1% in 2013 and 64.0% in 2019.

### Colorectal cancer screening

In 2019, 10.9% of the target population of Serbia, aged 50 to 74, were tested for faecal occult blood (blood invisible in the stool with the naked eye) in less than three years. A significantly higher percentage of residents tested was in Vojvodina (13.5%), among residents with higher education (12.6%), as well as those living in cities (12.2%).

In the same age group, 9.1% of the population underwent a colonoscopy in less than 10 years, significantly less in Southern and Eastern Serbia (5.5%), among the residents with the lowest level of education (7.4%), the poorest (6, 4%) and residents living in suburban settlements (7.2%).

Graph 39. Percentage of inhabitants aged 50 to 74 who underwent a colonoscopy in less than 10 years, by regions and age groups



Preventive examinations for early detection of colorectal cancer (faecal occult blood test and colonoscopy) are evenly distributed in both sexes. The faecal occult blood test and colonoscopy were performed in a higher percentage in the population aged 65 to 74 (12.5 and 11.3%, respectively) (Graph 39).

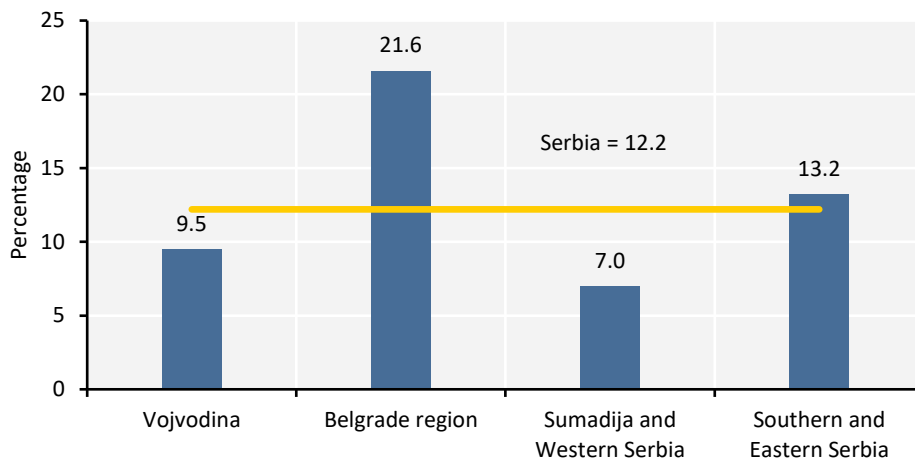
## Unmet needs for health care

Equality in the use and accessibility of health services are of great importance in the health policies of all countries. There are many reasons why people experience delays in providing health care or do not receive it at all. Health Survey helps us to see the key factors that influence the failure to meet health needs.

Among the population in need of health care, 15.4% did not meet their needs due to long waiting lists, 4.1% due to distance or transportation problems and 31.3% due to financial reasons. Finances were the reason for not meeting the needs of mostly dental (13.9%) and medical (examinations, treatment and rehabilitation) care (12.2%), followed by the procurement of prescribed medicines (9.9%) and mental health care (4, 0%).

Unmet needs for medical health care due to financial reasons in Serbia by regions is shown in Graph 40. The highest percentage of the population with unmet needs for medical health care due to financial reasons was registered in Belgrade (21.6%), and the lowest in Sumadija and West Serbia (7.0%). A significantly higher percentage of women (13.6%), residents with the lowest educational status (17.7%) and material status (22.4%) failed to meet their needs for medical health care due to financial reasons.

Graph 40. Percentage of population that has not met their needs for medical care in the last year due to financial reasons by regions



# **Children's health**

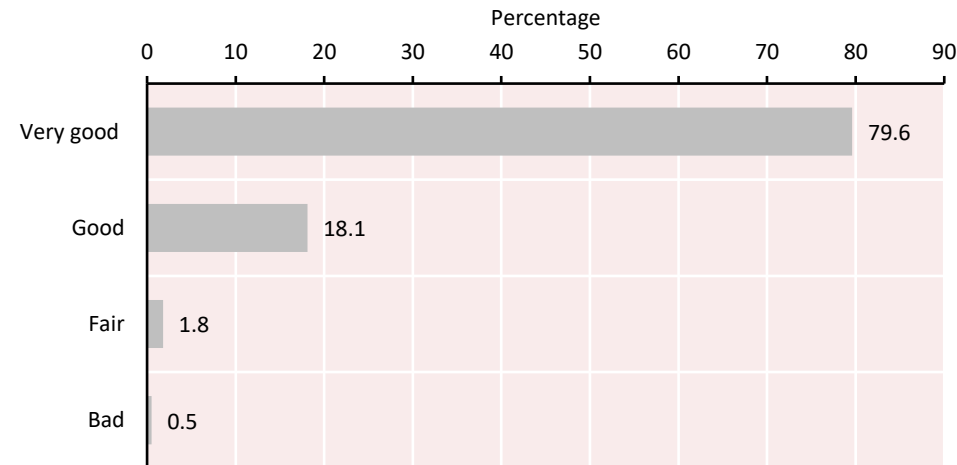


Improving the health and well-being of children are the priorities of each country's health policies. Children need to be provided with a stable environment for growth and development that includes good health, proper nutrition, protection from dangers and providing opportunities for learning and progress. Numerous epidemiological studies link childhood health to adult health outcomes, and investing in children's health is becoming one of the most important measures society can take to build a better future.<sup>68</sup>

## Health status

The majority of parents (97.7%) in 2019 assessed the health of their children as a very good and good (Graph 41): in the population aged 7 to 14 – 97.3%, which corresponds to the results obtained in the Surveys from 2013 and 2006 (96.8% and 95.2%, respectively).

Graph 41. Health of children aged 5 to 14



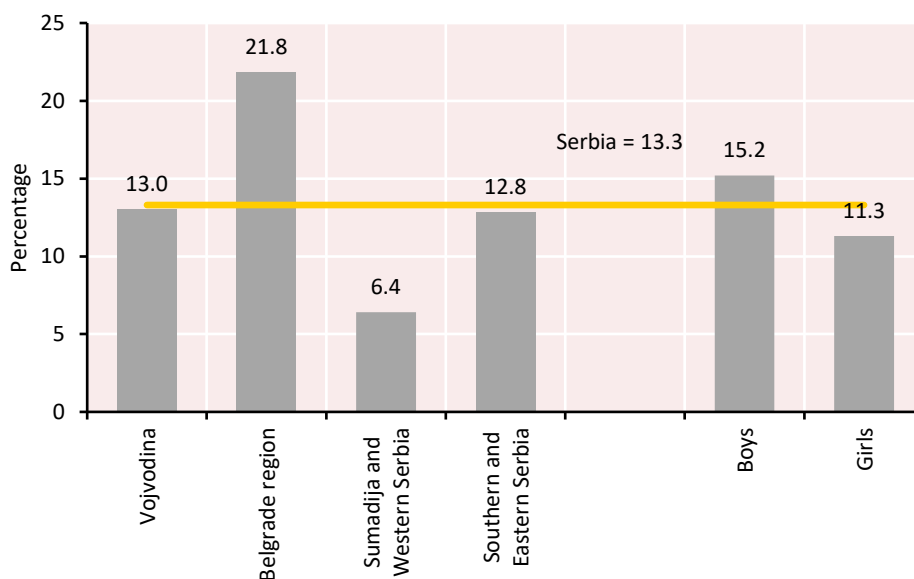
<sup>68</sup> <https://www.who.int/westernpacific/health-topics/child-health>



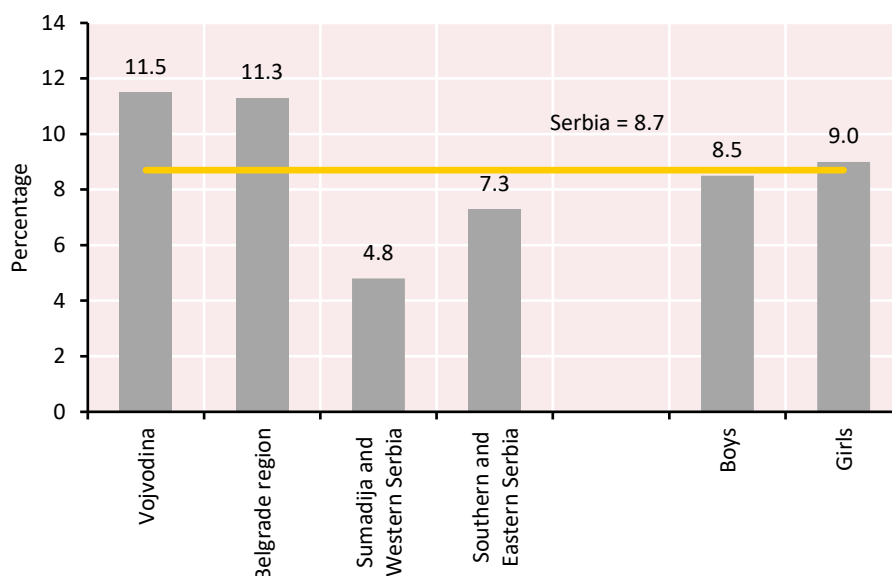
7.9% of children aged 5 to 14 had a long-standing illness or health problem (which lasted or is expected to last at least six months). In the last 6 months or longer, due to health problems, 3.2% of children in Serbia have been limited in activities that are usually done by other children of the same age.

In terms of functional impairments, in previous systematic/preventive examinations, the largest percentage of children had a problem with flat soles (13.3%), while 8.7% of children had spinal deformities. A significantly higher percentage of children had flat soles in Belgrade (21.8%), urban settlements (15.0%) as well as those living in wealthy households (19.4%) (Graph 42). Spinal deformities are significantly more common in children from Belgrade (11.3%) and Vojvodina (11.5%) (Graph 43).

Graph 42. Frequency of problems with flat soles in children aged 5 to 14 by gender and regions



Graph 43. Frequency of spinal deformities in children aged 5 to 14 by gender and regions



12.4% of children in Serbia aged 5 to 14 had a vision difficulty. Vision aids (glasses or contact lenses) were used by 10.3% of children (9.1% have vision difficulty corrected with no remaining eye health problem, while 1.2% of children have vision difficulty corrected with remaining eye health problems). 2.1% of children reported vision difficulty without correction.

Parents/guardians of children from Belgrade reported a significantly higher percentage of children with vision difficulty (16.2%). Children aged 11 to 14 years were significantly more likely to have a vision difficulty (16.6%), compared to children aged 5 to 10 years (9.3%) (Graph 44).

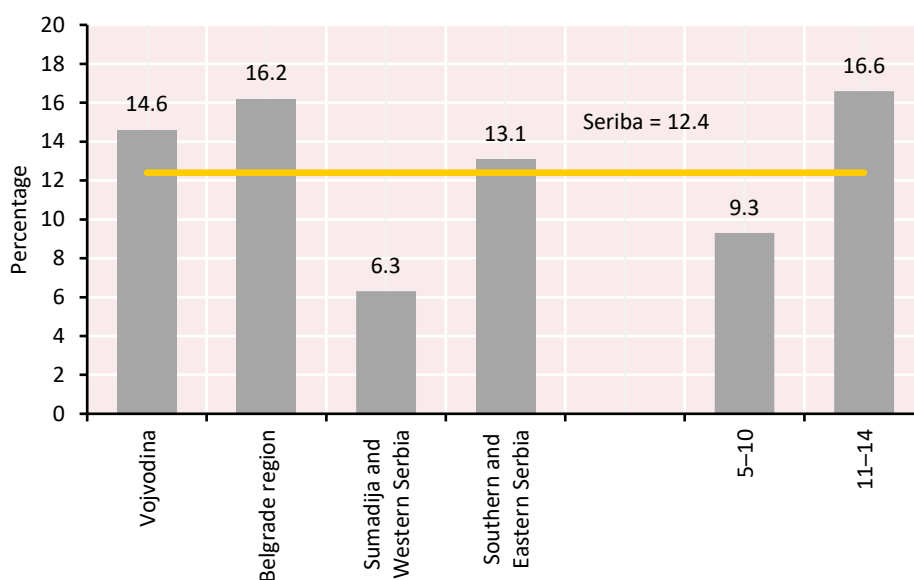
Compared to the 2013 Survey, in the population of children aged 7 to 14 there is an increase in vision difficulty (14.0% compared to 11.5%), as well as an increase in the use of vision aids (11.3% compared to 6.6%).

1.9% of children aged 5 to 14 had a hearing difficulty. The hearing aid was used by 0.7% of children (0.6% have hearing difficulty corrected with no remaining hearing

problem, while 0.1% of children have hearing difficulty corrected with remaining hearing problems). 1.2% of children reported hearing difficulty without correction.

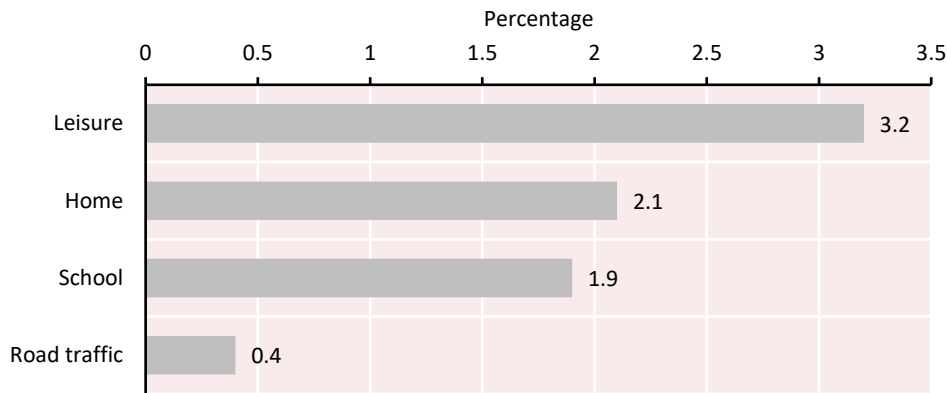
2.1% of children aged 5 to 14 had a difficulty in walking. 0.4% of children used walking aids (0.4% have difficulty walking with the use of aids). 1.7% of children reported difficulties in crossing 100 meters on foot, but did not use walking aids (less than 0.1% more difficult).

Graph 44. Frequency of vision difficulties in children aged 5 to 14 by regions and age groups



In the year preceding the Survey, children most often experienced injuries while engaging in leisure activities (3.2%), at home (2.1%) and at school (1.9%), while less than 1% were injured in traffic (Graph 45). Of the total number of injured children, almost three quarters (74.2%) received medical assistance due to the consequences of injuries, and 10.3% were hospitalized.

Graph 45. Percentage of injured children aged 5 to 14 according to the place of injury



## Health determinants

Childhood obesity increases the risk of premature death and disability in adulthood. Obese children are often obese as adults, they suffer from chronic non-communicable diseases, such as diabetes and cardiovascular diseases, at an earlier age, and their development depends in part on the age at which obesity arose and its duration. Obese children and adolescents have both short-term and long-term health consequences.<sup>69</sup>

The most significant health consequences that often do not become apparent until adulthood are: cardiovascular diseases, diabetes, musculoskeletal disorders, some types of malignancy, as well as psychological problems.

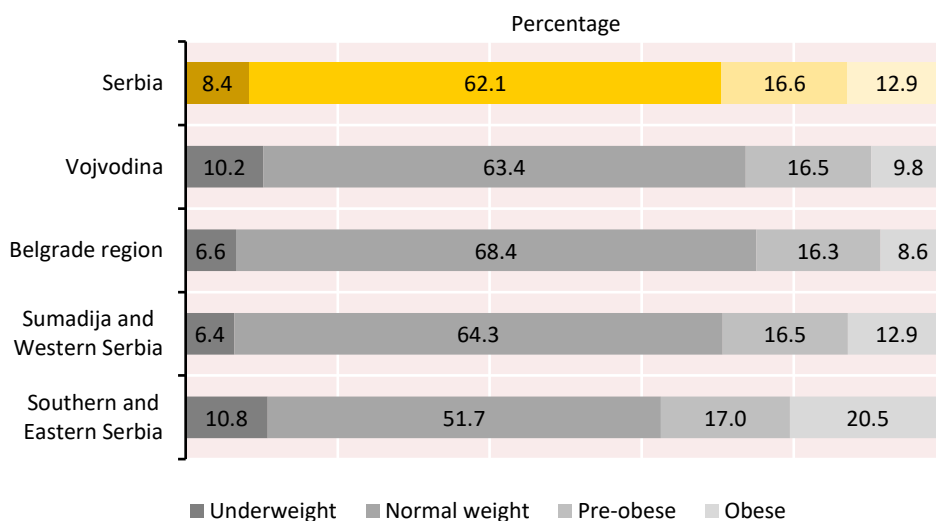
The main goal of obesity prevention in children is to ensure energy balance between calorie intake (diet) and calories metabolized (physical activity).

<sup>69</sup> <https://www.who.int/news-room/q-a-detail/noncommunicable-diseases-childhood-overweight-and-obesity>

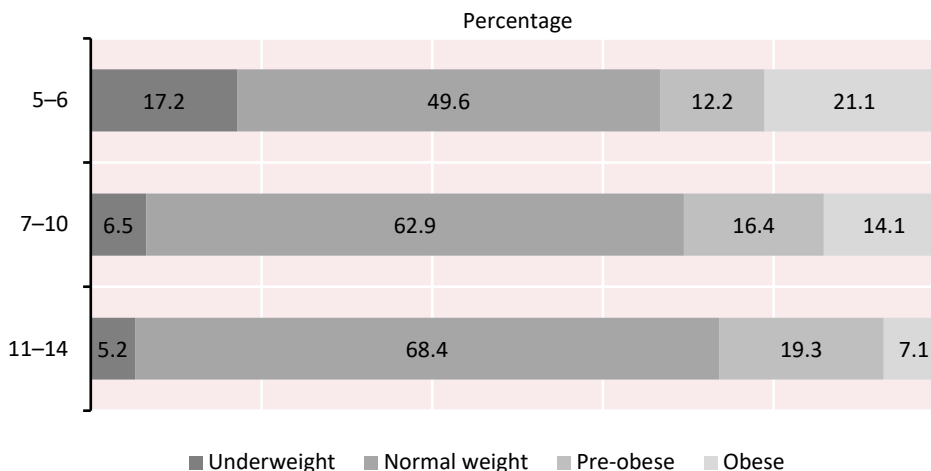
## Body mass index

The percentage of obese children aged 5 to 14 in 2019 was 12.9%, while the pre-obese were 16.6% (Graph 46). It is important to know that a significantly higher percentage of obese children (21.1%) was recorded among children aged 5 to 6 years (Graph 47). Also, an increase in the percentage of obese children aged 7 to 14 (10.5%) was registered compared to 2013 and 2006 (4.9% and 2.6%, respectively).

Graph 46. Body mass index of children aged 5 to 14 by regions



Graph 47. Body mass index of children by age groups

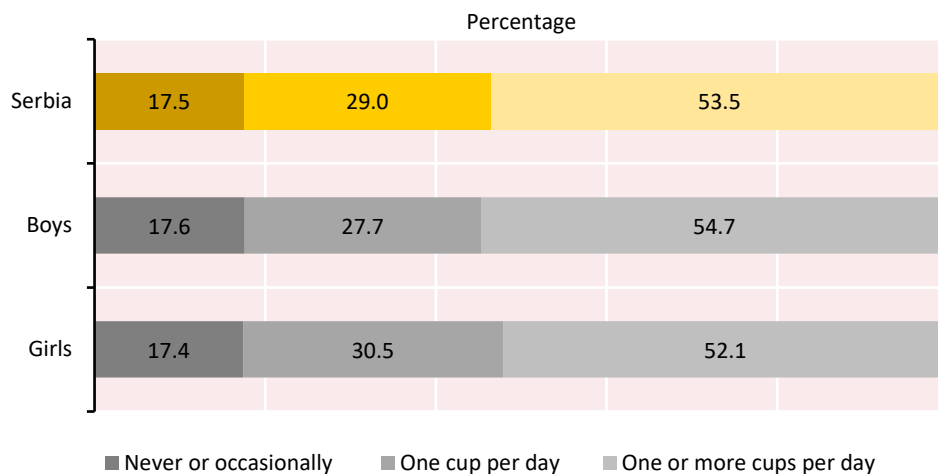


## Diet

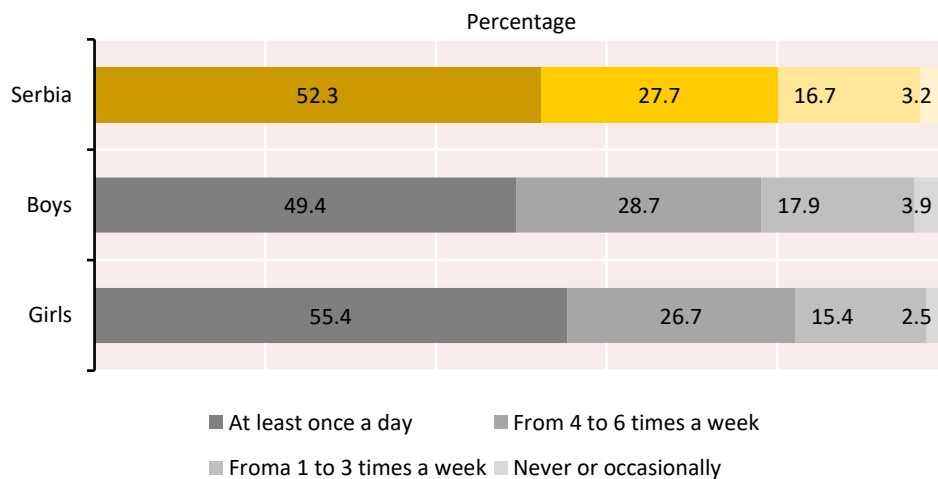
In 2019, most children had the habit of having breakfast every day (96.1%). More than four-fifths of children (82.5%) consumed at least one cup of milk or dairy product daily (Graph 48). In the population of children aged 7 to 14, 81.5% consumed at least one cup of milk or dairy product every day, which is significantly more than in 2013 (74.2%). This food is the least available to children living in the poorest households - 72.5%.

Every second child in Serbia between the ages of 5 and 14 consumes fruits (52.3%) and vegetables (53.9%) at least once a day (Graphs 49 and 50), while other children consume insufficiently or never consume fruits and vegetables.

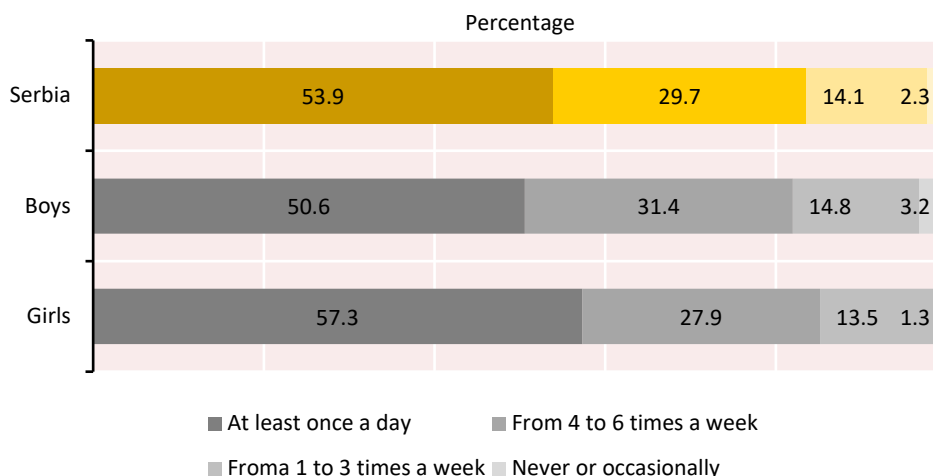
Graph 48. Frequency of milk and/or dairy products consumption in children aged 5 to 14 by sex



Graph 49. Frequency of fruit consumption of children aged 5 to 14 by gender



Graph 50. Frequency of vegetable consumption of children aged 5 to 14 by gender



There are differences in terms of socio-demographic characteristics: children aged 5 to 10 (56.6%), in the Belgrade region (62.7%), as well as children from wealthier families (64.9%), consumed fruit at least once a day in a higher percentage. Children in the Belgrade region (60.3%) and from wealthier families (71.9%) consumed a larger percentage of vegetables at least once a day.

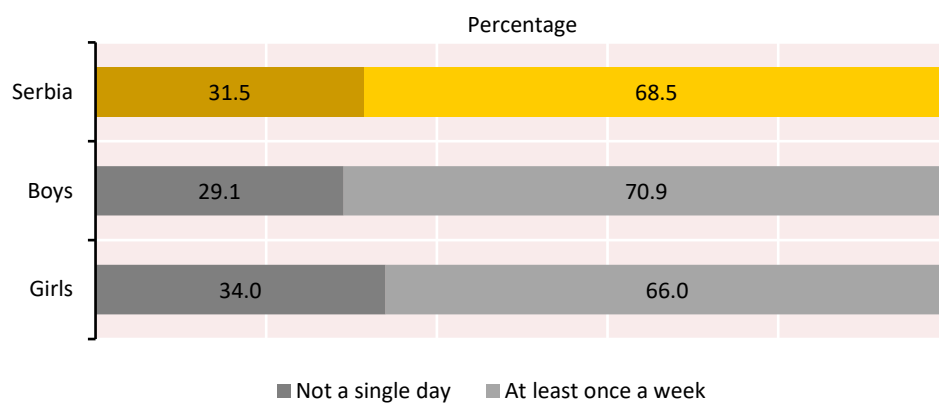
Almost half (47.7%) of children consumed sugary soft drinks at least 4 times a week, while 18.5% consumed it at least once a day.

### Physical activity and sports

Slightly more than two thirds of children (68.5%) had engaged in physical activities at least once a week (so that they breathe quickly or sweat), significantly more boys (70.9%) than girls (66.0%), in the Belgrade region (82.3%), as well as children from the wealthiest households (87.2%) (Graph 51). Children spent an average of 4.8 hours per week engaged in physical activity. In the population of children aged 7 to 14, there was a decrease in the percentage of children who engage in sports and recreational activities outside school at least once a week compared to 2013 (from 82.3% to 71.5%).



Graph 51. Frequency of physical activity of children aged 5 to 14 by sex



# Health of the elderly



Population aging – caused as a long-term consequence of low birth rates, but also an increase in life expectancy – is one of the problems facing the whole world.

Between 2015 and 2050, the percentage of people over the age of 60 will double – from about 12% to 22% of the world's population. The absolute number of people aged 60 and over is expected to rise from 605 million to 2 billion in the same period.<sup>70</sup>

With an average age of 41.6 years, the Republic of Serbia is in the group of the demographically oldest countries in Europe. In the period between the two Censuses in the Republic of Serbia (2002–2011), the average age of the population increased from 40.2 to 41.6 years, the average life expectancy increased by 1.8 years, and the percentage of persons over 65 exceeded the percentage of persons under 15 years of age.<sup>71</sup>

The relationship between health and aging is very complex. With the aging process, numerous physiological changes take place and the risks of chronic diseases increase. The elderly do not represent a homogeneous category in terms of health, which requires that the services of the health and social sector be better integrated and coordinated to meet the different needs of this population group.

## Health status

Self-perceived health is a reliable and valid indicator of health status and a good predictor of mortality and morbidity, and can be used as such to assess the health of the elderly.

In Serbia, almost a third of the population aged 65 and over (31.9%) rated their own health as very good and good (significantly more men - 38.4%, age groups 65 to 74 – 37.1%, from Belgrade – 40.6%, and urban settlements 37.3%), slightly more than a third of the population (41.3%) as fair, and a quarter (26.8%) as bad and very bad. The population of Southern and Eastern Serbia (30.7%), as well as the population of suburban settlements (31.4%) rated their health more common as bad.

Residents with the lowest education (37.5%), as well as those in the category of the poorest (41.0%) significantly more often perceived their own health as very bad and

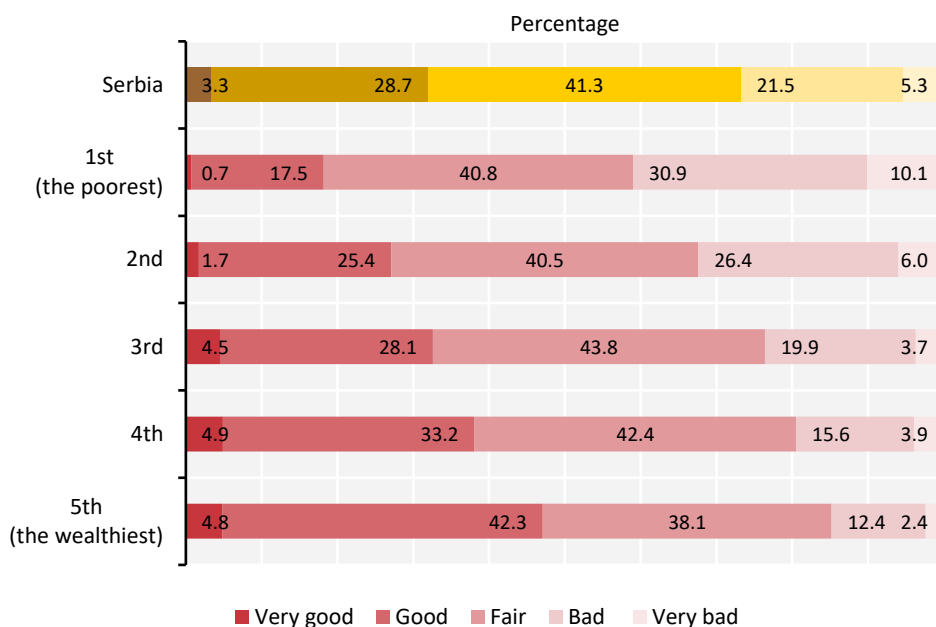
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<sup>70</sup> World Health Organization. World report on Ageing and Health. Geneva: World Health Organization; 2015.

<sup>71</sup> Републички завод за статистику. Статистички годишњак Републике Србије, 2020.

bad, while those with the highest household income (47.1%) and the most educated (46.2%) rated their health as good and very good in a higher percentage (Chart 52). 5.3% of the elderly population rated their own health as very bad, significantly higher among the residents of lower education (7.8%), the lowest income (10.1%) and those older than 75 (6.8%).

Graph 52. Self-perceived general health of the elderly according to the quintiles of household income



Despite the noticeable improvement in self-perceived general health compared to 2013, when a fifth of the elderly population (22.4%) assessed their health as good and very good, Serbia is still below the EU average. According to EU data (EUROSTAT), more than a third of the population (28 countries of the European Union) aged 65 and over (42.4%) assessed their own health as very good and good

in 2019, and 14.4% as poor.<sup>72</sup> A comparative analysis of 34 member countries of the Organization for Economic Development and Cooperation (OECD) showed that the range of values of good health in this population ranged from 8.2% in Lithuania to 86.6% in New Zealand.<sup>73</sup>

Over four-fifths of the elderly population of Serbia (85.7%) stated that they have a long-standing illness or health problem, slightly more than in 2013 (75.8%). Women (87.8%) were more likely to have a long-standing illness or health problem than men.

## Diseases and chronic conditions

Chronic non-communicable diseases are the primary reason for the use of health care in the elderly population.<sup>74</sup>

The most common disease, in the year preceding the Survey, among the elderly population of Serbia was high blood pressure (63.8%), followed by low back disorder or other chronic back defect (32.2%), coronary heart disease or angina pectoris (24.7%), neck disorder or other chronic neck defect (23.3%), high blood lipids (21.0%), diabetes (18.6%), arthrosis (18.0%) and urinary incontinence (10.4%), while others represented by less than 10%.

Observed according to demographic and socio-economic characteristics, it was noticed that the frequency:

- High blood pressure significantly higher in the population of Southern and Eastern Serbia (69.5%), women (67.3%) and residents with lower education (66.7%) and aged 75 and over (66.4%);
- Low back disorder or other chronic back defect significantly higher in women (36.8%), the poorest (37.6%), lower education (37.0%) and age 75 and older (36.8%);

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<sup>72</sup> Eurostat [database on the Internet]. Self-perceived health by sex, age and educational attainment level: European Commission [cited 2021 March 23th]. Available from: <http://appsso.eurostat.ec.europa.eu/nui/submitViewTableAction.do>

<sup>73</sup> OECD [database on the Internet]. Health Status: Perceived health status by age and gender. [cited 2021 March 23th]. Available from: <https://stats.oecd.org/index.aspx?queryid=30117>

<sup>74</sup> Boutayeb A, Boutayeb S. The burden of non communicable diseases in developing countries. *Int J Equity Health*. 2005;4(1):2.

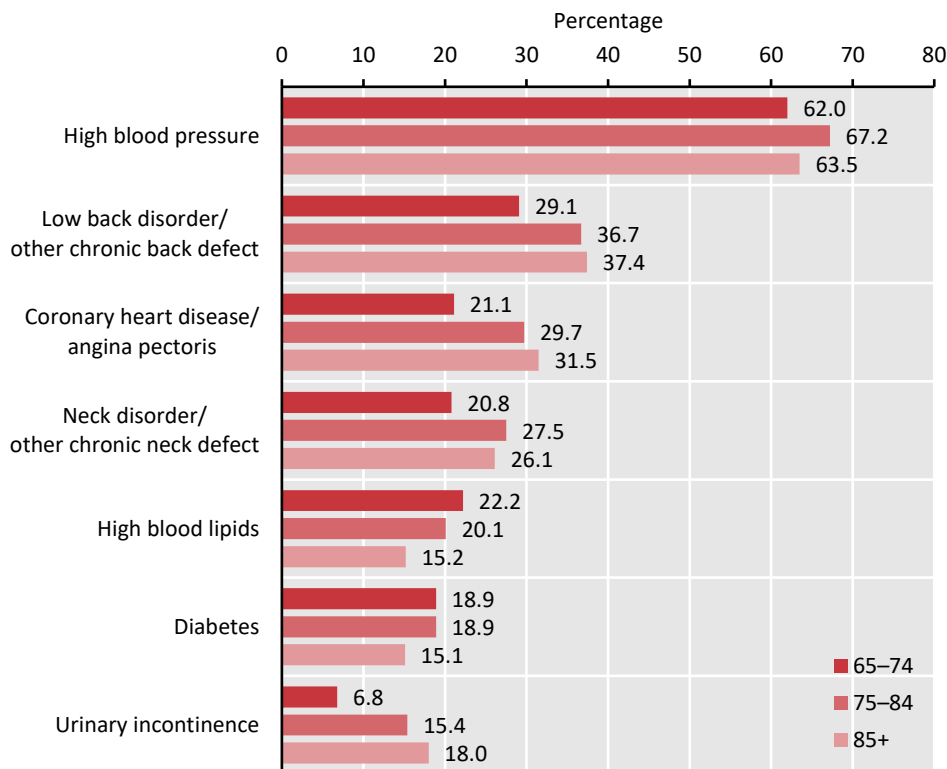
- Coronary heart disease or angina pectoris significantly higher in the population with lower education (28.9%) and age 75 and older (30.1%);
- Neck disorder or other chronic neck defect significantly higher in women (28.4%), residents with lower education (27.1%), the poorest (28.0%) and aged 75 and over (27.2%);
- High blood lipids significantly higher in women (24.9%), among the population of Vojvodina (25.1%) and Belgrade (23.6%) and the population aged 65 to 74 years (22.2%) compared to older age categories;
- Diabetes is significantly higher in the urban population (20.1%) compared to other settlements (16.7%);
- While urinary incontinence was significantly more common among the population with lower education (13.4%) and age 75 and over (15.9%), and significantly less common among the population with higher household income (7.5%).

The most common disease in Serbia was high blood pressure in all three age groups of the elderly population (Chart 53). High blood pressure was the most common disease in other European countries among the population aged 65 and over. The value of this parameter ranged from 29.5% in Norway to 68.4% in Hungary in the age group from 65 to 74, while in the age group of 75 and over the lowest percentage was also recorded in Norway (33.7%) and the highest in Bulgaria (72.6%).<sup>75</sup>

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<sup>75</sup> Eurostat [database on the Internet]. Persons reporting a chronic disease, by disease, sex, age and educational attainment level: European Commission [cited 2021 March 23th]. Available from: [https://ec.europa.eu/eurostat/databrowser/view/HLTH\\_EHIS\\_CD1E\\_\\_custom\\_751458/default/table?lang=en](https://ec.europa.eu/eurostat/databrowser/view/HLTH_EHIS_CD1E__custom_751458/default/table?lang=en)

Graph 53. Percentage of elderly population who had selected diseases according to age groups



## Physical and sensory functional limitations

Physical and sensory functional limitations are the basis for assessing the health status of the population in terms of capacity for daily functioning, regardless of the reasons for the limitations (innate limitations, caused by illness, accident, aging, etc.). As a result of the Budapest Initiative, a survey module has been developed to measure health status that includes major physical, sensory, and cognitive



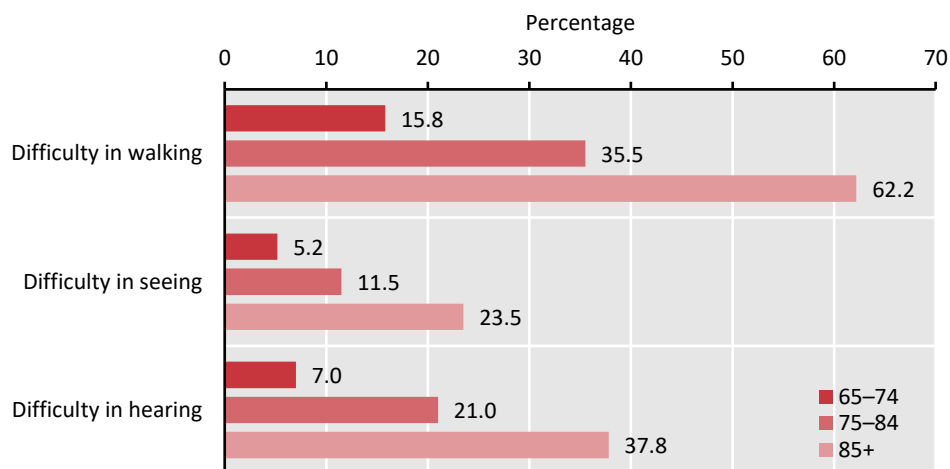
functional limitations (seeing, hearing, walking, and remembering or concentrating).<sup>76</sup>

Almost half of the elderly population (44.8%) had functional walking limitation, 40.7% had functional seeing limitation and 45.9% had hearing limitation.

Every fourth elderly resident (25.8%) stated that in 2019 he had severe difficulty in walking, 8.7% severe difficulty in seeing, and 13.9% severe difficulty in hearing. Observed by demographic and socio-economic characteristics, women (in walking 30.0%, in seeing 10.6%), residents of suburban settlements (in walking 30.1%, in seeing 10.2%), the lowest education and poorer, as well as older than 75 years (in walking 41.0%, in seeing 14.0% and in hearing 24.5%) (Chart 54).

Compared to the 2013 Survey, when every third elderly resident (37.1%) had difficulty in walking, every ninth (10.7%) in seeing vision, and almost every fourth (23.6%) in hearing there was a decrease in prevalence of functional limitations in the elderly population.

Graph 54. Percentage of elderly population with physical and sensory functional limitations by age groups



<sup>76</sup>[https://www.unece.org/fileadmin/DAM/stats/publications/BI\\_Report\\_to\\_CES\\_2012\\_-\\_BI-M2\\_Final\\_Version\\_\\_10\\_with\\_cover.pdf](https://www.unece.org/fileadmin/DAM/stats/publications/BI_Report_to_CES_2012_-_BI-M2_Final_Version__10_with_cover.pdf)

## Personal care and household activities

The existence of physical and sensory functional limitations reduces the capacity to perform daily activities, and thus affects the quality of life of the elderly.<sup>77</sup>

Slightly less than a third of the elderly in Serbia (31.5%) stated that they have severe difficulties in performing daily household activities (preparing meals, using the telephone, shopping, managing medication, etc.), and almost every tenth resident (9.5%) in performing personal care activities (feeding oneself, getting in and out of a bed or chair, dressing and undressing, using toilets, bathing or showering), which is unchanged compared to the 2013 Survey. The observed demographic and socioeconomic differences related to these activities are the same as those related to physical and sensory functional limitations. Namely, women, older than 75, residents of suburban settlements, the lowest education, as well as the poorest, were significantly more often limited in performing daily household and personal care activities. As expected, the percentage of people who are unable to perform daily household and personal care activities increases with age. Older residents of Sumadija and Western Serbia were significantly more likely to have difficulty performing household activities.

According to the indicators related to the percentage of the population who have difficulties in performing household and personal care activities on their own, Serbia is slightly above the average of the European Union countries in all age groups (Table 11).

In the population of elderly people with difficulties in performing household activities, 29.7% do not need assistance, 33.3% get enough assistance, while more than a third (37.0%) had lack of assistance. Residents of Southern and Eastern Serbia (49.1%), the poorest (46.8%), lower education (42.0%) and those aged 75 and over (44.0%) were significantly more often in lack of assistance with household activities.

In the population of elderly people with difficulties in performing personal care, 30.7% do not need assistance, 24.5% get enough assistance, while almost half (44.8%) had lack of assistance. Lack of assistance in performing personal care was significantly more often found in the population belonging to the category of the poorest (48.5%), lower education (48.6%) and age 75 and older (49.9%).

<sup>77</sup> Maresova P, Javanmardi E, Barakovic S, et al. Consequences of chronic diseases and other limitations associated with old age - a scoping review. BMC Public Health. 2019;19(1):1431.

The representation of lack of assistance in performing household activities, as well as personal care activities has not changed significantly compared to the Survey in 2013 (37.1% and 51.9%, respectively).

Table 11. Percentage of the elderly population with severe difficulties in performing household<sup>78</sup> and personal care activities,<sup>79</sup> Serbia (2019) and selected countries (2014)

Difficulties	Minimum (%)	Maximum (%)	EU average (%)	Serbia (%)
Household activities				
65+	11.6 Sweden	51.6 Turkey	25.8	31.5
65–74	4.3 Norway	42.2 Turkey	13.9	19.7
75+	19.9 Sweden	69.4 Turkey	39.2	49.3
Personal care activities				
65+	2.5 Norway	16.7 Belgium	8.8	9.5
65–74	1.1 Malta	7.0 Hungary	3.4	4.7
75+	3.9 Norway	26.4 Belgium	14.9	16.8

## Accidents and Injuries

Injuries are a significant public health problem, especially in the elderly population. Higher mortality rates caused by injuries were observed in this age group, with falls being the leading cause of death.<sup>80</sup>

<sup>78</sup> Eurostat [database on the Internet]. Difficulties in household activities by sex, age and educational attainment level: European Commission [cited 2021 March 23th]. Available from: [https://ec.europa.eu/eurostat/databrowser/view/HLTH\\_EHIS\\_HA1E\\_\\_custom\\_761419/default/table?lang=en](https://ec.europa.eu/eurostat/databrowser/view/HLTH_EHIS_HA1E__custom_761419/default/table?lang=en)

<sup>79</sup> Eurostat [database on the Internet]. Difficulties in personal care by sex, age and educational attainment level: European Commission [cited 2021 March 23th]. Available from: [https://ec.europa.eu/eurostat/databrowser/view/HLTH\\_EHIS\\_PC1E\\_\\_custom\\_761431/default/table?lang=en](https://ec.europa.eu/eurostat/databrowser/view/HLTH_EHIS_PC1E__custom_761431/default/table?lang=en)

<sup>80</sup> Violence and injuries in Europe: burden, prevention and priorities for action. Copenhagen: WHO Regional Office for Europe; 2020.

In Serbia, 7.4% of the elderly population suffered some kind of injury during 2019. According to the place of injury, it was most often in the house (4.9%), without significant change compared to 2013 (4.4%). Of the total number of injured, four fifths (80.4%) received medical assistance.

## Use of health care

Primary health care for the elderly is provided through their general practitioner, gynecologist and a dentist. They can also use the consultant services of specialist, which are not related to hospital treatment. The use of hospital services is realized as a continuation of diagnostics, treatment and rehabilitation started at the primary level.<sup>81</sup>

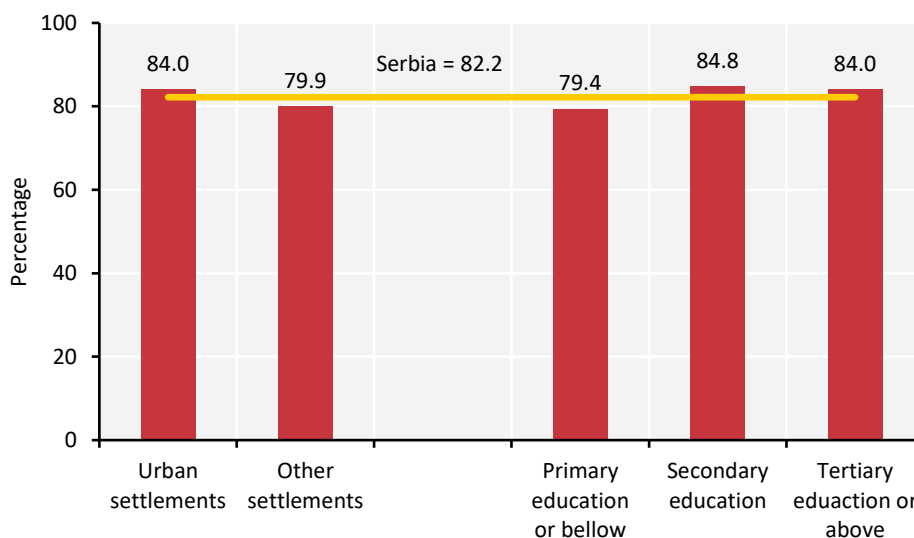
In line with the increasing share of the elderly in the general population, the need for the provision of home treatment and care services and an integrative approach to caring for the elderly has increased.

According to the results of the Survey, 95.9% of the elderly population had their general practitioner in 2019, which is unchanged compared to the Survey 2013. In the year preceding the Survey, four fifths of the elderly (82.2%) visited a general practitioner, significantly more frequent urban and more educated population (Chart 55). In the same period, 55.6% of the elderly visited the specialist. Each resident visited either a general practitioner or a specialist on average once a month, which is unchanged compared to the 2013 Survey.

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<sup>81</sup> Закон о здравственој заштити. Службени гласник РС, бр. 25/2019

Graph 55. Percentage of elderly population who visited a general practitioner by type of settlement and level of education



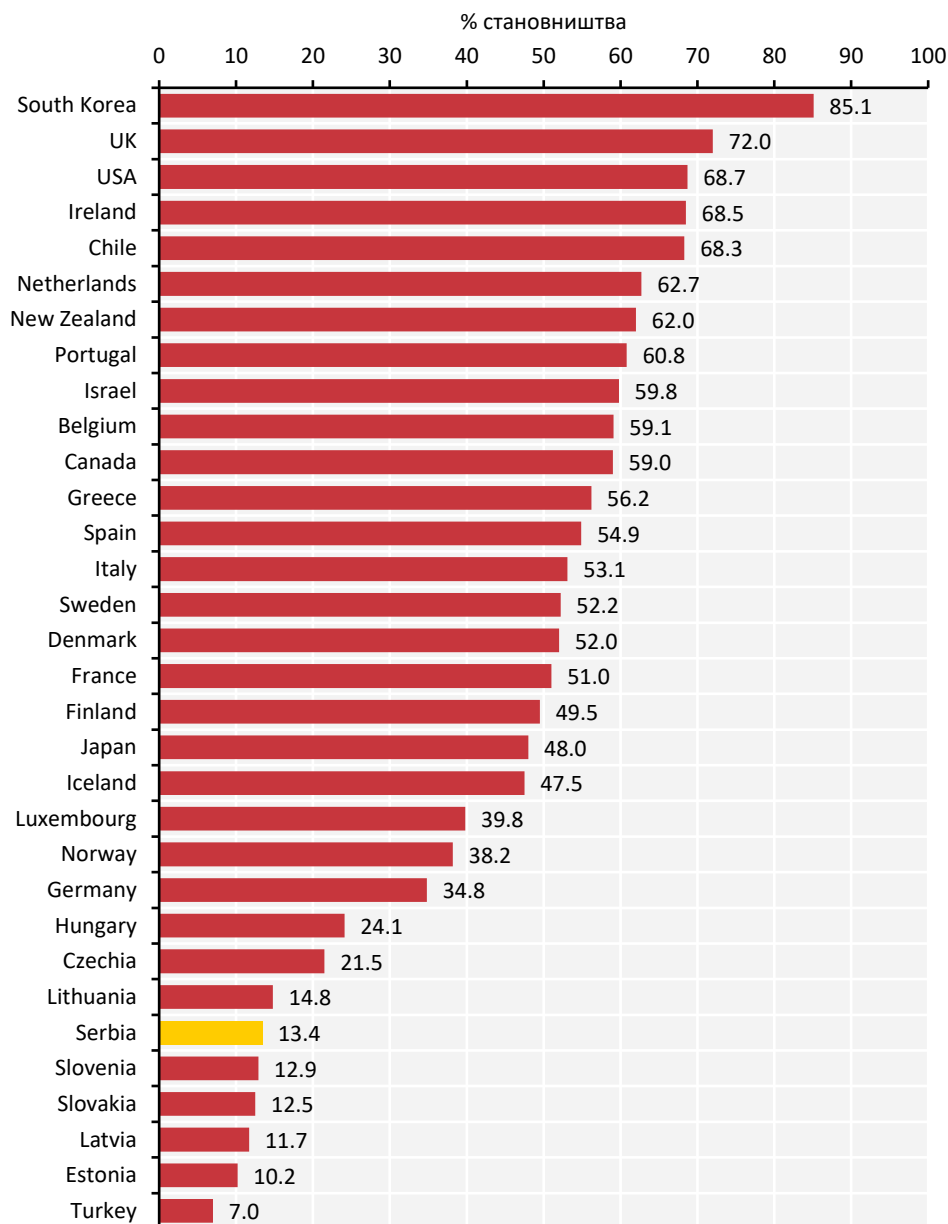
A significant indicator of quality improvement at the level of primary health care for the elderly is the percentage of those vaccinated against.

According to the 2019 Survey, 13.4% of the elderly population stated that they received the vaccine against influenza in the year that preceded it. This percentage is significantly higher among the population aged 75 and over (16.3%) and those with higher level education (18.4%).

Although there has been an improvement compared to 2013, when 8.7% of older people received the influenza vaccine, based on this indicator, Serbia is among the EU countries with the lowest percentage of older people who received this vaccine. The range of values of this indicator, according to EUROSTAT data in 2014, ranged from 1.5% in Estonia to 78.6 in the United Kingdom. Also, comparative data from 37 member countries of the Organization for Economic Development and Cooperation (OECD) showed that the average vaccination rate for people over 65 was over 50% in 2019.<sup>82</sup> (Graph 56).

<sup>82</sup> OECD Health Statistics 2020. Available at: <http://www.oecd.org/health/health-data.htm>

Graph 56. Percentage of elderly population vaccinated against influenza, Serbia and selected countries, 2019 or last available



Every second elderly resident (53.0%) stated that they have dentist, which is an improvement compared to 2013 when every third (31.5%) had their dentist. Residents aged 65 to 74 (58.5%), living in urban settlements (60.7%), in the Belgrade region (75.0%), having higher level education (74.4%), and who belong to the group of the wealthiest (67.7%) significantly more often had their dentist. 19.4% of the elderly visited the dentist in the last 12 months.

Every second older woman (47.9%) had gynecologist, which is an improvement compared to 2013 when every fourth (25.5%) had gynecologist. Women aged 65 to 74 (55.6%), those living in urban areas (52.2%), Belgrade (69.8%), who have higher education (63, 0%), as well as those belonging to the group of the wealthiest (59.7%) were more likely to visit a gynecologist. In the last year, every tenth elderly woman (12.1%) visited gynecologist.

In the last year, private practice services were used by every fourth elderly resident (24.6%), which is a significantly higher percentage compared to 2013, when every seventh elderly resident used private practice services. Population from urban settlements (29.5%), Belgrade (37.3%), having higher education (45.7%), with the highest household income (43.3%) and age from 65 to 74 years (27, 7%) used private practice services significantly more often. In 2019, 4.8% of the elderly had general practitioner in private practice, 25.6% chose a private dentist, while 5.5% of women had a chosen gynecologist in private practice.

In Serbia, in the year preceding the Survey, 13.7% of the elderly population was hospitalized as inpatient. Men (15.5%) and people aged 75 and over (15.6%) were significantly more often hospitalized as inpatient. About 10% of the elderly population were hospitalized as day patient. Compared to the 2013 Survey, the hospitalization as inpatient increased, and the hospitalization as day patient in the elderly population decreased (data from the 2013 Survey: inpatient 7.8% and day patient 15.0%).

Home care and assistance services, provided by health workers or social workers, were used by 5.2% of the elderly, which is significantly less than the percentage of the elderly who stated that they needed assistance, unchanged compared to 2013 when 4.6% of the elderly population did so. These services were significantly more often used by women (6.2%), persons with the lowest level of education (7.5%), residents aged 75 to 84 (7.5%) and 85 and older (17.7%).

# Medicine use

The use of medicine and medical devices has increased in the last few decades, which can be a problem of an aging society, and indicates aspects of accessibility, quality but also increasing health care costs.<sup>83</sup>

In the period of two weeks preceding the survey, medicines prescribed by a doctor were used by 85.3% of the elderly in Serbia, significantly more often by women (88.5%) and residents aged 75 and over (89.1%), which is unchanged compared to the 2013 Survey.

According to EUROSTAT data, a slightly higher percentage of prescribed medicines use was registered in Serbia in the older population, than the European Union average (Table 12).

Table 12. Percentage of elderly population who used prescribed medicines by age groups, Serbia (2019) and selected countries (2014)<sup>84</sup>

Age	Minimum (%)	Maximum (%)	EU average (%)	Serbia (%)
65+	61.1 Romania	92.1 Czech Republic	82.2	85.3
65–74	55.2 Romania	89.4 Czech Republic	78.1	83.0
75+	68.0 Romania	96.3 Czech Republic	87.1	89.1

Almost every second elderly resident in Serbia (45.0%) used medicines, herbal remedies or vitamins not prescribed by a doctor during the two weeks before the Survey, significantly more women, residents of Belgrade, urban settlements, the most educated and wealthiest.

<sup>83</sup> Dagli RJ, Sharma A. Polypharmacy: a global risk factor for elderly people. J Int Oral Health. 2014;6(6):i-ii.

<sup>84</sup>Eurostat [database on the Internet]. Self-reported use of prescribed medicines by sex, age and educational attainment level: European Commission [cited 2021 March 23th]. Available from: [https://ec.europa.eu/eurostat/databrowser/view/HLTH\\_EHIS\\_MD1E\\_\\_custom\\_761378/default/table?lang=en](https://ec.europa.eu/eurostat/databrowser/view/HLTH_EHIS_MD1E__custom_761378/default/table?lang=en)



## Social support

In Serbia, a quarter of the elderly population (24.4%) stated that they have strong social support, more than half intermediate (60.3%), while almost every seventh elderly resident rated social support as poor (15.4%).

Older residents with lower levels of education (18.0%), lower household incomes (22.6%), living in suburban settlements (15.9%) and older than 75 years (16.3%) assessed a higher percentage of social support as poor.

# Conclusions



## Health status

The percentage of the population that perceives their general health as very good or good (66.5%) increased compared to 2013 and 2006 (57.8% and 49.8%), which is closer to the average value of this indicator in the countries of the European Union.

The existence of a long-standing illness or health problem was recorded in 43.6% of Serbian citizens, slightly more than in 2013 (40.0%).

Due to health problems, in the last 6 months preceding the survey or longer, 20.3% of the population in Serbia was restricted in performing daily activities, which is a significant decrease compared to 2013 (29.9%).

The percentage of the population that perceived their general oral health as very good or good (55.3%) increased compared to 2013 and 2006. Improving oral hygiene habits may be associated with an increase in the percentage of the population that has all their teeth.

Compared to 2013, there was a predominant decrease in the frequency of most of the examined diseases and chronic conditions in the adult population. The highest percentage of the population stated that they have high blood pressure (29.6%), followed by low back disorder or other chronic back defect (17.2%), neck disorder or other chronic neck defect (12.1%), high blood lipids (10.8%), coronary heart disease or angina pectoris (8.9%), diabetes (7.8%), allergies (7.3%), arthrosis (6.9%), depression (4.3%) and kidney problems (3.9%).

The frequency of high blood pressure compared to 2013 and 2006 is unchanged, both based on the statements of the respondents and based on the results of blood pressure measurements in the adult population. However, the percentage of the adult population diagnosed with untreated hypertension has decreased significantly (from 9.4% in 2013 to 5.7% in 2019).

During the year preceding the survey, 4.9% of the population had an injury (in traffic, at home or during leisure activities), which is a slightly lower percentage compared to 2013 (5.2%). Medical assistance was provided to 75.0% of the injured.

In the year preceding the Survey, every sixth inhabitant of Serbia was absent from work due to health problems, on average 37 days, which is slightly more than the Survey in 2013, when every sixth inhabitant was absent from work for an average of 34.5 days.

2.1% of the population had symptoms of depression, which is lower than in 2013 (4.1%). Most residents with symptoms of depression were recorded in the population older than 75 years and older.

## Health determinants

More than half of the population of Serbia is overweight (pre-obese and obese). The percentage of obese in 2019 (20.8%) differs slightly compared to 2013, but is significantly higher compared to 2006.

Fruits and vegetables were consumed at least once a day by 39.4% and 50.2% of the population of Serbia, which in both cases is below the EU average (58.6% and 61.0%, respectively).

In 2019, almost two thirds (64.6%) of the population of Serbia aged 18 to 64 meet the recommendations of the World Health Organization for performing health-enhancing physical activity. Excessive sedentary behavior was exposed to 23.0% of the population of Serbia aged 15 and over.

Almost every third inhabitant of Serbia smokes (daily or occasionally), which is above the average of EU countries. Almost half of the population older than 15 in Serbia is exposed to tobacco smoke. Less than a third of smokers received advice to stop smoking from a health worker. The implementation of the existing legal regulations, as well as the further adoption of tobacco control measures in accordance with the Framework Convention on Tobacco Control of the World Health Organization remain the priorities of the health policy of the Republic of Serbia.

In the year preceding the Survey, half of the population of Serbia consumed alcohol. 3.1% of the population drank daily, and the habit of consuming alcohol on a daily basis was more common among men. 1.1% of the population was exposed to the hazardous alcohol consumption, significantly more often men (2.0%) than women (0.3%). At least once a month, 10.9% of the population was exposed to heavy episodic drinking, which is lower than the European average. Every sixth adolescent between the ages of 15 and 19 was exposed to heavy episodic drinking, at least once a month. Implementation and integration of all activities defined by the National Program for the Prevention of Harmful Alcohol Use and Alcohol-Induced Disorders also remain health policy priorities in the Republic of Serbia.

In the year preceding the survey, 1.4% of the population used some of the illegal drugs, most often cannabis in the age group of 15 to 24 years (2.9%).

In the adult population, there is an increase in the use of condoms with an occasional partner compared to the 2013 Survey (50.5% vs. 43.3%).

Two-fifths of women aged 15 to 49 who were sexually active in the year preceding the survey used a contraception; women with lower education and women from the poorest households used contraception significantly less.

Only a third of young people aged 15 to 24 had sufficient knowledge about HIV/AIDS. In the population aged 15 to 49, 2.1% were tested for HIV during the 12 months preceding the Survey.

In Serbia, almost a third of the population stated that they have strong social support, slightly more than half intermediate, while every ninth inhabitant assessed social support as poor.

In Serbia, every seventh resident provides informal care or assistance at least once a week, most often to family members.

## Health care

91.1% of the population of Serbia aged 15 and over had general practitioner or pediatrician. Slightly less than two thirds of the population of Serbia visited a general practitioner or pediatrician in the year preceding the Survey. Two thirds of women had gynecologist, and one third of women visited a gynecologist in the year preceding the research. Two-thirds of the population had dentist, and almost half of the population had dentist in private practice. During the year preceding the Survey, every third inhabitant of Serbia visited a dentist. In the same period, two fifths of the population of Serbia (41.3%) visited a specialist.

In Serbia, 7.7% of the population over the age of 15 were hospitalized as inpatient in the year preceding the Survey, similar to the results of the 2013 Survey (7.8%). During the year preceding the Survey, 6.6% of the population of Serbia was hospitalized as day-patient, with an average of 4 stays, which is significantly less than in 2013, when, according to the results of the Survey, 10.4% of the population was hospitalized as day-patient, with an average of 5 stays.

In the year preceding the Survey, 27.7% of the population of Serbia used private practice services, which is a significant increase compared to 15.1% in 2013.

In Serbia, in the period of two weeks before the Survey, 45.3% of the population used medicines prescribed by a doctor, and 37.0% used medicines, herbal remedies or vitamins not prescribed by a doctor.

In the adult population, the percentage of those who used preventive services increased significantly compared to 2013 and 2006. In the last five years, preventive services related to the measurement of blood pressure, blood sugar and cholesterol have been performed on over 90% of the population of Serbia. In the target population of women for early detection of breast cancer, 30.1% performed a mammogram in less than two years prior to the study, while a screening for early detection of cervical cancer in less than three years prior to the study performed two thirds of women in the target population. Faecal occult blood test in less than three years was prior to the study was done by every ninth inhabitant of the target population, while colonoscopy in less than 10 years was done by every eleventh inhabitant of the target population.

Among the population in need of health care, 15.4% did not meet their needs due to long waiting lists, 4.1% due to distance or transportation problems and 31.3% due to financial reasons. Finances were the reason for not meeting the needs of most often dental (13.9%) and medical health care (12.2%), followed by the procurement of prescribed drugs (9.9%) and mental health care (4.0%).

## Children's health

The majority of parents (97.7%) in 2019 assessed the health of their children as a as very good and good, which corresponds to the results obtained in the Surveys from 2013 and 2006.

7.9% of children aged 5 to 14 had a long-standing illness or health problem. In the last 6 months or longer, due to health problems, 3.2% of children in Serbia have been restricted in activities that are usually performed by other children of the same age.

In terms of functional impairments, in previous systematic/ preventive examinations, the largest percentage of children had a problem with flat soles (13.3%), while 8.7% of children had spinal deformities.

Every eighth child (12.4%) had a vision difficulty, while vision aids (glasses or contact lenses) were used by 10.3% of children. 1.9% had a hearing difficulty, and 0.7% of children used a hearing aid.

2.1% of children aged 5 to 14 had a walking difficulty. 0.4% of children used walking aids.

The percentage of obese children aged 5 to 14 in 2019 was 12.9%, while pre-obese children were 16.6%. A significantly higher percentage of obese children is in the category of preschool children. In 2019, an increase in the percentage of obese school-age children was registered compared to 2013.

Four-fifths of children (82.5%) consumed at least one cup of milk or dairy products every day, which is more than in 2013 and 2006 (74.2% and 60.4%, respectively). Every other child consumed fruits (52.3%) and vegetables (53.9%) on a daily basis.

According to the 2019 Survey, two thirds (68.5%) of children engaged in physical activities in their free time. There was a decrease in physical activity in the population of school children compared to 2013.

## Health of the elderly

One third of the elderly population in Serbia perceived their general health as very good and good (31.9%), which is an improvement compared to 2013, when a fifth of the elderly population (22.4%) perceived their general health in the same way. Despite the noticeable improvement, Serbia is still below the average of the European Union countries in relation to this indicator.

Over four-fifths of the elderly (85.7%) stated that they had a long-standing illness or health problem, slightly more than in 2013 (75.8%).

The most common disease or chronic condition among the elderly population of Serbia was high blood pressure, followed by low back disorder or other chronic back defect, coronary heart disease, neck disorder or other chronic neck defect, high blood lipids, diabetes, arthrosis and urinary incontinence.

Every fourth elderly resident had severe difficulty in walking, every eleventh in seeing, and every seventh in hearing, which is an improvement compared to 2013 when every third elderly resident had severe difficulty in walking, every ninth in seeing, and almost every fourth in hearing.



Slightly less than a third of the elderly in Serbia had severe difficulties in performing household activities, and almost every tenth resident in performing personal care activities, which is unchanged compared to 2013. In the population of elderly people with difficulties in performing home activities, more than a third (37.0%) had an unmet need for assistance. In the population of elderly people with difficulties in performing personal care, almost half (44.8%) had an unmet need for assistance.

In the year preceding the Survey, 7.4% of the elderly population experienced some kind of injury, most often at home (4.9%), which is unchanged compared to 2013 (4.4%).

Every elderly resident visited a general practitioner or a specialist on average once a month. According to the Survey, 13.4% of the elderly population received the influenza vaccine in the year before, which is an improvement compared to 2013, but based on this indicator, Serbia is still among the European countries with the lowest percentage of elderly people who received the vaccine. In the elderly population, there is a low level of use of dental health care. Every second older woman had her own gynecologist, which is an improvement compared to 2013 when every fourth older woman had her own gynecologist.

Private practice services were used by every fourth elderly resident, significantly more than in 2013, when every seventh elderly resident used private practice services.

Home care and assistance services, provided by health workers or social workers, were used by 5.2% of the elderly, unchanged compared to 2013 (4.6%).

The Survey registered a slightly higher percentage of prescribed medicines use in the elderly population (85.3%) than the European Union average (82.2%).

A quarter of the elderly population said they had strong social support, more than half intermediate, while every seventh elderly resident rated social support as poor.



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