

1 357 9 2468 0

Stewardship

24681 5 379 1

Fair Financial Contribution

0257 9 6 7 3 6 3

Responsiveness

3 5 7 6 9 5 9 5 8 2

Creation of Resources

9 5 6 4 8 7 420 8 4

Service Delivery

3 5 7 9 2 796 1 7 5

Financing

1 6 9 5 2 578 4 2 3

Health Improvement

8 3 59 6 7 4 2 3 5

Access to Health Care

75 5 8 2 9 4 7 1 6 9

Quality and Safety

5 6 8 3 9 3 7 1 6 4 1

Financial Protection

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ARMENIA HEALTH SYSTEM PERFORMANCE ASSESSEMENT

HEALTH SYSTEM PERFORMANCE ASSESSMENT

ARMENIA

2016

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page 195

The seventh report on Health System Performance Assessment (HSPA) presents key challenges of the Republic of Armenia health system, general health status of the population as well as the mental health, most prevalent morbidity and mortality causes, problems related to healthy lifestyle, prevalence of risk factors of non-communicable diseases, quality of and financial access to health care services, system response to population demands, availability and distribution of health system human resources, as well as availability of needed specialists in places.

Analyses presented in the HSPA report are based on official health statistics of Armenia and the findings of the 2015-2016 sample survey. They summarize achievements and shortcomings of the health system performance and are aimed at development and strengthening of the system capacities.

Each section of the report includes the overview of the challenges of the health system of Armenia and recommendations on improvement of the performance effectiveness and efficiency.

HSPA report is designed for health system organizers, health experts, clinicians, as well as other specialists interested and involved in health system issues.

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ABBREVIATIONS

AMI	Acute myocardial infarction
ADHS	Armenia Demographic and Health Survey
AH	Arterial hypertension
AP	Arterial pressure
BC	Breast cancer
BMI	Body mass index
CSD	Circulatory system diseases
CIS	Commonwealth of Independent States
CerC	Cervical cancer
CerVD	Cerebrovascular disease
DK	Don't know
DAH	Diseases associated with arterial hypertension
EU-26	Union of 26 Eastern European states
EU-27	Union of 27 Eastern and Central European states
GDP	Gross domestic product
HFA-DB	European Health for All Database
HPIU	Health Project Implementation Unit
HHR	Health system human resources
HSPA	Health system performance assessment
HH	Household
IHD	Ischemic heart disease
ICD-10	International statistical classification of diseases and related health problems, 10th revision
IPCEC	Injury, poisoning and other consequences of external causes
MoH	Ministry of Health of Republic of Armenia
NIH	National Institute of Health after Academician S. Abdalbekyan, Ministry of Health of the Republic of Armenia
NHA	National Health Accounts
NSS	National Statistical Service of Armenia
NHIAC	National Health Information Analytical Centre
NCO	National Center of Oncology
NGO	Nongovernmental organization
NSS	National Statistical Service of Armenia
MDGs	Millennium Development Goals
MTEF	Medium-term expenditure framework
Pap test	Cervical screening method used to detect potentially pre-cancerous and cancerous processes in the cervix (Papanicolaou test)
PHC	Primary health care
RF	Risk factors
SHA	State Health Agency
YSMU	Yerevan State Medical University
WHR	World Health Report
WHO	World Health Organization

Please refer to ‘Armenia Health System Performance Assessment, 2016’, Yerevan, 2016, when you use published data in HSPA.

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FOREWORD

Preventive measures implemented for population health strengthening and improvement are among overarching goals of any health system all over the world. Population health strengthening and promotion is the warrant of a country's socioeconomic development. The Government of Armenia, being faithful to its commitments, continues targeted elaboration and implementation of population health improvement efforts, since healthy society implies reduction of the health system financial burden and development of the country's economy.

It is not a secret that financial resources of any country are rather limited and budget deficit is inevitable. However this should not hamper investments in population health improvement.

Annual health budget allocation requests should be supported by adequate rationales. This requires bridging the system gaps.

The 2015-2016 health reforms were targeted at (a) modernization of the system and public health strengthening, (b) early detection and proper control of cardiovascular diseases, malignancies and diabetes, thus contributing to reduction of the burden of non-communicable diseases, (c) improvement of the quality of hematological and oncological care and services, (d) establishment of infrastructures, as well as (e) population health needs assessment. Interagency cooperation is one of the key challenges of the health system, since it can seriously facilitate implementation of strategic public health programs on both national and periphery levels.

Improvement of health system performance and effective management require implementation of an integrated electronic health information system with transparent and accurate data collection and assessment, which is critical for drafting further reforms, clear-cut strategies and policies.

The Ministry of Health of Armenia is committed to the engagements of the Government and assumes responsibility for easy access to healthcare, reduction of financial risks, improved population satisfaction, and population health improvement and strengthening, through effective interagency cooperation and being guided by the WHO Health 2020 Strategy.

Health system performance assessment (HSPA) is a tool, which enables observing and assessing effectiveness of health system performance, the reform progress and impact on population health. Adequate assessment of the system is prerequisite to reforms and a valid argument for future investments

Ministry of Health of the Republic of Armenia

GENERAL CONCEPT OF HEALTH SYSTEM PERFORMANCE ASSESSMENT

Health system performance assessment is a strong argument for improvement of the system and further investments. It helps shaping reforms and improves social wellbeing through meeting population expectations.

HSPA reflects health system functions, population health status, the burden of diseases and the prevalence of risk factors as well as the effectiveness of intersectoral collaboration for implementation of reforms.

HSPA helps performing realistic assessment of the role and importance of the health system and answering below three questions raised by the society:

- How can investments in the health system improve population health, economic and social wellbeing?
- What guarantees can an effective health system performance offer in the future?
- How to manage the health system and improve its performance in order to ensure maximum effectiveness?

A coordinated approach to the HSPA process enables centralizing the health system performance and drafting joint, feasible and complex projects in order to demonstrate remarkable successes.

Health system performance has a multi-layer domain, hence integration of governance levels (central, regional) and public - private sectors is a key function. Reforms of the system imply accurate definition of responsibilities, application of effective and flexible regulations, clear understanding that many key health functions are outside the scope of health system and require coordinated intersectoral cooperation.

Recently countries in the European Region, and Armenia as well, seem to attach greater importance to assessment of the health system performance.

Health system performance depends on reliability of information, which enables assessing the outcomes of the system performance. Application of information technologies facilitates data collection and analysis, ensures more accurate estimation of costs, revenues and current situation in order to make target decisions.

The analysis data should be presented in a way that every stakeholder, i.e. patients, providers, health organizers can find interesting and useful information.

Of course addressing this problem is not an easy task, since many functions need to be observed and linked to end data results. Carefully chosen and clearly defined indicators can show the level of achievement of the target and pinpoint the steps needed to improve the effectiveness.

The effectiveness of performance assessment depends on how useful is the implementation of the health system. Hence it cannot stand alone from political levers ensuring factual improvement. Drafting and enforcement of activities aimed at performance improvement require very careful approach. Besides, the process should not be limited to implementation of short-term goals and should not ignore innovations.

Collection of reliable and valuable data, their transparent analysis, coordinated use of the findings during planning and evaluation, as well as support to informed public discussions are part of the management function of the Ministry of Health. All these factors together ensure smooth implementation of health system goals and targets and management of compromises between them.

Health system organizers are responsible not only for assessment of the system effectiveness but also for further improvement of the system performance.

Each health system decides independently about what activities should be implemented to improve population health and social wellbeing and how to implement them.

In June 2008, the 53 Member States of the WHO European Region met in Tallinn, Estonia, and endorsed the “Health Systems, Health and Wealth” (Tallinn Charter). A regular process of health system performance assessment (HSPA) is an important first step to meeting the Charter commitments.

Armenia implemented the first HSPA in 2007. The process was institutionalized and a unit for health system performance assessment was established at the National Institute of Health of the Ministry of Health. The HSPA 2016 is the seventh report published by the country. Armenia is one of the few countries in the European Region that conducts regular assessment of health system performance.

HSPA Armenia has three ultimate goals:

- To assess progress in implementation of the key health system goals and monitor changes in the system.
- To initiate summary assessment of the health system performance.
- To position health system performance in the limelight of the national health policy.
- To help improving effectiveness of the health system management.

- To make possible the assessment of the health system effectiveness.
- To highlight priority areas within the functions and efforts aimed at improvement of the health system performance.
- To promote more complete search and collection of health system data and the latter's accurate analysis.

Selecting the right indicators is critical in assessment of any system performance. This is done within the framework of HSPA strategy.

Below are the prerequisites of selection of HSPA indicators and development of the package.

1. The relation of indicators with health system reform goals and the strategy.
2. Availability and reliability of data.

When assessing the system performance the team observed annual results of indicators and studied recent trends. Results were also matched with targets set in the RA Government strategies or the MDGs.

The Armenia HSPA included the following:

- Changes in health system of Armenia were observed, particularly data were compared with baseline situation of 1990 and the start of economic growth in 2000.
- An attempt was made to identify relations with health system performance reforms, referring to special reform projects (e.g. primary healthcare reforms or hospital optimization). The team studied population health status across wealth quintiles in order to understand access to healthcare by different demographic groups.
- Population satisfaction with services rendered by healthcare facilities was assessed.
- The burden of chronic diseases and the prevalence of risk factors were studied.
- Education and training of human resources, their distribution and availability of specialists were assessed.

EXECUTIVE SUMMARY

The Armenia Health System Performance Assessment Report 2016 comprises of eight chapters.

Health status

This chapter presents population demographic and health indicators, most prevalent noncommunicable diseases (NCD) and death causes, maternal and child health indicators, population general and mental health estimates and other issues.

Over the last decade the average life expectancy in Armenia remains 75 years. At that, women live 6.5 years longer than men. Nonetheless, the average life expectancy at birth is overestimated, so health status analyses cannot be based on this key integral indicator and its change tendencies.

In early 2016 the proportion of 65 and older population comprised 10.9%. Aging population is one of the main demographic challenges of the country. This is the result of long-term demographic changes, shifts of population reproduction, natality and mortality ratios, as well as migration.

Another important factor contributing to low birth rate in Armenia is the vast spread of self-centered values and socioeconomic conditions, limiting the number of children to 1 or 2.

According to official statistics main causes of mortality in Armenia include NCDs, in particular, circulatory system diseases (CSD 46%), malignancies (21.9%), diabetes mellitus (DM4.6%), chronic obstructive pulmonary diseases (COPD 4.2%). Thus, the NCD share of mortality burden is nearly 75%.

Reducing NCD prevalence and mortality burden requires implementation of PHC screenings for early detection of these diseases, thus improving follow-up of patients and the quality of care.

NCD mortality is essentially higher in regions, particularly Tavoush and Lori. One of the health priority challenges is early death (under 65) due to NCDs which covers 28.5% of the general death structure. This means that every third dies not reaching the age of 65.

Most prevalent diseases include respiratory system, CSD, cancers, digestive organs, genitourinary system, eye and related diseases, and endocrine system diseases, which comprise 67.1% of total morbidity.

Maternal and child mortality rate is closely linked to the country's socioeconomic development. Under-5 mortality rate (per 1 000 live births) was 10.4 ‰ in 2015, 21.4 ‰ in 1994 and 13.0 ‰ in 2004. Decline of the rate is primarily due to reduction of under1 mortality. Child mortality has dropped

between 2011 and 2015. The rate is close to the target set in both MDGs and National Maternal and Child Health Strategy. Child mortality in Armenia is lower compared with CIS, Eastern European countries (EU-26), Georgia and Turkey, but higher than in EU-27 (developed European countries) countries. Child health and nutrition are among priority issues of child welfare. As Armenia Demographic and Health Survey (ADHS) 2010 shows 19 % of under-5 children in Armenia are stunting, 4% malnourished and 5% are underweight. Along with this, there is also a contrary picture - some 15% of children are overweight.

As HSPA findings suggest, between 2016 and 2012, the general health, bodily pain, mental health and viability rates have increased, but the physical, role physical and role emotional and social viability values have decreased.

According to HSPA the following 12 conditions, symptoms and complaints are most prevalent in 15 and older population as reported during the past month: headache, lower back pain, joint pain, sleeplessness, neck/shoulder ache, pain in the chest when walking or doing other movements, toothache, depression, edema of legs, variceal dilatation of veins, constipation, dermatoses.

Most common conditions reported by RA population included headache, sleeplessness, pain in the chest when walking or doing other movements.

The study of the mental health according to the sample survey results, witnesses that some 40% of the country population suffers some form of mild depression, 2.9% reported to have mild form and nearly 0.1% serious form of depression. Depression is strongly linked to health, age, gender and educational attainment.

According to 2016 survey, most prevalent chronic diseases and conditions in 15 and older population include arterial hypertension (AP), heart, vision and nervous system diseases.

Risk factors

Prevalence of biological and behavioral risk factors (daily smoking males, males daily consuming 20gr alcohol, abuse of salt, sedentary lifestyle, being overweight) among the population of Armenia has increased in general during 2007-2016. On the other hand, the prevalence of hypertension has decreased.

According to laboratory data studied within the framework of the survey, high level of cholesterol was detected in 8.5% and high level of glucose in 18.0% of 35 and above age groups. Use of tobacco

and alcohol in males has drastically increased in the 20-29 age group. Though the overwhelming majority of the population is aware of the harmful effects of smoking and secondary smoke, nonetheless men continue actively smoking and ignoring the harm to their surroundings. Hence smoking bans and limitations in public places should be made stronger.

Responsiveness of the health system

Estimates for responsiveness domains are very high in health facilities of Armenia. Responsiveness of PHC units within hospitals has improved between 2012 and 2016. Rates of inpatient clinics have not changed except for main conditions domain, which has improved significantly.

The following indicators were used for general assessment of health system responsiveness: access to healthcare services, confidence in health system, general satisfaction with health services, etc.

Workforce potential of the health system

This section reflects on education and training of health system workforce, i.e. doctors and paramedical staff, availability of specialists, as well as their distribution and demand. The section presents data and trends of the baseline system performance assessment (HSPA 2009) and following reports.

Professional education of health care human resources in Armenia is provided by Yerevan State Medical University (YSMU) and 5 private higher education medical institutions. Vocational education of secondary medical workforce is performed by 20 secondary medical vocational institutions, of which 12 are public and 8 are private.

In 2015 a total of 756 persons have graduated from public and private higher educational institutions. During the past 3 years the number of graduates of all specialties has decreased around 1.6 times.

Comparison and analysis of Armenian and international data witness that in 2014 Armenia was out of any competition as regards education of medical specialists, compared with neighboring and European countries. The number of dental department graduates ten times exceeds the rate of above countries.

According to 2015 data the number of medical specialists of public, private, academic, research, higher and vocational educational institutions (doctors, nurses and pharmacists) made up 30 974. The

number of doctors of all specialties (including dentists) was 13 117 (43.7 per 10 000 population), and the nurses - 17 632 (58.8 per 10 000 population). Some 67% of health workforce are women.

Distribution of main medical specialties per population (excluding dentists and pharmacies) has not changed much recently.

Though the total relative number of physicians in Armenia is pretty close to that of other countries, the number of doctors and nurses per marz population is low. In 2015 the lowest rate of staffing was recorded in Gegharkunik marz (12.2) and the highest in Shirak (21.3) (excluding Yerevan city).

In parallel with the growth of medical workforce building process, Armenia experiences an increasing demand of doctors.

Migration to Russian Federation and European Region countries is rather significant. Armenia is a donor and builder of workforce for other countries.

Access to healthcare services

The report presents problems with access to health services particularly reasons for not seeking care when needed. The HSPA study revealed that main reasons for not utilizing medical services when there is a perceived need, included financial difficulties, lack of time and self-treatment.

In 2016, 17.2% did not seek care because it was financially not affordable, versus 15.0% in 2009 and 22.6% in 2012.

In 2016 the rate of those not seeking care because of having no time accounted for 7.3%, which is 6 times the level of 2009 (1.2%).

In 2016 the proportion of those not seeking care because of self-treatment was 4.6% versus 5.1% in 2012 and 2.1% in 2009 (twofold increase).

Overall, the share of 15 and older population not seeking care when there is a perceived need has almost doubled between 2009 and 2015. If in 2009 the rate of not seeking care was 19.2%, in 2012 it increased to 35.2%, and in 2015 reached 36.8%.

To assess geographic (physical) access to healthcare facilities the team studied different types of settings, including PHC (polyclinics/ambulatories), hospitals, pharmacies and maternities, transportation means and the time required to reach the site.

Geographic access in less than in 20 minutes to PHC settings (92.5%) and pharmacies (90.1%) is much high than access to professional healthcare settings, i.e. hospitals (61.3%) and maternities (58.2%).

When assessing affordability of healthcare services it is worth reflecting on access to drugs, especially for those receiving ambulatory treatment. Surveys suggest that the most common reasons for partially or fully refraining from buying needed drugs are financial constraints (79.2%) and having the needed drugs at home.

The report reflects also on issues related to utilization of PHC services, such as proneness to utilize outpatient services, actual utilization of services for all purposes, reasons for visiting the clinic, preventive actions and screenings performed by the provider, the purpose of visit, referrals to the hospital, as well as access to drugs provided to patients by PHC settings.

The hospitalization rate in 2015 was 13.1 (per 100 population), which equals the level of 1990, and the per capita outpatient visit rate was 4, which is nearly two times lower than the 1990 rate and two times higher than that of 2000.

The number of ambulatory visits during 2006-2015 has increased in all marzes, though the relative number continues being essentially higher in Yerevan, with exception of Syunik marz where the number of per capita ambulatory visits is higher than in the capital. Lori marz has the best picture in terms of increase of ambulatory visits.

The quality of healthcare services

To assess the quality of healthcare services the team studied problems with early detection and treatment of most common and deadliest diseases, i.e. cancers and circulatory system diseases.

Incidence of malignancies has drastically increased in the above-35 age group, reaching its maximal level in 65 and older population group.

The study of early detection of all cancer types, according to stages, pinpoints that early detection of cancer in Armenia has not improved over the past decade and continues being one of the serious challenges faced by the system. The rate varied from 40% to 46% during 2007-2015.

The most common cancers (with essentially higher rates) that affect women are breast, endometrial, cervical and ovarian cancers. During 2010-2015 the rates of early detection of breast cancer (I-II stage) and 5 year survival following diagnosis, have increased compared with other cancers. Incidence of tracheal, bronchial, pulmonary, bladder and prostate cancers in males has increased.

Recent years saw significant increase in the incidence of stomach and colorectal cancer in both males and females which may be attributed to sedentary lifestyle and unhealthy diet.

Main diseases related to hospital fatality are cerebrovascular diseases, acute myocardial infarction, and diabetes.

The partum and post-partum anemia and genitourinary complications rates showed a decline tendency between 2007 and 2015.

Results of arterial pressure, cholesterol and glucose measurements conducted within the framework of HSPA 2016 suggest that every third 15 and older person has high/elevated arterial blood pressure, which is latent and not recorded by a health provider. Patients with hypertension usually do not demonstrate strict adherence to doctor's prescriptions and advices. This is confirmed by the survey data – high blood pressure was detected in 80.4% of respondents who had taken an antihypertensive medication during the last 24 hours.

High level of cholesterol was detected in 8.4% of 35 and older population and elevated level in 9.5%. The level of blood cholesterol increases along with decreasing wealth status. In high income groups cholesterol level was 6.4%, in middle income groups 7.8% and in low income groups 10.0%.

High glucose level was detected in 19% of 35 and older population of Armenia.

Utilization of healthcare services

This section of the report reflects on physical accessibility of medical services, in particular the reasons behind low access and types of access to medical services, i.e. financial, geographic, information, which are critical for adequate coordination of health system efforts.

The high rate of poverty in Armenia is the main factor hampering physical access to healthcare services. Poverty in the country was analyzed based on NSS data of 2008-2014. In 2014 the extreme poverty level remained 0.7 ‰ above that of 2008 nation-wide, except for Aragatsotn, Ararat, Kotayk and Vayots Dzor marzes. In fact, more rapid increase of the rate was recorded in Tavoush and Yerevan (1.3 times), Armavir and Syunik (1.2 times). At that, the total poverty level has increased by 2.4 ‰ (or 8.7 %).

The rate of hospital visits increased more than that of outpatient ones. This is probably due to the fact that majority of patients can receive free of charge specialized health services and undergo inpatient diagnostic laboratory and instrumental examinations within the framework of social package.

Moreover, increased utilization of Yerevan inpatient services is explained by the fact that majority of specialized clinics and relevant specialists is centralized in Yerevan.

In order to improve access to inpatient services one multi-profile hospital was selected in all ten marzes of Armenia, where investments were made and modern equipment provided.

HSPA IMPLEMENTATION

HSPA was based on statistics reported by healthcare facilities of Armenia and the ad hoc sample survey data.

Findings of population health and health system performance assessments were compared with corresponding rates of a number of other countries and the weighted mean of three groups of European countries. Comparisons were made with immediate neighbors in the region - Georgia, Azerbaijan and Turkey. Country groups included 12 CIS countries, 26 Eastern European countries with relatively high mortality rate, including the former 15 USSR republics (EU-26) and most developed 27 countries of Western and Central Europe with low mortality rate (EU-27). International comparisons were usually made according to the European Health for All database (HFA-DB), where the most recent data available refer to 2013 or 2014.

DESCRIPTION OF THE HSPA SAMPLE SURVEY

The prime goal of the HSPA survey was to collect data, through population inquiry, for assessments of health status and mental health of 15 and older population, the NCD burden and prevalence of favoring risk factors, financial and geographic access to health clinics, responsiveness of health system to population needs, population satisfaction with provided medical services. The survey findings are used by the Ministry of Health, World Bank, Health PIU, international donor organizations and other stakeholders.

Methodology

The household sample was created on the basis PPS (Probability Proportional to Size) sample. According to the latter all territorial units of the sample have the same probability to be included in the sample. Given the defined sample size (2500 households) the entire population was divided into 25 clusters (100 households in each).

The first included distribution of all clusters according to marzes based cumulative method in accordance with the population number.

Afterwards (second step) random selection of the geographic location was done. In this case areas

corresponding to the number of clusters were selected randomly in every marz and Yerevan city. 100 households were selected on systematic random basis.

Survey participants within the household were selected by 10 quotas defined for gender and age groups.

The survey age groups are as follows: 15-19, 20-34, 35-49, 50-64 and 65 older population.

The sample size in each gender-age group was 250, equal for males and females.

The levels of cholesterol and glucose were measured in risk groups of 35-49, 50-64 and 65 and older.

When interviewing a household was impossible (refused to participate in the survey or nobody was at home, also in cases when respondent has refused to participate in glucose and cholesterol measurements during the second visit or failed meeting the measurement requirements) next household was selected through zigzag method.

The sample survey included 2500 households in 10 marzes and Yerevan. In each household one person was selected randomly for an interview.

The following was implemented the first day.

- Face-to-face interviews according to approved questionnaire, blood pressure and heart rate measurements, 4 times, 2 measurements on right and left arms.
- Measurements of participant's height and weight,
- Measurement of participant's waist circumference,
- Measurement of participant's hip circumference.

In addition, blood glucose and cholesterol were measured in households subject to a second visit.

The sample survey questionnaire

The questionnaire comprises two parts.

The first part contains general information on the household, respondent's physical and mental health, health complaints, chronic diseases, risk factors contributing to their development, financial and geographic access to outpatient and inpatient clinics, as well as population satisfaction with received services, etc. Instrumental (measuring blood pressure) and anthropometric measurements (arterial pressure, height, body mass, waist and hip circumference) were also performed.

The second part includes laboratory tests (defining glucose and cholesterol levels in capillary blood).

Laboratory measurements were performed applying below devices.

- Accutrend Plus test meter with disposable test strips - to define total cholesterol level.

- ACCU-CHECKPerforma glucose test meter with disposable test strips - to define total glucose level.
- OMRON S1 meter – electronic BP monitor – to measure arterial blood pressure.
- SONASHISSC-2211 scale – to calculate body mass index.
- Height measuring board – to take height measurement
- Constant tension tape to measure waist and hip circumferences.

Field works of the sample survey commenced 1st November 2015 and ended 16 February 2016.

Clusters with corresponding number of households were selected for each community in advance. Groups were provided with addresses of the cluster households and the gender-age quotas. In case no respondent meeting required criteria was found in the household, another eligible household meeting the requirements was selected in accordance with developed methodology.

The survey was conducted in 128 communities of the country and 12 districts of Yerevan city.

Overall, 5627 addresses were selected, of which 2075 was not located, 1037 refused to participate in the survey, or the household did not have a member meeting the gender-age quota. The remaining 2515 households were interviewed and the questionnaire was populated.

Out of the above 2515 households 1519 met the quota for blood test. Consents were collected from all households on day 2, when blood sample was taken. Though respondents agreed to fast 10-12 hours for blood cholesterol and glucose measuring, only 1198 fasted and agreed to undergo the measuring. Their blood measure data were entered into the questionnaire.

Table 1. Sample clusters of HSPA sample survey

COMMUNITY	CLUSTER	NUMBER OF HOUSEHOLDS IN THE CLUSTER
Ajapnyak	1	100
Avan	0	0
Davtashen	1	100
Erebouni	1	100
Kentron	1	100
Malatia-Sebastia	1	100
Nor Nork	1	100
Nork-Marash	1	100
Nubarashen	0	0
Shengavit	1	100
Qanaqer-Zeytun	0	0
Syunik	1	100
Vayots Dzor	1	100
Shirak	1	100
Lori	3	300
Kotayk	2	200
Ararat	3	300
Armavir	2	200
Aragatsotn	1	100
Tavoush	1	100
Gegharkunik	1	100
Total	25	2500

Effective interviews and measuring of blood glucose and cholesterol levels ensured representation of the survey according project requirements and parameters.

Problems faced during the main survey

During the survey on average every 5th respondent refused to participate in the survey. The team had to visit at least 6-7 additional households to be able to find gender-age eligible respondents.

The refusal rate was much higher in Yerevan than in marzes.

During the survey the interviewers experienced problems with building door phones in Kentron and Arabkir districts of Yerevan. Residents refused to open the door and let the interviewers in.

Though the interviews were conducted only in households where respondents gave their preliminary consent for fasting cholesterol and glucose test, numerous failures were recorded, leading to additional refusals of blood test. Main reasons of refusal included failure to meet the consent requirement of fasting or the influence of other household members or pressure on the respondent requiring to refuse having blood test. In those cases interviewers tried to reassure the respondent and request to keep preliminary arrangements. In case of failure the household was replaced with another one which helped to collect good number of blood samples.

Problems were faced with taking anthropometric measures. In particular, men mostly refused to have their waist circumference measured and overweight women refused to have their weight measured. Also difficulties occurred with responding to some items of the questionnaire, i.e. several respondents harshly refused to answer sensitive questions. Following the received instructions, in both cases interviewers tried to explain the purpose and importance of those questions.

In case of negative outcomes the specific questions were not populated and the reasons were specified.

The heavy snow of January created serious problems for organization of interviewers' transportation. Some communities, particularly in Shirak and Lori marzes, could not be accessed, resulting in significant waste of time.

Recommendations

Given the aforementioned problems and the accumulated experienced, it is recommended to design and implement similar surveys considering the below notes:

- Consider a big number of refusal cases when estimating the needed sample size which is especially reasonable when designing surveys with anthropometric and blood sampling components.

- If possible avoid conducting surveys during winter months.
- Use a maximally respondent-friendly and tactful wording when asking about personal hygiene, use of alcohol, etc. and envisage a 'No response' option.
- Use special thermoisolated boxes for storage and transportation of blood meters, if blood test is envisaged.
- Ensure at least 20% additional test strips when conducting blood tests.
- Closely cooperate with local authorities and provide them with very detailed information on the goal of the survey.

Recheck survey

Below methods were applied to recheck the survey process and the quality.

- A randomly selected 20% of households that had participated in the survey were telephoned and inquired.
- The interviews and anthropometric measuring, and the following blood cholesterol and glucose tests were performed by different interviewers, thus cross-checking the work.
- Field coordinators perused the populated questionnaires and singled out several with incomplete information, omissions, which were later corrected by coordinators and supervisors through personal interviews with respondents.

Throughout the survey process telephone and face-to-face discussions were held with interviewers and necessary instructions were provided in order to share the gained experience, adjust the current situation and improve the further process.

1. HEALTH STATUS

Morbidity and mortality indicators reflect population health status and are directly linked to various factors such as family history, gender, age (30%), lifestyle including behavioural and biological risk factors (unhealthy food, smoking, use of alcohol, lack of physical activity, high arterial blood pressure, high level of blood glucose and cholesterol (40%), socioeconomic, i.e. low social and economic status, lack of social support, stress at work and in the family, depression, anxiety, hostility, education (15%), activities of environmental protection (5%) healthcare systems. (10%).

Population physical and mental development, metabolism balance, adequate performance of immune, hormonal, ferment and other vital systems are possible only if healthy lifestyle is practiced.

Population health assessment enables describing the country's demographic and socioeconomic situation, as well as current public health challenges.

This chapter focuses on the prime goal of the health system performance assessment, i.e. population health maintenance and improvement.

The NIH HIAC indicators and 2009-2016 HSPA sample survey data were used to assess general population health.

Demographic overview

Population number and composition

As of 1st January 2016 permanent population of Armenia was estimated to be 2 998 600. Early 2015 that figure declined by 12 000, which was due to natural surplus and estimated external migration during the reference year (NSS Armenia, 2016).

In 2015 the proportion of urban population was 63.6% and the rural population was 36.4 %. Males comprised 47.6% and females 52.4% of the population.

According to the UN demographic aging scale when the proportion of 65 and above population exceeds 7% of the population structure, the latter is considered aging.

Between 1990 and 2015 the share of 0-15 children drastically declines in the permanent population structure. In 1990 it accounted for 32.2%.

- As of early 2016 the share of 0-15 children was 20.8%.

- The share of 65 and over population was 11%. This is one of the key population aging factors in Armenia. Population aging is the result of long-term demographic changes, changes in population reproduction, birth rate, mortality and the correlations thereof as well as migration.
- Low natural reproduction is among priority demographic problems of Armenia.

Natural increase of population

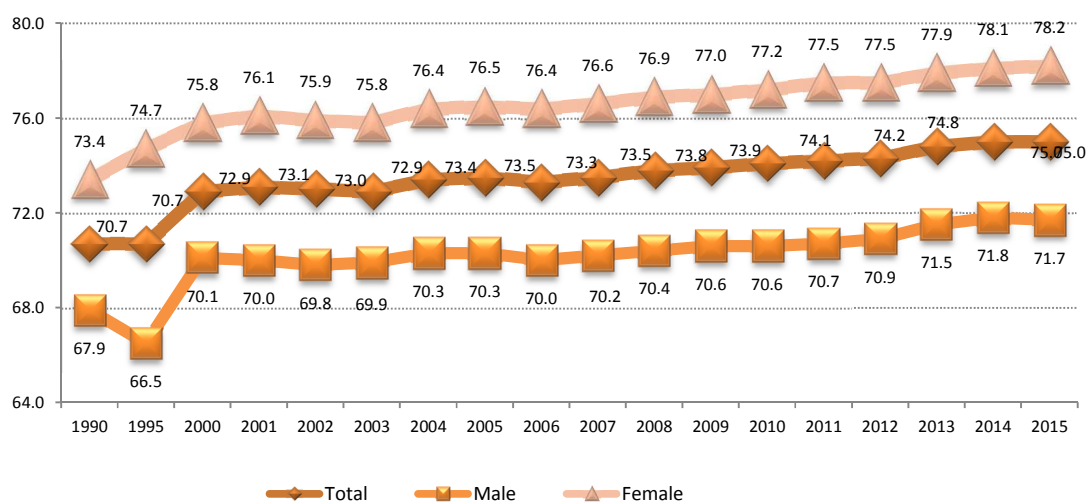
Unstable economic, social and political situation of Armenia has shaped the population reproduction behavior. The total birth rate per 1000 population accounted for 13.9 ‰ in 2015 and 14.3‰ in 2014 versus 22.5‰ in 1990.

The fertility (cumulative birth) rate per woman of reproductive age (15-49) was 1.645 units in 2015 and 1.651 in 2014, which is much lower than the rate required for simple reproduction¹ i.e. 2.150.

Life expectancy

As of 2015 life expectancy in Armenia is 75 years. At that, women live 6.5 years longer than men (Figure 1). The rate increased by 2.8 years compared with 1990, which is due to decreasing infant (under 1) mortality from 18.5 ‰ in 1990 to 8.8‰ in 2015.

Figure 1. Life expectancy at birth, 1990, 1995, 2000-2015

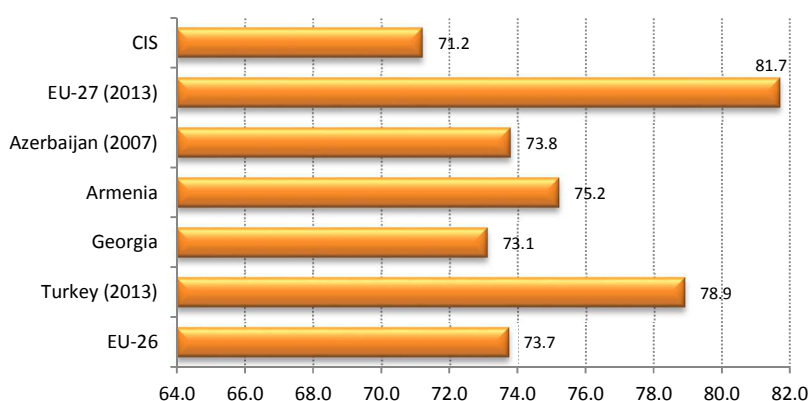


Source: NSS, 2015

¹ Simple reproduction implies equal absolute numbers of parents and offsprings, who replace the parents.

As international comparisons suggest Armenia has a higher rate of life expectancy at birth compared with 26 CIS and EU-26 countries. The rates do not vary much compared with Georgia and Azerbaijan, but are below the average level of developed European countries (EU-27) (Figure 2).

Figure 1. Life expectancy at birth, selected countries and country groups, 2007, 2013-2014



Source: DFA-DB, 2016

According to WHO estimates, life expectancy at birth is actually lower in Armenia than the officially reported results by 5-6.5 years. This statement is explained by the fact that Armenia public agencies do not have the capacity to ensure accurate estimation of deaths of RA citizens residing outside the territory of the country.

The possible rate of births and death not registered in Armenia since 1991 is unknown because no large-scale and comprehensive professional study has been conducted. This means that no accurate statistics on natural reproduction is available.

Natural reproduction of population

The **total mortality rate** showed decline tendency between 1949 and 1989 due to annual improvement of the country's socioeconomic situation, wellbeing and development of the health system (Figure 3). In 1949 the total mortality rate was 10,9 per 1000 population, in 1989 it dropped to 6,0. The drastic increase of mortality in 1988 (reaching 10,3) was due to a natural disaster – the Spital earthquake.

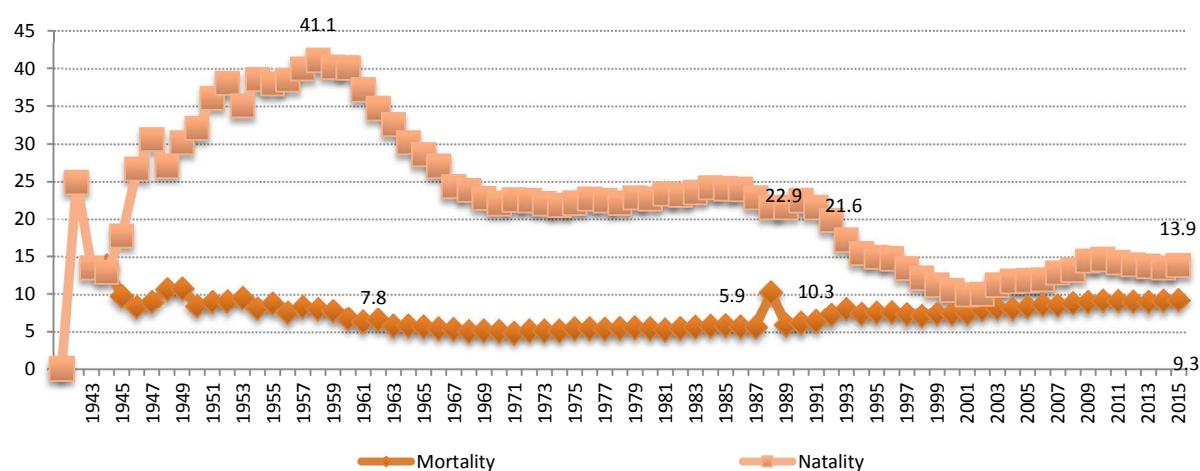
In post-Soviet period the total mortality rate increased from 6,5 (1991) to 9,3 (2015).

- **The change of population age structure (population aging) is one of the main components contributing to increase of the total mortality ratio.**

Total mortality ratio of 55 and older people significantly exceed the lower age ratios, hence population aging leads to the increase of the total mortality rate.

Economic collapse, that was triggered by reforms in Armenia implemented the 1990-s, resulted in mass migration of reproduction age population and mass poverty which had a negative spin-off on birth rate. The lowest rate was recorded in 2001, followed by very slow natural reproduction.

Figure 2. Total mortality and natality rates of RA population, 1942-2015



Source: NSS, 2015

- **Another important factor contributing to low birth rate in Armenia is the vast spread of self-centered values and consumer culture, limiting the number of children to 1 or 2.**

Causes of mortality

A total of 27 878 deaths was registered in Armenia in 2015 (927.84 per 1 000 population).

Most prevalent causes of mortality in Armenia did not change much between 2009 and 2015 (Table 2).

Table 2. Causes of mortality in Armenia, 2009-2015

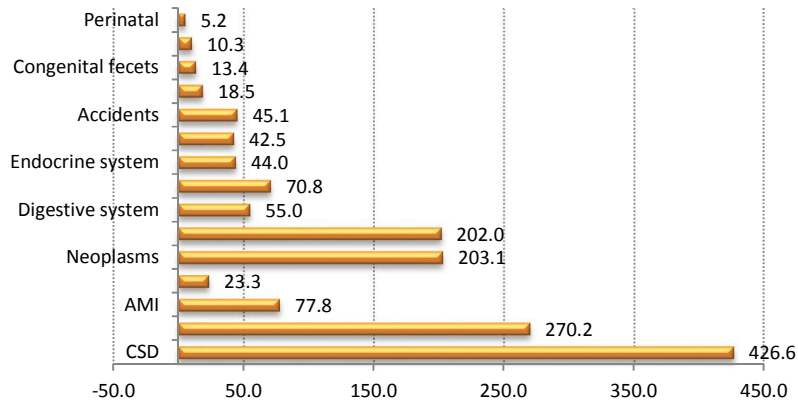
Causes of death	2009	2010	2011	2012	2013	2014	2015
Circulatory system diseases	49.1%	48.9%	47.6%	48.3%	47.7%	47.9%	46%
Neoplasms	19.6%	19.8%	19.9%	20.4%	20.6%	20.6%	21.9%
Respiratory system diseases	6.5%	5.9%	6.1%	5.8%	6%	6.7%	7.6%
Digestive system diseases	5.9%	5.8%	6.3%	5.8%	6%	5.9%	5.9%
Injury, poisoning and certain other consequences of external causes	4.4%	4.5%	4.9%	4.9%	4.7%	4.5%	4.9%
Endocrine, nutritional and metabolic disorders	5.2%	5.2%	5.0%	4.8%	4.9%	4.5%	4.7%
Diseases of the genitourinary system	2.6%	2.9%	2.8%	2.9%	3.4%	3.2%	3.0%
Symptoms, signs and abnormal clinical and laboratory findings, not elsewhere classified	2.9%	2.9%	3.2%	2.8%	2.6%	2.6%	2.0%
Congenital malformations, deformations and chromosomal abnormalities	1.1%	1.5%	1.7%	1.6%	1.7%	1.6%	1.4%
Certain infectious and parasitic diseases	1.0%	1.1%	0.9%	1%	0.9%	1.01%	1.1%
Certain conditions originating in the perinatal period	0.7%	0.7%	0.8%	0.7%	0.6%	0.62%	0.56%
Diseases of the nervous system	0.5%	0.6%	0.4%	0.5%	0.4%	0.41%	0.42%
Duodenal ulcer	0.3%	0.3%	0.3%	0.3%	0.3%	0.39%	0.44%
Diseases of the musculoskeletal system and connective tissue	0.2%	0.2%	0.2%	0.2%	0.4%	0.15%	0.23%
Diseases of the blood and blood-forming organs and certain disorders involving the immune mechanism	0.1%	0.1%	0.1%	0.08%	0.07%	0.07%	0.05%
Diseases of the skin and subcutaneous tissue	0.1%	0.1%	0.0%	0.1%	0.3%	0.09%	0.06%
Pregnancy, childbirth and the puerperium	0.0%	0.0%	0.0%	0.0%	0.3%	0.02%	0.03%
Mental and behavioral disorders	0.0%	0.0%	0.0%	0.0%	0.0%	0.01%	0.05%

Source: NHIAC, 2015

The proportion of deaths due to NCD is 75% and communicable diseases 1%. At that, CSDs are the main killers (46%), followed by malignancies (21.9%), diabetes (4.6%), IPCEC (4.9%), COPD (bronchitis, asthma, other pulmonary and bronchiectatic diseases) (4.5%).

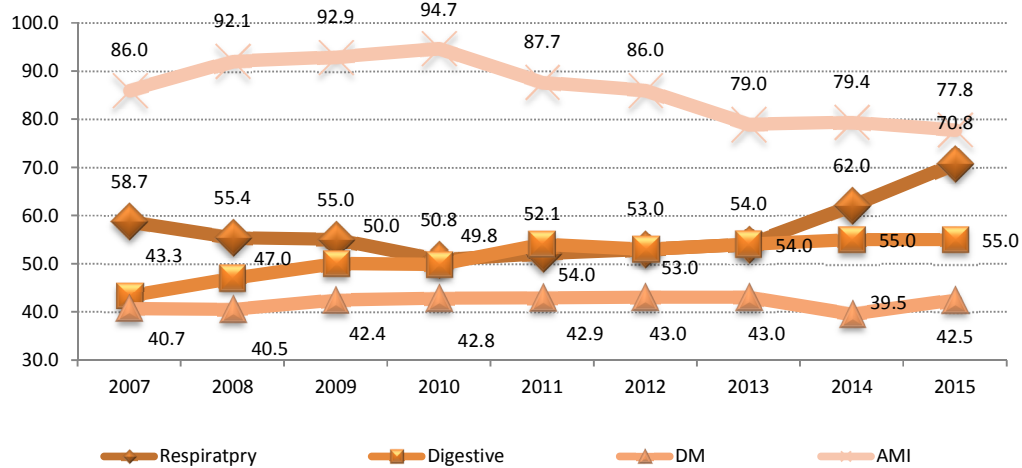
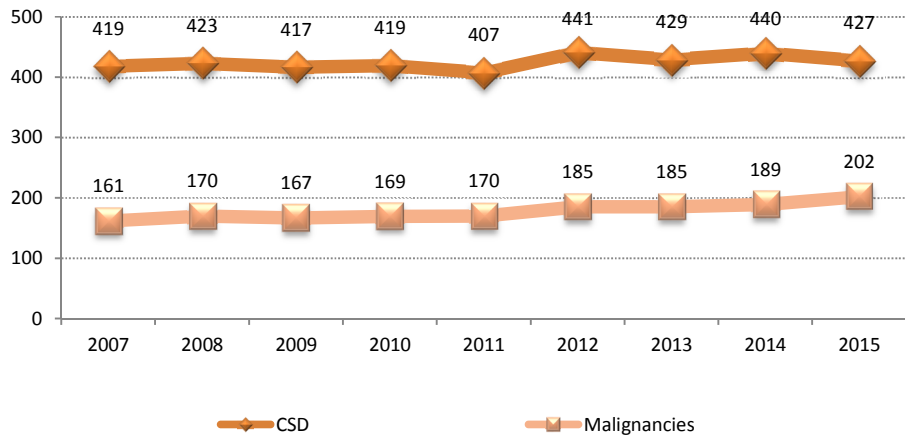
The relative rate of deaths due to main causes is presented in Figure 4 and the dynamics in Figure 5 A and B.

Figure 3. Mortality according to the causes, 2015, per 100 000 population



Source: NHIAC, 2015

Figure 4. A-B. Mortality due to most prevalent diseases, per 100 000 population, 2007-2015



Source: NHIAC, 2015

Premature mortality

Premature (under 65) mortality according to causes mimics the NCD mortality structure (Table 3).

It shares 28.5% of the total mortality structure.

This means that every third person dies before reaching the age of 65.

Premature mortality accounts for 28.5% and the 35-65 age groups – for 24.4% of the total mortality structure, which negatively impacts the country's socioeconomic development.

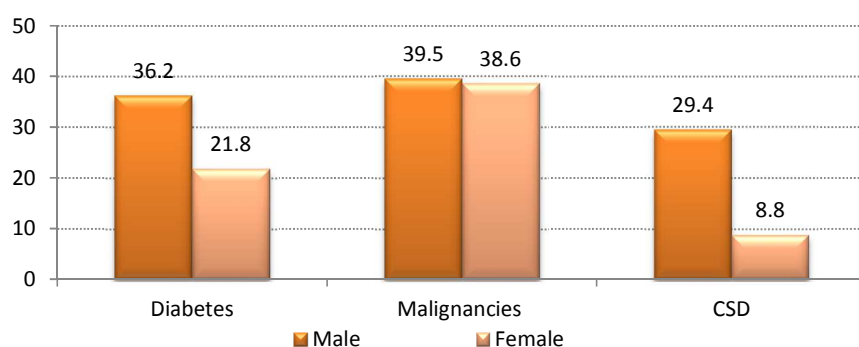
Table 3. Premature mortality of RA population according to causes and gender, 2015

Disease according to ICD 10	Gender	Premature (under 65)	Per 100 000 population
Malignancies (C00-C99)	Male	1326	101.6
	Female	1047	76.2
	Total	2373	88.6
Diabetes (E10-E14)	Male	172	13.2
	Female	175	12.7
	Total	347	13.0
Circulatory system diseases (I00-I99)	Male	1814	139.0
	Female	586	42.7
	Total	2400	89.6
Respiratory system disease (J00-J99)	Male	230	17.6
	Female	113	8.2
	Total	343	12.8
Accidents (V01-V99)	Male	226	17.3
	Female	40	2.9
	Total	266	9.9
Other external causes of injuries during accidents (W00-W99)	Male	54	4.1
	Female	5	0.4
	Total	59	2.2
Contact with poisonous animals and plants (X20-X29)	Male	7	0.5
	Female	3	0.2
	Total	10	0.4
Intentional self-harm X60-X84	Male	33	2.5
	Female	12	0.9
	Total	45	1.7
Other and unspecified transport accidents (Y00-Y98)	Male	374	28.7
	Female	62	4.5
	Total	436	16.3
TOTAL	Male	5360	410.7
	Female	2562	186.5
	Total	7922	295.7

Table 4. Premature mortality of RA population according to causes, gender and age groups, 2015

	Total	0-65	Total categories %	35-65	Total categories %
Total	27878	7918	28.4	6790	24.4
Female	13576	2562	18.9	2209	16.3
Male	14302	5356	37.4	4581	32.0
Diabetes (E10-E14)	1276	347	27.2	340	26.6
Female	801	175	21.8	172	21.5
Male	475	172	36.2	168	35.4
Malignancies (C00-C99)	6069	2373	39.1	2269	37.4
Female	2709	1047	38.6	1002	37.0
Male	3360	1326	39.5	1267	37.7
CSD (I00-I99)	12817	2400	18.7	2335	18.2
Female	6653	586	8.8	570	8.6
Male	6164	1814	29.4	1765	28.6

The study of premature deaths according to the causes and gender shows that the rate is nearly 4 times high in males, with the exception of malignancies (Figure 6).

Figure 6. Premature mortality according to causes and gender, % of total deaths, 2015

CSD mortality

Shares of deaths due to different CSD nosologies are presented in below Table 5. The situation has not changed much between 2009 and 2015. The lead cause is IHD (29.1%), followed by CerVD (8.7%) and AMI (8.4%).

Table 5. Mortality according to CSD nosologies, 2009-2015

Cause of death	2009	2010	2011	2012	2013	2014	2015
Ischemic heart disease, chronic and others	29.1%	29.4%	29.5%	30.5%	31.2%	30.9%	29.1%
Cerebrovascular diseases	11.5%	10.6%	10.4%	10.2%	9.4%	9.5%	8.7%
Acute cardiac infarction	9.7%	10.0%	9.1%	9.4%	8.8%	8.6%	8.4%
Hypertensive diseases	3.6%	3.9%	3.2%	2.8%	2.4%	2.2%	2.5%

Source NHIAC, 2015

Table 6. Total and premature CSD mortality according to nosologies, 2015

Cause of death	2015			
	All age groups	%	Premature (under 65)	%
Ischemic heart disease (I20-I25)	8118	63.3	1689	70.4
including				
Angina (I20)	44	0.3	6	0.3
Acute cardiac infarction (I21)	2337	18.2	455	19.0
Double cardiac infarction (I22)	426	3.3	99	4.1
Cerebrovascular diseases (I60-I69)	2428	18.9	395	16.5
Hypertensive diseases (I10-I15)	700	5.5	49	2.0

Source NHIAC, 2015

According to 2015 statistics, a total of 55 468 CSD cases were detected in 15 and over population (2293.1 per 100 000 population). In fact the total number of patients accounted for 235 210 (9723.8 per 100 000 population), and the total number of deaths - 12 817 (426.58 per 100 000 population).

Table 7. CSD prevalence in 18 and older population, morbidity and incidence, 2015

	Prevalence		Incidence	
	Absolute	Relative	Absolute	Relative
Total	234401	10132,3	55074	2380.7
Hypertension-induced diseases	122960	5315,1	24936	1077.9
Ischemic heart disease	71390	3085,9	15989	691.1
Including angina	24306	1050,7	5344	231.0
Acute cardiac infarction	2438	105,4	2149	92.9
Double cardiac infarction	775	33.5	561	24.3
Cerebrovascular diseases	18587	803,4	6419	277.5
Including hemorrhage	2267	98.0	1075	46.5
Cerebral infarction	2634	113.9	1072	46.3
Stroke unspecified, as hemorrhage or infarction	2034	87.9	869	37.6
occlusion and narrowing of precerebral and cerebral arteries not provoking cerebral infarction	4426	191.3	1723	74.5

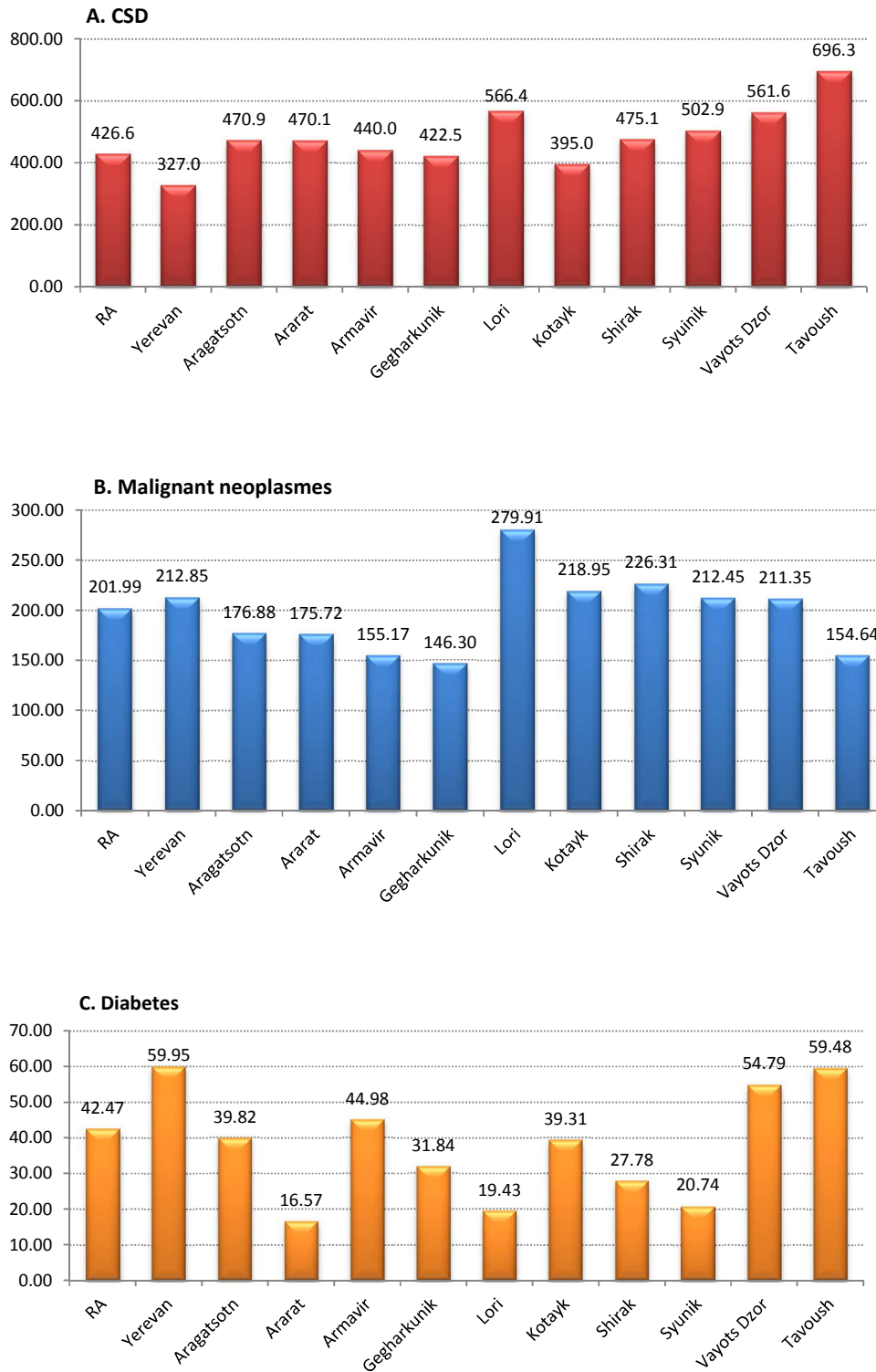
Source NHIAC, 2015

Most prevalent causes of death across marzes

Figure 7-A, B and C present most prevalent cause of death in marzes of Armenia. According to them:

- **CSD-induced mortality is essentially higher in Tavoush and Lori marzes.**
- **Mortality due to malignancies is higher in Lori.**
- **Mortality due to diabetes is higher in Tavoush.**

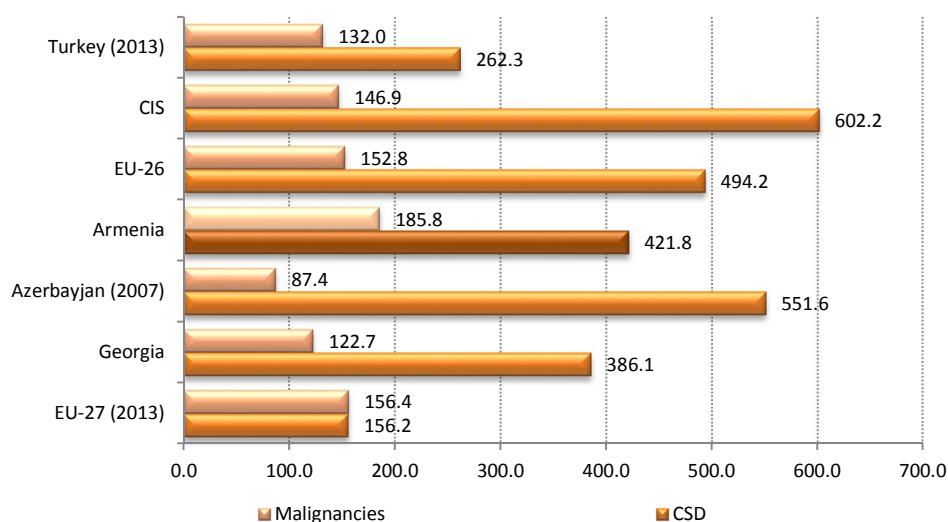
Figure 7. Most prevalent mortality causes, RA marzes, per 100 000 population, 2015



International comparison of most prevalent causes of mortality

The European Health for All Database does report age-standardized mortality rates due to different causes. Figure 8 presents Armenia's mortality rates for circulatory system diseases and malignant neoplasms, compared with other countries. In Armenia the mortality rate due to circulatory system diseases is lower than in CIS and Eastern Europe countries, almost equal to Azerbaijan and higher than in Georgia. However, when it comes to malignancy-induced mortality rates Armenia shares one of the highest positions among the aforementioned countries.

Figure 8. Standardized mortality rates per 100 000 population due to CSD and malignancies, selected countries and country groups, most recent year available, 2007, 2013-2014

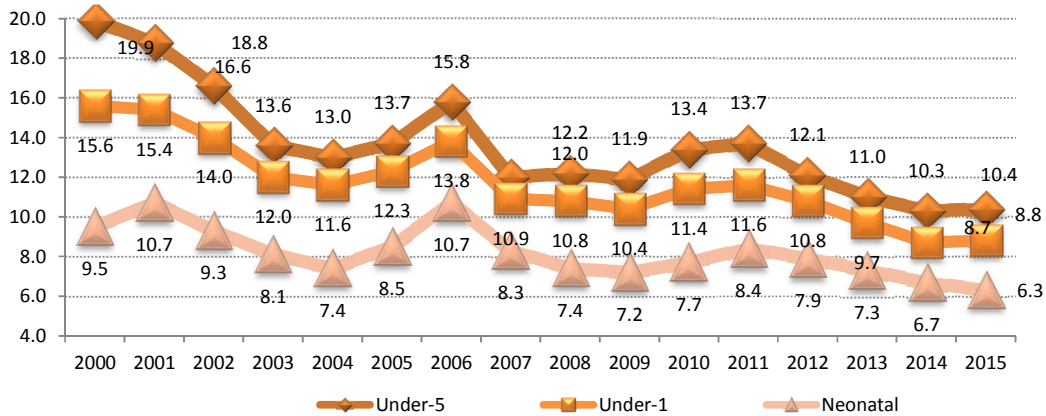


Source: HFA-DB, WHO, 2016 (last updated 01. 07. 2016)

Infant, child, neonatal and maternal mortality

These indicators are closely linked to socioeconomic development of the country. In 2005, Armenia adopted the WHO standard definition of live birth, which may partially account for the unusual increase in 2006. Hence, data of 2006 are taken as baseline for extrapolations. Figure 9 presents tendencies of child, infant and neonatal mortality rates since 2000.

Figure 9. Infant, child and neonatal mortality per 1000 live births, 2000-2015

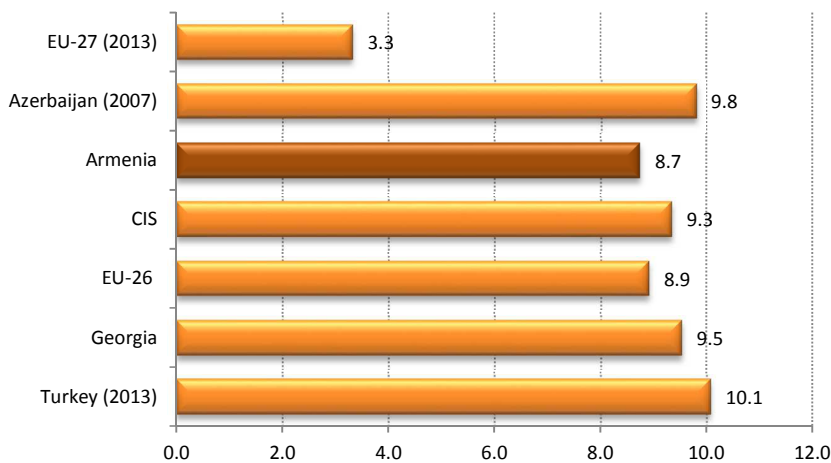


Source: NHIAC, 2015

Data depict decline of all 3 indicators of under-5 mortality rates during 2011-2015. In fact, the rates approached the MDGs and MCH Strategy targets.

Overall, Armenia has a lower infant mortality rate than in CIS, Eastern Europe (EU-26), Georgia and Turkey, but it is higher than in ER-27 (developed European countries) (Figure 10).

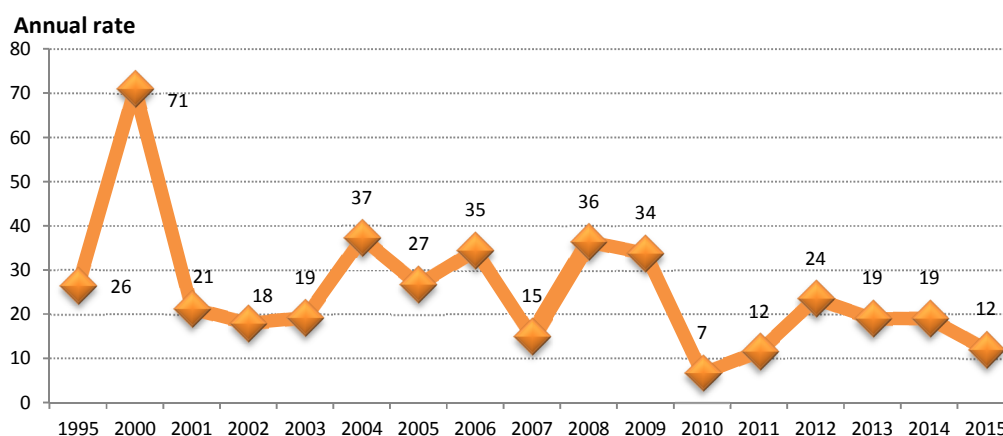
Figure 10. Infant mortality ratio per 1000 live births, selected countries and country groups, recent years available, 2007, 2013 -2015



Source: HFA-DB, WHO, 2015 (last updated 07. 2016)

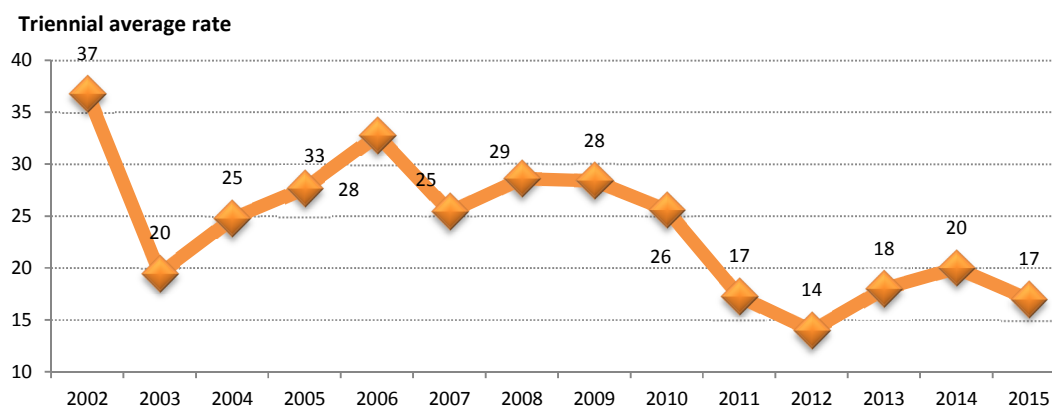
Both the annual and the triennial average ratios for maternal mortality are presented in Figures 11 and 12.

Figure 11. Maternal mortality ratio per 100,000 live births, 1995 and 2000-2015



Source. NHIAC, 2015

Figure 12. Maternal mortality ratio per 100,000 live births, 1995 and 2000-2015 (triennial average)

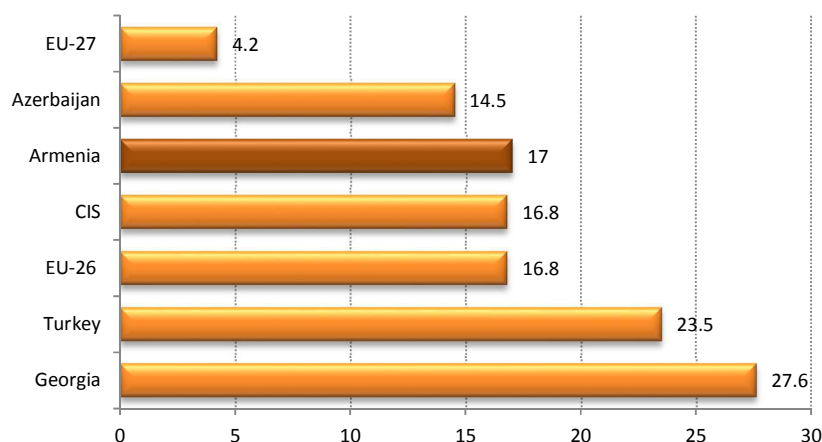


Source. NHIAC, 2015

Maternal mortality ratio (triennial average) in 2011-2015 is in line with the National Maternal and Child Strategy target. Hence:

- **It is reasonable to set a new maternal mortality target adopting the MDG one – 10 deaths per 100 000 live births.**

Given the instability in annual ratios, international comparisons should be made with caution. Armenia's maternal mortality ratio is much lower than in neighboring countries and the average ratios in the ER-26 and the CIS. It is almost close to the rates of developed European countries (Figure 13).

Figure 13. Maternal mortality ratio per 100,000 live births, selected countries and country groups, 2013-2014

Source: HFA-DB, WHO, 2016 (last updated 07. 2016)

Child nutrition problems

Child wellbeing, particularly child health and nutrition are all-times priority. Missed practices and neglected requirements of early childhood growth and development cannot be easily recovered in the future, even with the best nutrition and care.

Organizing adequate nutrition for an infant is critical. The 0-2 age is the period when the baby grows, develops and shapes future health patterns. Unfortunately this age children often experience micronutrient deficiencies, slowed development and childhood diseases like diarrhea and acute respiratory infections.

Despite the efforts of the international community and the global progress in fostering child wellbeing, there are still problems to be addressed.

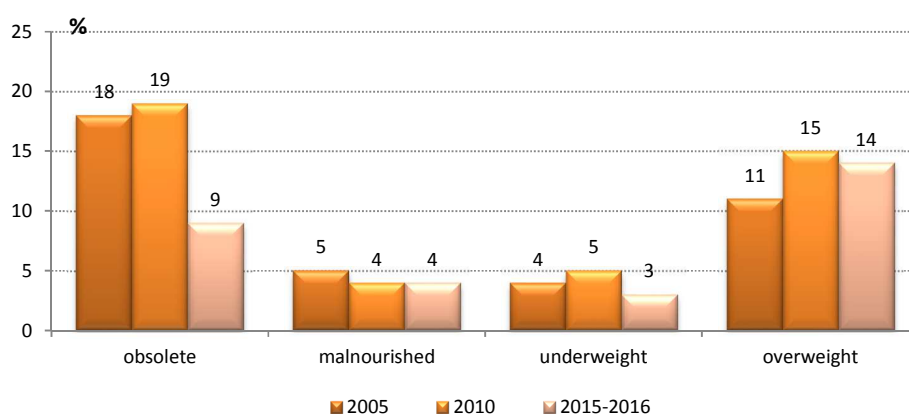
According to the WHO estimates nearly 8 million children died in 2012, in 48% the cause co-occurred with malnutrition. In 2013 165 million under-5 children all over the world were stunting, 51million had acute malnutrition, and 41.7 million were overweight or obese. Every year malnutrition kills 7500 under-five children in low income countries of the world.

According to 2015-2016 ADHS, comparison of 2000, 2005 and 2010 trends suggest a stable decline of 15-16% during the first 6-7 months of life in the 8 to 24 months age group, and then increases again in the 3 – 4 age group. The highest mulnutrition and stunting rates were recorded in 6-10 months

when complementary foods are introduced in addition to breast milk. After the age of 12 months both malnutrition and stunting levels stay low up to 24 months when slight improvement is seen.

The rate of first 6 months exclusive breastfeeding (as recommended by MoH) has significantly improved since 2010 (from 35% to 45%). The proportion of same age infants who receive additional foods varies from 20% in 2005 to 17% in 2010. The HSPA survey came up with 21%.

Figure14. Specifics of under-5 child nutrition



Note. For comparison purposes the AHDS 2005 data were recalculated according to WHO 2006 Child Development Standards. They are different from data published in the 2005 ADHS Report which were calculated in 1997 according to NCDC/WHO-approved International baseline population.

Figure 14 presents child nutrition trends between ADHS 2005 and ADHS 2015-16 according to stunting, malnutrition and being overweight. Armenian children are more prone to stunting and being overweight, rather than being underweight or malnourished. Stunting had declined sharply from 18-19% (2005-2010) to 9% (2015-2016). Malnutrition rate has not changed much since 2005. The share of underweight children has dropped from 5% (2010) to 3% (2015-2016). The share of overweight children increased from 11% (2005) to 15% (2010), and not changed much during the last five years (14% during 2015-2016). The ADHA data are currently assessed by MoH and international experts (http://armstat.am/file/article/dhs_kir_2015-16-arm.pdf).

As mentioned already, early (right from the adolescence) prevention of risk factors contributing to development of noncommunicable diseases is key to reduction of both the NCD mortality burden in adults and the DALYs.

NHIAC data pinpoint an annual increase of NCD incidence among children and adolescents during the last two decades. First of all it includes diseases and conditions like metabolic syndrome, obesity, diabetes, bronchial asthma and other allergic diseases.

According to official data and increase of child incidence rates is detected for various chronic diseases. The diabetes morbidity rate in 0-14 children increased from 197 (18.2 per 100 000 population) in 1990 to 248 (48.2 per 100 000 population) in 2014.

As for NCD risk factors in Armenia, their impact and risky behavior are developed still in childhood and adolescence and shapes future health of the person. According to 2005 Health Behavior in Adolescents and School Aged Children of Armenia (HBSC), adolescents practice unhealthy eating habits; they skip the breakfast (8 out of 10 reported not to consume breakfast). Some 20% of children who do not eat breakfast at home, consume it at school. Breakfast-skippers are more prone to eating fast food rich in fat and sugar and poor in fiber. They also consume soda and sweets. All these fat- and sugar –rich foods replace fruits and vegetables.

Lack of physical activity is among common NCD risk factors. Around 1/4 of children spends too much time at the TV and computer screen (5 and more hours per day). Higher grade students are overloaded with homework and additional tasks which hampers involvement in physical activities. One-third of urban children spend at least 5 hours on additional tasks, mostly preparing to university entrance examinations. Nearly one-third of all children spend 3-4 hours per day on homework. About 10% of respondents skip physical training classes, 41.3% of boys and 46% of girls attend physical training classes twice a week. Classes of physical education are attended more regularly by rural students. Thirty percent of Yerevan and marz urban children reported not being involved in any sport activity during the last week. Nearly 31% of boys and 44% of girls (slight difference between urban and rural children) were not involved in any sport activity during last 12 months. Given the above, no wonder that Armenia saw gradual increase of screen time during the last decade, which leaves no place for active physical engagements. Some 29.5% of boys and 20.4% of girls reported spending 5 hours and more per day in front of a screen.

Overall, 58.7% of adolescents spends 3 hours and more daily watching TV or using computer. Daily computer use varies strongly depending on gender and residence. Up to 70% of rural children

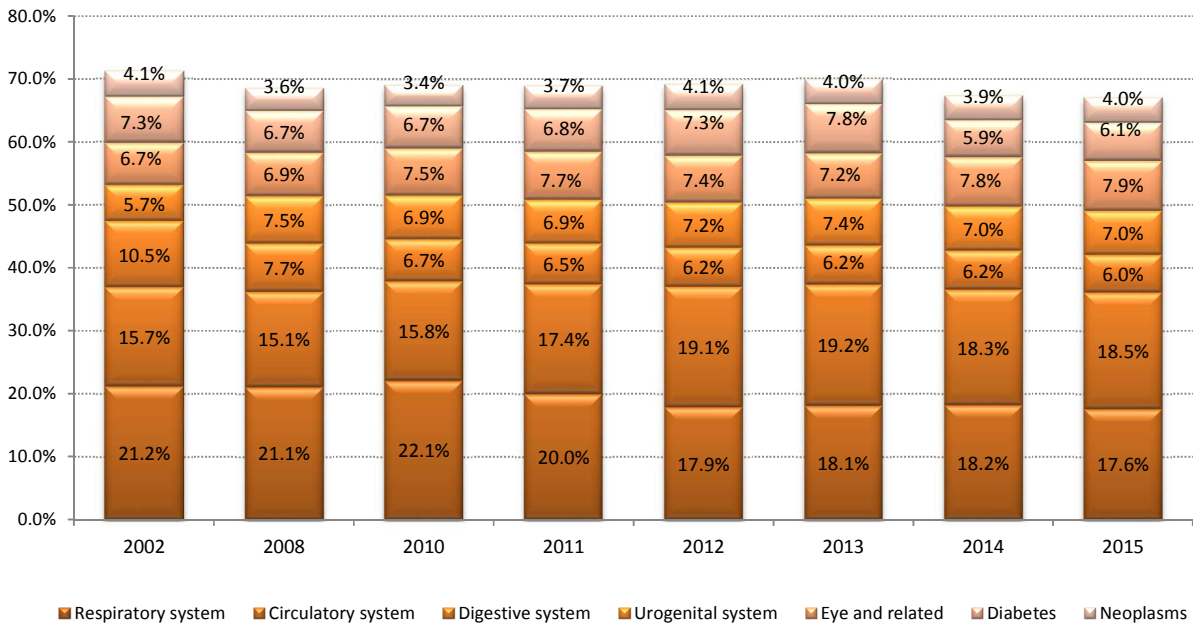
reported not to use computer at all. However 51.9% of children from Yerevan spends 30 minutes and more in front of a computer (5.5% of them spend 5 hours and more).

Disease prevalence trends

The total of seven most prevalent diseases in Armenia account for 67.1% of the total morbidity rate. These diseases include respiratory system diseases, circulatory system diseases, digestive system diseases, urogenital system diseases, eye and related diseases, endocrine system diseases and neoplasms.

The prevalence structure of these diseases in 2002, 2008, 2010 - 2015 is presented in Figure 15. The number of CSD cases increased over the past 12 years, which speaks of improved utilization of primary care services.

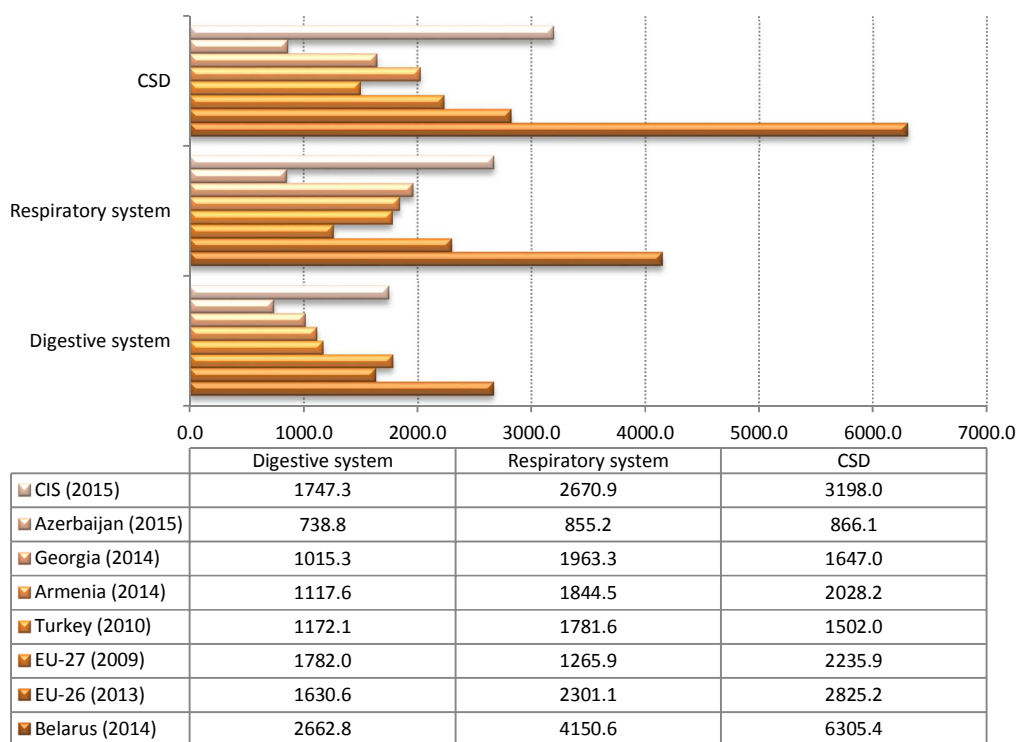
Figure 15. Most prevalent diseases, 2002, 2008, 2010-2015



Source NHIAC, 2015

Figure 16 presents international comparisons of hospitalization rates according to causes of diseases.

Figure16. Hospital discharges per 100 000 population by selected diseases, selected international comparisons



Source: HFA-DB, WHO, 2016 (last updated 07. 2016)

As the Figure shows rates are close to those of Georgia and Azerbaijan, but significantly lower than in CIS, EU-26 and EU-27.

- Hospitalization rate largely depends on access to hospital care in the country.
- In 1995 morbidity rates for all diseases dropped drastically. The reason is obvious - in 1995 the economy was collapsed, the population was poor, the infrastructures was destroyed, PHC services were paid making healthcare difficult-to-access. As a result the impoverished population preferred not seeking care when needed.

Table 8. Total morbidity of 15 and older population of Armenia according to disease groups and years, 1990, 1995, 2005, 2010-2015

Disease	1990	1995	2000	2005	2010	2012	2013	2014	2015
TOTAL	62665	35944	25537	31964	41969	48263	49352	50439.0	52604.8
Respiratory system diseases	16420	8145	5825	7535	9292	9135	9419	9200.4	9253.8
Circulatory system diseases**	8709	5588	4047	4430	6599	8645	8903	9226.4	9723.8
Eye and adnexa diseases	-	-	-	1626	3117	3756	3790	3911.3	4161.3
Endocrine, nutritional and metabolic disorders	2003	1766	1703	2237	2777	3398	3706	3930.9	4402.7
Genitourinary system diseases	3450	1948	1383	1948	2870	3372	3536	3532.7	3702.0
Digestive system diseases	11813	4992	2751	2751	2824	3059	3084	3116.2	3163.3
Diabetes	1434	1350	1331	1576	2056	2515	2771	2955.4	3186.9
Mental health disorders	2978	2126	1796	1897	2296	2456	2445	2522.0	2437.1
Pregnancy, childbirth and the puerperium complications*	2521	1274	1530	2043	1948	2335	2353	2169.2	2753.7
Infectious and parasitic diseases	1600	1333	1488	1899	2241	2499	2274	2274.5	2326.1
Diseases of the musculoskeletal system and connective tissue	1965	962	724	941	1462	1915	1961	2022.2	2082.9
Diseases of the nervous system	4600	2719	1785	1265	1588	1834	1875	1957.0	2077.2
Neoplasms	1152	1085	931	1219	1433	1849	1855	1962.6	2114.0
Injury, poisoning and certain other consequences of external causes	4945	3065	1689	1495	1678	1851	1852	1945.0	1950.8
Diseases of the skin and subcutaneous tissue	1965	1504	659	1037	1541	1798	1807	1967.4	2010.0
Diseases of the ear and mastoid process	-	-	-	584	1020	1233	1318	1410.9	1515.0
Symptoms, signs and abnormal clinical and laboratory findings, not elsewhere classified	41801	79	41779	43	146	157	202	214.9	227.0
Congenital malformations, deformations and chromosomal abnormalities	58	47	43	77	95	100	111	100.5	96.7

Source: MoH NHIAC, 2015

The 2005-onward increase of the total morbidity rate at PHC level for all diseases is first of all due to improved access to primary care services and not the health status of the population. Improved utilization of healthcare services was due to health system reforms. The data imply that if the population is more eager to utilize PHC services, their health status is supposed to be improved. This requires sample surveys of population health in order to shape the reliable picture of population health status and particularly the reasons for not seeking care when needed, as well as the prevalence of various health conditions and symptoms.

2. POPULATION HEALTH ASSESSMENT

General assessment of health

General assessment of health is based on the WHO Health and quality of life questionnaire SF-12, which comprises eight components (domains) describing population satisfaction with various aspects of physical and mental health. Respondents assess their own health.

The SF12 12 domains are as follows:

Components of physical health

1. General health (gh)
2. Physical function (functionality) (pf)
3. Role - physical (rp)
4. Bodily pain (bp)

Components of mental health

5. Mental health (mh)
6. Role - emotional (re)
7. Social functioning (sf)
8. Energy/fatigue (vt)

Scores for every component change within (0-100) range, where 0 describes the worst situation and 100 the most favorable.

Population health assessments of 2012 and 2016 are presented in Figure 17. Value intervals were divided into 5 domains in order to generalized interpretation of data.

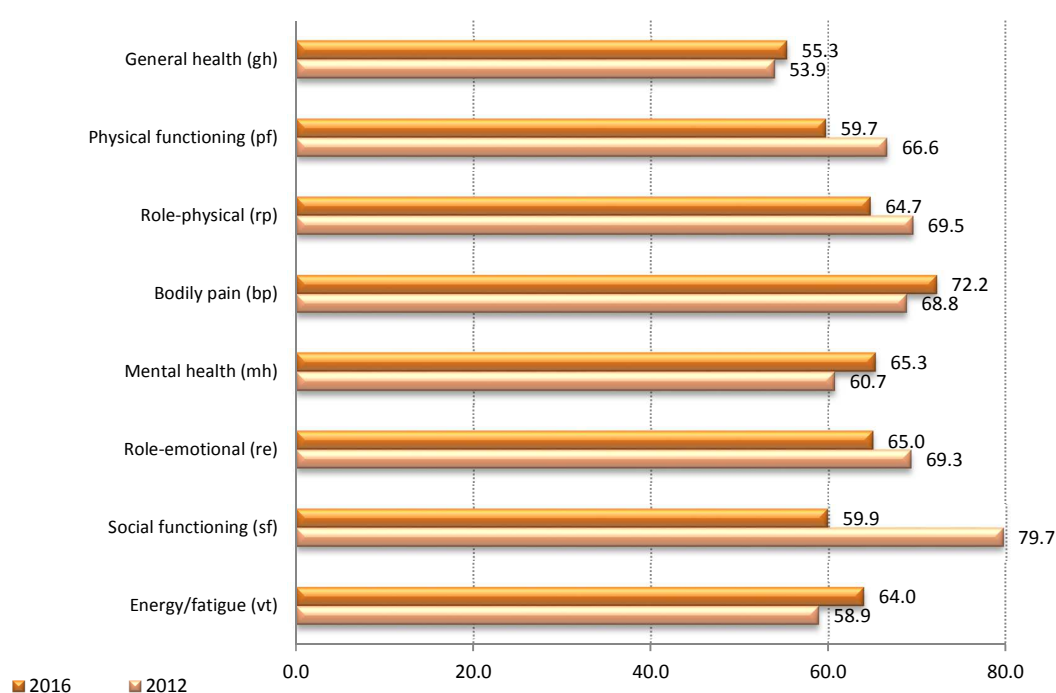
1. Very low range (0-20)
2. Low range (20-40)
3. Moderate range (40-60)
4. High range (60-80)
5. Very high range (80-100)

According to Figure 17 five out of eight components, i.e. role physical (rp), role emotional (re), bodily pain (bp), mental health (mh) and energy/fatigue (vt) are located in the domain of **high values**, and three components, i.e. general health (gh), physical functioning (pf) and social functioning (sf) – in

the domain of **average** values. Nonetheless all these three components are in the top part of average scores, in other words they are very close to high values.

Values for general health, bodily pain, mental health and energy have increased between 2012 and 2016. Along with that, a decline tendency is seen in physical functioning, role-physical, role-emotional and social functioning. In fact, the biggest decline is seen in social functioning—from 79.7% in 2012 to 59.9% in 2016.

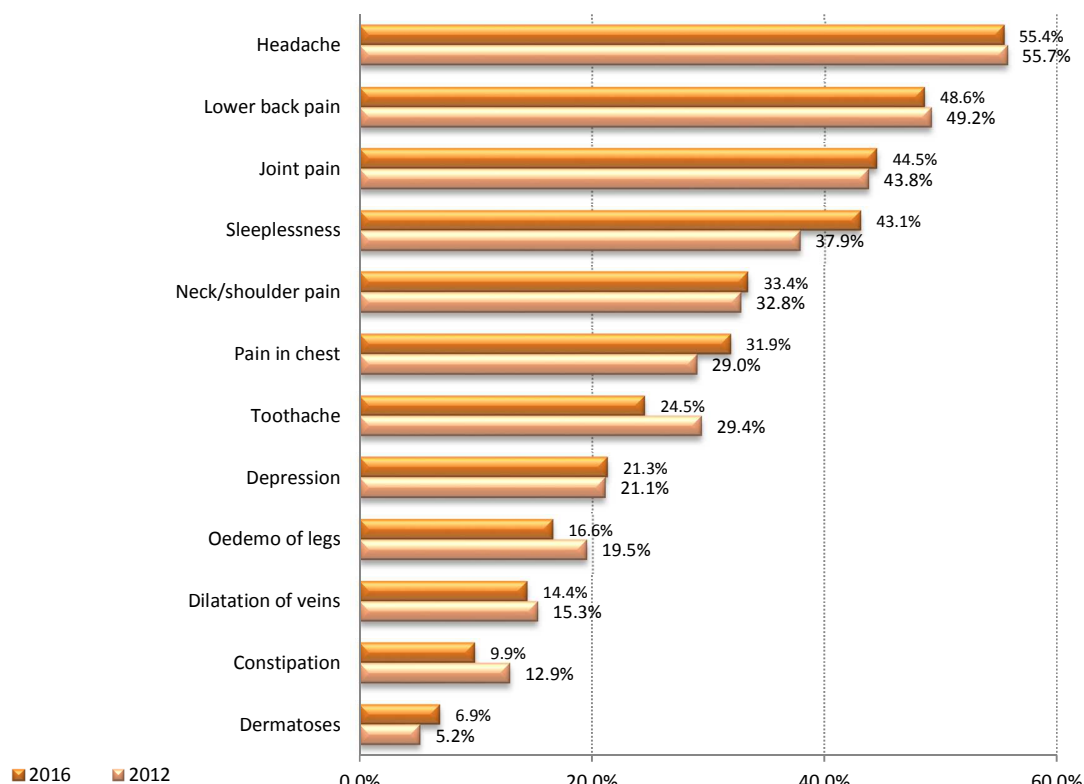
Figure 17. Health assessment (SF-12) 2012, 2016



Prevalence of health conditions

The survey studied 12 most common health conditions, symptoms and complaints in 15 and older population during the past months (headache, lower back pain, joint pain, sleeplessness, neck/shoulder pain, pain in the chest when walking or doing other movements, toothache, depression, edema of legs, variceal dilatation of veins, constipation, dermatoses).

Prevalence of observed health conditions and symptoms in Armenia between 2012 and 2016 is presented in Figure 18.

Figure 18. Prevalence of health conditions, 2012, 2016

Headache, lower back pain, joint pain and sleeplessness were reported by 40-60% of respondents.

In 2016 headache continues being the most common health condition in Armenia, like it was during the previous survey. Every second respondent reported to have headache.

Some 20-40% complained about neck/shoulder pain, pain in the chest when walking or doing other movements, toothache and depression.

Another 5-20% reported edema of legs, dilatation of veins, constipation and dermatoses.

Overall, in 2016 people complain more about sleeplessness (37.9%` 43.1%) and pain in chest when walking or doing other movements (29%` 31.9%).

On the other hand, less respondents complained about toothache (29.4%` 24.5%), edema of legs (19.5%` 16.6%) and constipation (12.9%` 9.9%).

Prevalence of health conditions and symptoms in 2016 according to sociodemographic groups is presented in Tables 9 and 10.

Table 9. Prevalence of health conditions, according to sociodemographic characteristics, %, 2016

Health condition	Residence			Gender		Age				
	Yerevan	Urban	Rural	F	M	15-19	20-34	35-49	50-64	65 +
Pain in chest when walking or doing other movements	28.4	33.7	34	32.8	30.9	12.2	20.3	36.5	44.5	45.2
Joint pain	40.3	44.0	48.7	50.5	37.7	14.5	27.3	49.0	63.0	69.9
Lower back pain	44.3	47.5	53.1	54.3	42.0	26.6	38.5	52.3	61.3	61.1
Neck/shoulder pain	29.8	33.5	36.6	40.8	25.0	10.2	21.7	36.9	47.7	48.7
Edema of legs	13.4	16.6	19.5	20.6	12.1	1.9	7.3	16.7	26.6	33.1
Variceal dilatation of veins	11.8	14.8	16.4	19.6	8.4	1.0	7.8	15.8	20.6	27.1
Dermatoses	6.9	7.9	6.2	6.8	7.0	4.8	6.0	7.8	6.9	8.8
Constipation	9.8	11.0	9.3	13.5	5.8	8.1	6.3	9.7	10.5	19.7
Headache	49.5	59.0	58.6	63.1	46.7	43.1	52.9	59.4	61.2	53.8
Sleeplessness	39.8	44.6	45.2	48	37.5	16.8	30.4	45.3	61.0	59.5
Depression	18.2	23.8	22.5	25.6	16.3	8.7	14.6	26.4	28.3	25.8
Toothache	17.0	26.1	30.4	27.1	21.5	23.2	29.4	26.2	23.5	11.9

Table 10. Prevalence of health conditions, according to sociodemographic characteristics, %, 2016

Condition	Education			Wealth					Total
	IS	Sec	Voc	IH	Higher	Low	Middle	High	
Pain in chest when walking or doing other movements	34.6	35.3	38.4	19.2	23.3	36.2	29.8	28.6	31.9
Joint pain	51.7	46.2	56.7	24.0	36.3	48.1	45.1	39.9	44.5
Lower back pain	55.0	51.2	59.8	25.8	40.4	50.6	49.5	45.4	48.6
Neck/shoulder pain	34.9	35.5	39.6	13.0	31.1	34.2	34.4	31.6	33.4
Edema of legs	21.0	19.1	21.1	7.5	10.0	18.3	16.5	14.8	16.6
Variceal dilatation of veins	18.5	16.2	18.2	5.7	9.5	14.4	14.4	14.2	14.4
Dermatoses	4.7	6.7	9.6	5.8	6.2	6.9	6.9	6.9	6.9
Constipation	20.3	10.1	9.8	7.0	7.8	10.2	10.4	9.2	9.9
Headache	51.5	56.9	62.4	49.7	50.0	53.8	58.2	54.9	55.4
Sleeplessness	44.0	45.8	50.9	26.6	37.0	45.8	41.7	41.2	43.1
Depression	30.4	20.5	28.2	15.6	16.5	24.3	22.4	16.8	21.3
Toothache	25.5	26.5	26.6	21.8	19.8	23.0	24.9	25.9	24.5

The prevalence of health conditions and complaints is significantly higher in

- Marz cities and villages
- women
- 50 and older population
- Low educational attainment groups²
- Poor households more often report pain in chest, joint pain, lower back pain and depression.

²It should be noted that most of incomplete higher education respondents are students, that is why data in incomplete higher education group are very close to mean data of 15-19 and 20-29 age groups.

Mental health

The 2016 sample survey questionnaire included a section for assessment of mental health based on Zung self-rating depression scale. It enables monitoring changes in the level of depression over the time. The scale was developed by Duke University psychiatrist William Zung (1929-1992) to assess the level of depression for patients diagnosed with depressive disorder.

This was the first time Armenia used the translated and adapted Zung questionnaire, which is widely used as a useful screening tool.

There are 20 items on the scale that rate the affective, psychological and somatic symptoms associated with depression. Each question is scored on a scale of 1 through 4 (based on these replies: "a little of the time", "some of the time", "good part of the time", "most of the time"). Scores on the test range from 20 through 80. The scores fall into four ranges.

- 20-44 Normal Range
- 45-59 Mildly Depressed
- 60-69 Moderately Depressed
- 70 and above Severely Depressed

Criteria for diagnosis of severe depressive disorders

At least 5 of the following symptoms have been present during the same 2-week period, represent a change from previous functioning, and include either depressed mood or loss of interest or pleasure.

- Depressed mood
- Marked diminished interest or pleasure
- Significant weight loss or weight gain
- Insomnia or hypersomnia
- Psychomotor agitation or retardation
- Fatigue or loss of energy
- Feelings of worthlessness or excessive guilt
- Diminished ability to concentrate
- Recurrent thoughts of death or suicidal ideation

A 2002 literature review found that median sensitivity across 16 instruments, including the BDI, CES-D, SDS, and GDS, for major depression was 85%, ranging from 50-97%, while median specificity was 74%, ranging from 51-98%. [6] The more common screening tools will be reviewed in this topic, including the following:

- Hamilton Depression Rating Scale (HDRS)
- Beck Depression Inventory (BDI)
- Patient Health Questionnaire (PHQ)
- Major Depression Inventory (MDI)
- Center for Epidemiologic Studies Depression Scale (CES-D)
- Zung Self-Rating Depression Scale (SDS)
- Geriatric Depression Scale (GDS)
- Cornell Scale for Depression in Dementia (CSDD)

Distribution of mental health assessment findings for the entire sample is presented in Figure 19. According to statistical data the assessment of 15 and older population mental health shows normal distribution (Kolmogorov-Sirnov test value 0.06, Lillieforce test 0.000). Mean distribution is 43.6 and the standard deviation 7.848.

According to statistical data, mental health assessment in all sociodemographic groups (gender, age, education, wealth, residence) also has normal distribution. Mean values in sociodemographic groups are presented in Figure 20.

Figure 19. Distribution of depression assessments in 15 and older population (scale changed in 20-100 range)

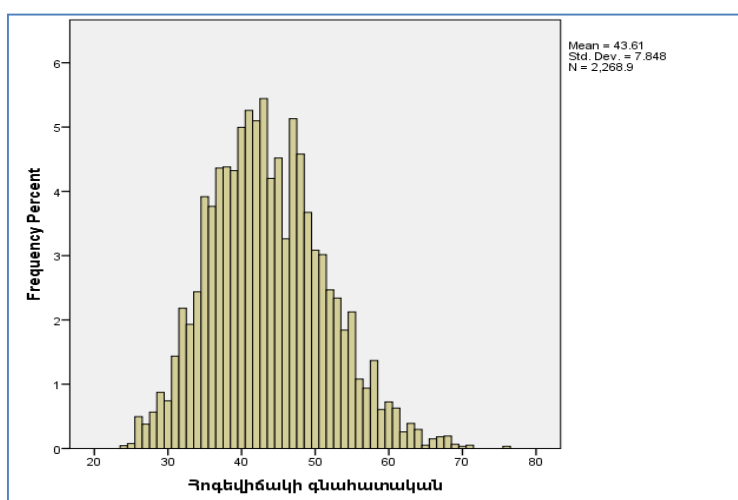
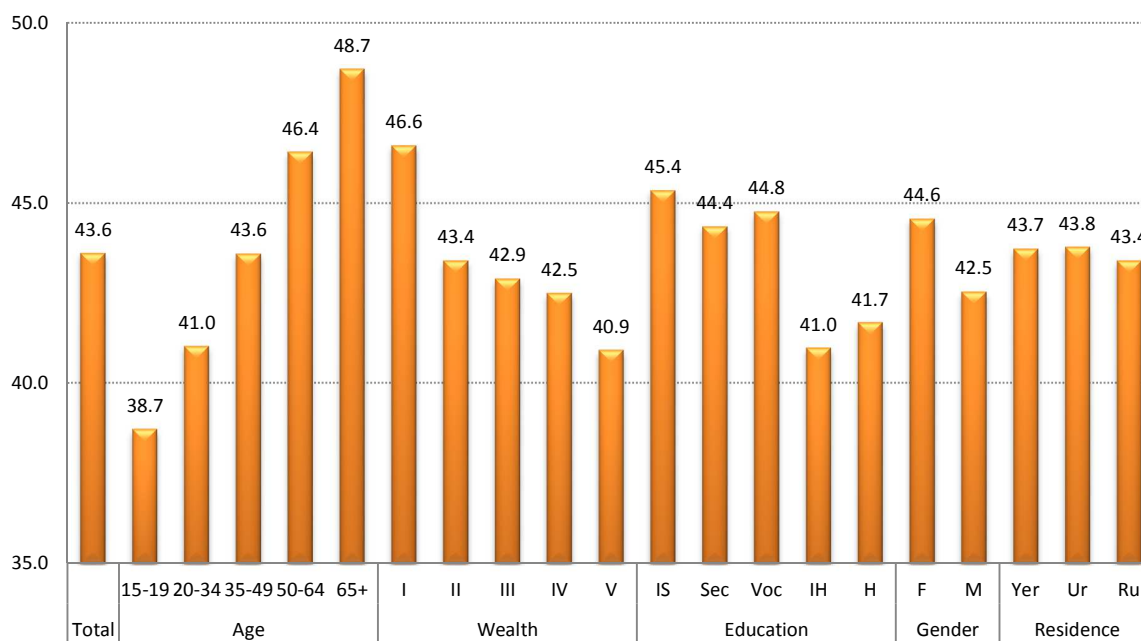
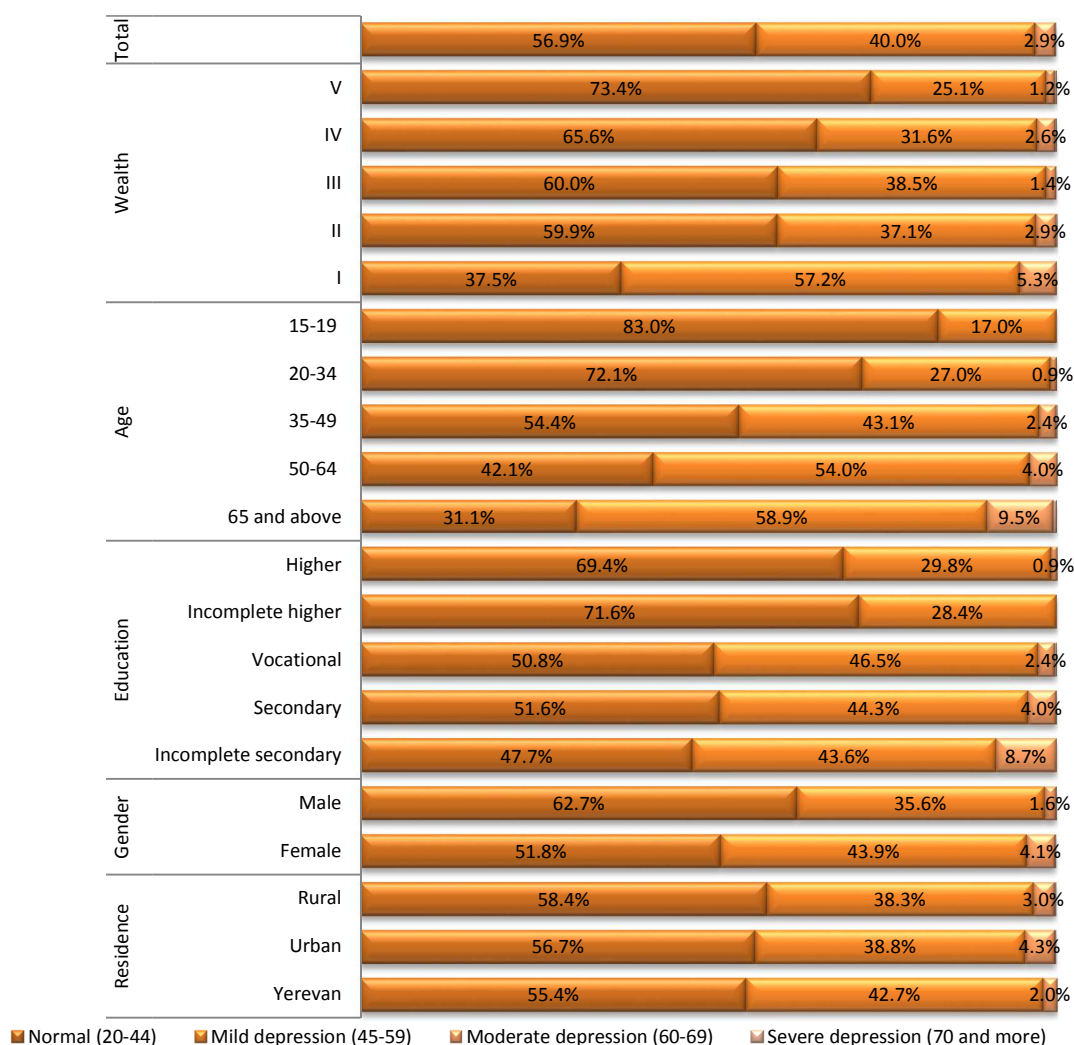


Figure 20. Mean value of mental health assessment according to sociodemographic groups, change range 20-100, 2016



Distributions of population mental health, per severity, per different sociodemographic groups are presented in Figure 21.

Figure 21. Prevalence of depression according to sociodemographic groups, 2016



So, some 40% of Armenia population has mild depression, while 2.9% is moderately and 0.1% is severely depressed.

Prevalence of mild depression in sociodemographic groups has the following picture.

- The level of mild depression is strongly linked to the level of **wealth**. If in low wealth quintile I mild depression is reported by 57.2%, in quintile III it decreases to 38.5% and in the highest quintile accounts for 25.1%.
- Mild depression is strongly correlated with **age**. Mild depression is present in 17.0% of 15-19 age group and 58.9% of 65 and older participants.

- Depression depends on **education**, as well. Mild depression is present in 29.8% of respondents with higher education, and 43-47% of those with incomplete secondary, secondary and vocational education. Note that respondents with incomplete higher education are the students, so low level of mild depression is due to their age.
- Mild depression is more prevalent in women (43.9%) than in men (35.6%).
- Mild depression is a bit higher in Yerevan (42.7%), than in marz cities (38.8%) and villages (38.3%).

Prevalence of moderate depression according to sociodemographic groups is similar to that of mild depression, but it differs residence-wise. Prevalence of moderate depression increases in parallel with decreasing wealth, increasing age, decreasing educational level and is much lower among males. In marz cities and villages the level of moderate depression is higher than in the capital city of Yerevan.

Moderate depression is significantly higher in low **wealth** I quintile (4.5%). In 65 and older population is accounts for 9.5%, in 50-64 age group - 4.0%, incomplete/lower secondary education 8.7%, females 4.1%, urban population 4.3%.

As for the prevalence of severe depression, the mass sociological survey methodology requires refraining from interviews with people who are sick and/or inadequate/depressive. On the other hand, these people usually avoid interviews. Hence it should be assumed that the prevalence of severe depression is much higher than the formally recorded level.

Nonetheless, severe depression was detected in 0.5% of 65 and older respondents, 0.3% of high wealth quintile, 0.3% of those with vocational education and 0.2% of rural population.

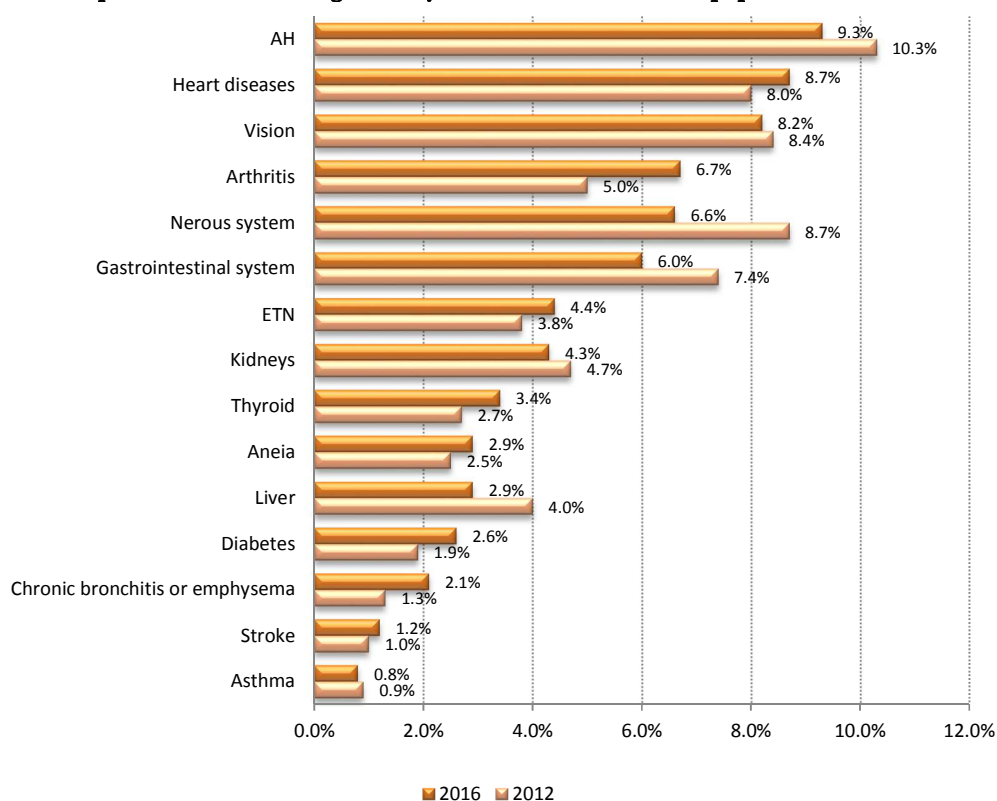
Thus, the prevalence of severe depression accounts for 0.1%.

Chronic diseases

The survey studies prevalence of chronic diseases and conditions in 15 and older population during the past year (2016). Figure 22 presents the snapshot for the period of 2012 - 2016.

According to the data, leaders in most prevalent provider-diagnosed diseases in 15 and older population are arterial hypertension (AH) (9.3%), cardiac diseases (8.7%), vision disorders (8.2%), arthritis (6.7%) and nervous system diseases (6.6%).

Figure 22. Most prevalent diseases diagnosed by a doctor in 15 and older population, 2012, 2016



Source: HSPA 2012, 2016

The following patterns were detected between 2012 and 2016.

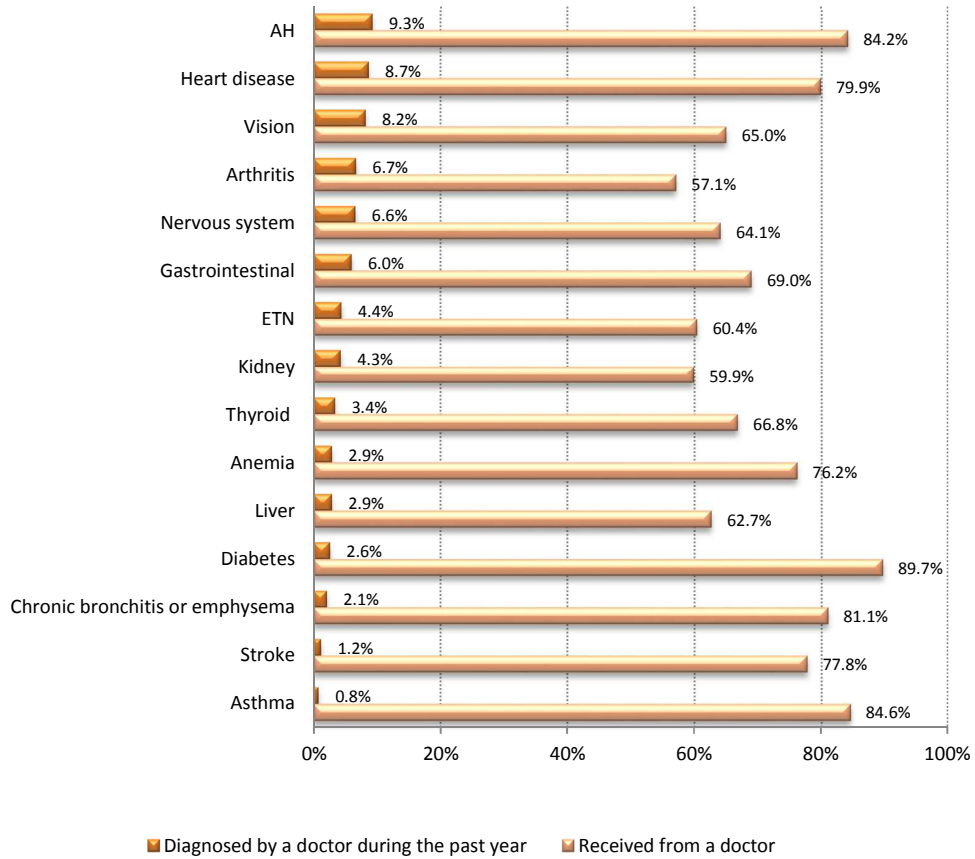
- The proportion of AH cases diagnosed by a provider decreased from 10.3% to 9.3%, but the prevalence of cardiac diseases has increased from 8.0% to 8.7%.
- Diagnosed cases of nervous system and gastrointestinal diseases declined from 8.7% to 6.6% and from 7.4% to 6.0% correspondingly.
- The number of patients with arthritis increased from 5.0% to 6.7%.

The survey studied the prevalence of chronic conditions diagnosed during the past 12 months and identified the number of cases (proportion) who were prescribed medications by a provider to treat the diagnosed disease (Figure 23).

As the Figure shows more than 75% of respondents with diagnosed diabetes, asthma, bronchitis, hypertension, heart diseases, stroke and anemia were prescribed drugs. The high rate of patients with diabetes who are on medication, is explained by free drugs under BBP available for diabetic patients.

The proportion of patients with vision, nervous system, liver, ENT, kidney diseases and arthritis who are on treatment, is rather small.

Figure 23. Proportion of patients who receive treatment for most prevalent diseases diagnosed by a doctor or who are prescribed drugs (% from the total number of diagnosed cases) during the last year, 2016



3. RISK FACTORS

According to evidence-based medicine data NCD development largely depends on one's lifestyle and specifics of present risk factors, that can trigger development of these diseases. As WHO data witness NCD development is strongly linked to the negative spin-off of smoking tobacco, alcohol abuse, unhealthy diet, lack of physical activity, hypertension and other harmful factors.

The survey studied below risk factors contributing to NCD development and affecting human health.

1. Biological, including
 - a. Hypertension
 - b. High cholesterol level
 - c. High glucose level
 - d. Being overweight
2. Behavioral, including
 - a. Tobacco use
 - b. Alcohol use
 - c. Lack of physical activity
 - d. Abuse of salt
 - e. Consumption of fats
 - f. Dependence on the screen/internet
 - g. Oral hygiene
3. Domestic risk factors, including
 - a. Air pollution, water and soil contamination, as well as radiation – outside the houses
 - b. Toilets, wastewater disposal, house heating – within the houses

Presence of risk factors was defined based on below criteria and methodology.

- **Arterial hypertension.** When readings of two measurements of each arm show systolic level equal or exceeding 140 mmHg and/or diastolic equal or exceeding 90mmHg. Measurements are based on international guidelines (a total of 4 measurements are taken, 2 on each arm with an interval of 2-5 minutes between measurements on the same arm and 30 minutes interval between measurements on right and left arms). AH was measured based on oscillometric method with an automatic blood pressure device OMRON S1.
- **Daily use of tobacco.** Assessed based on the WHO international questionnaire.

- **Being overweight.** Was defined through anthropometric measuring of respondents /height and weight/ to calculate their body mass index (BMI) according to the formula: $BMI=W/H^2$ [kg/m²]. WHO has defined the following BMI categories: underweight, when $BMI \leq 18.5$ kg/m², normal weight, when BMI ranges from 18.5 to 25.0 kg/m², being overweight, when BMI varies between 25.0 and 30.0 kg/m² and obesity = $MBI \geq 30.0$ kg/m². In cases when reference is made to BMI classification, respondents with underweight and normal BMI are grouped in the category 'not overweight' and those overweight and obese are put under category 'overweight'.
- **Physical inactivity.** Was defined in those who engage in light physical activity less than 30 minutes continuously per week.
- **Abuse of alcohol.** Was defined as percentage of those who consume the daily equivalent of 20 g or more of pure alcohol, according to WHO methodology
- **Level of glucose.** The content of glucose in capillary blood is defined after a 10-12 hours fasting using ACCU-CHECK Performa– glucometer and disposable test strips.
- **Level of cholesterol.** The total content of cholesterol in capillary blood was defined after a 10-12 hours fasting using Accutrend Plus– cholesterol meter and disposable test strips.

Prevalence of risk factors, 2012, 2016

Figure 24 presents the prevalence of risk factors in Armenia between 2012 and 2016. No cholesterol and glucose level measurements were taken within the framework of the 2012 HSPA.

Data pinpoint at the following situation for the period covering 2012-2016.

- AH prevalence decreased from 33.8% to 28.6%,
- Statistically no changes were detected in being overweight. In 2016 the rate was 51.2%,
- Proportion of daily smoking males increased from 48.7% to 53.4%,
- Number of males who consume the daily equivalent of 20 g or more of pure alcohol increased between from 11.2% to 16.3%,
- Number of physically inactive people increased from 11.3%³ to 13.9%,
- In 2016 high level of cholesterol was detected in 8.5% of 15 and older population.

In 2016 high level of glucose was detected in 18.0% of 15 and older population.

³In 2012 HSPA physically inactive people accounted for 50.6%, which was a typo.

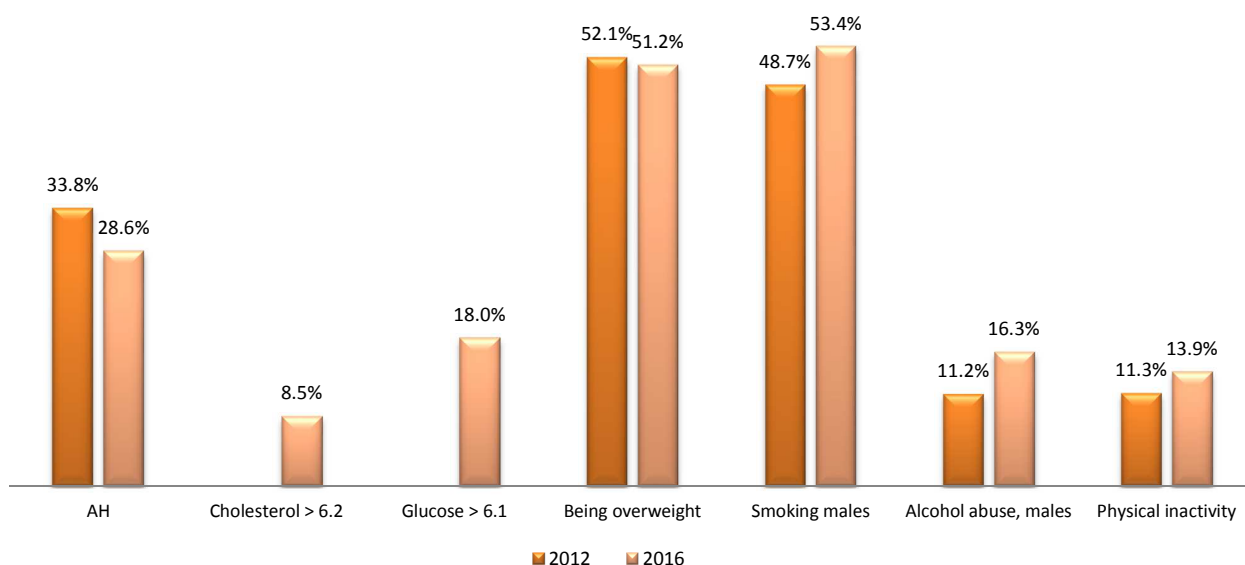
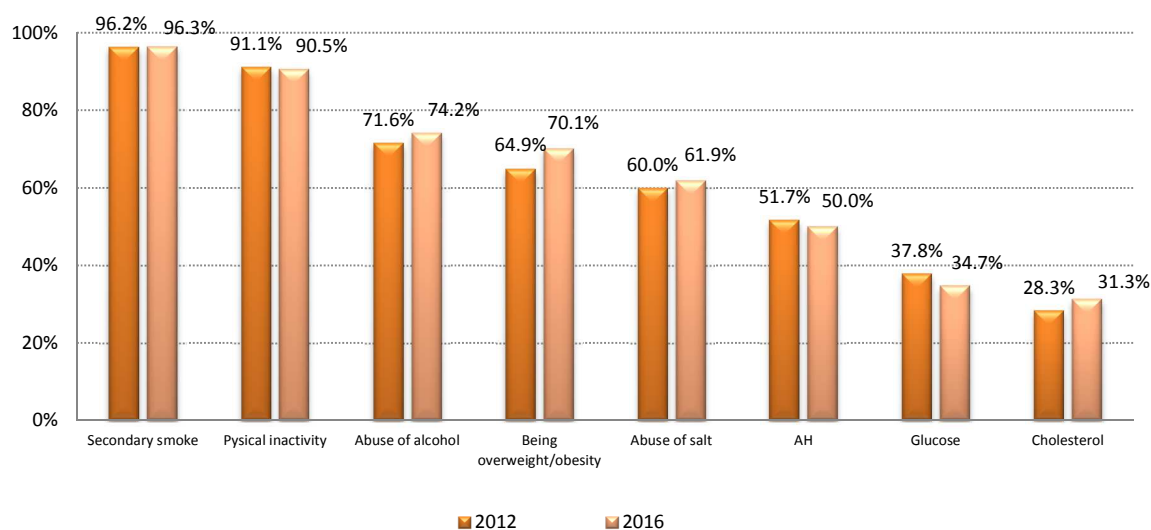
Figure 24. Prevalence of risk factors in 15 and older population of Armenia, 2012, 2016

Figure 25 presents public awareness of the harms of risk factors between 2012 and 2016. Awareness was assessed asking the following question, “Do you think that this risk factor affects your health?” The Figure shows the proportion of positive answers.

Awareness of Armenian people on harmful effects of risk factors changes with a quite tangible range.

- Very high is the level of awareness of tobacco use (96.3% of respondents) and lack of physical activity (90.5%).
- Good level of awareness is recorded for abuse of alcohol (74.2%), being overweight (70.1%) and abuse of salt (61.9%).
- Half of participants (50.0%) demonstrated moderate level of awareness of the harmful effect of hypertension.
- Low level of awareness was recorded for the harm of high level of glucose (34.7%) and cholesterol (31.3%) in the blood.

The level of awareness of risk factors did not change much between 2012 and 2016. Slight improvement is seen in awareness of alcohol abuse.

Figure 25. Fifteen and older population awareness of the negative impact of risk factors, 2012, 2016

Below is a detailed description of the prevalence of risk factors and related dimensions according to different sociodemographic groups.

Arterial pressure

Detection of arterial hypertension

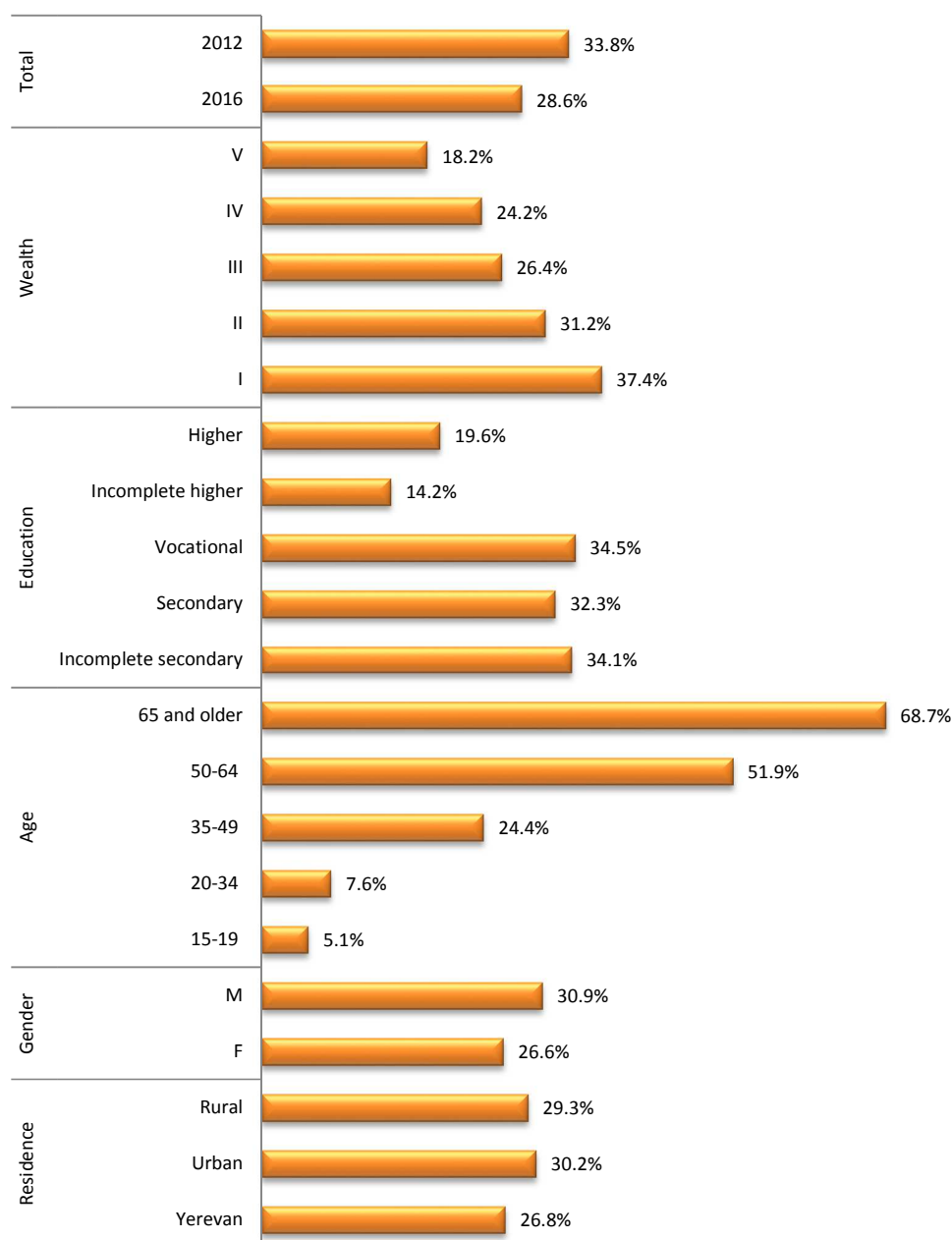
During field phase of the 2016 survey the team measured participants' arterial blood pressure with OMRON S1 monitor. Four measurements were taken – two on each arm.

Hypertension was identified by doing the following:

- The average of all four readings of systolic pressure was taken.
- The average of all four readings of diastolic pressure was taken,
- If average reading of systolic pressure exceeded 140, the participant has hypertension, regardless of the average diastolic reading.
- If average reading of diastolic pressure exceeded 90, the participant has elevated pressure, regardless of the average systolic reading.

The prevalence of hypertension identified during the survey among 15 and older population according to sociodemographic characteristics is presented in Figure 26.

Figure 26. Arterial hypertension according to measurements taken during the survey



The Figure suggests the following picture.

- Hypertension is clearly linked to one's **wellbeing** and is most prevalent in the lowest wealth quintile (37.4%), followed by quintile III (26.4%) and quintile V (18.2%),

- Hypertension is significantly less prevalent in the group with higher **education** (19.6%) as opposed to those with low educational attainment (32-35%). The only exception is the group with incomplete higher education comprised of mostly students.
- Hypertension is strongly correlated to **age**. In fact, hypertension was detected in every fourth respondent in the 35-49 age group (24.4%), every second in 50-64 age group (51.9%), and the 2/3 (68.7%) of 65 and older population.
- Prevalence of hypertension is higher in **males** (30.9%) than in females (26.6%).
- Hypertension is relatively less prevalent in **Yerevan** (26.8%), than in marz cities (30.2%) and villages (29.3%).

Table 11 presents the findings of measuring taken during the survey with age-gender breakdown.

Table 11. Prevalence of hypertension identified during the survey, age-gender breakdown, 2016

Age	Gender		Total
	Female	Male	
15-19	2.5%	7.7%	5.1%
20-34	1.9%	13.6%	7.6%
35-49	18.8%	30.9%	24.4%
50-64	52.2%	51.5%	51.9%
65 and older	69.6%	67.4%	68.7%
Total	26.6%	30.9%	28.6%

Latent arterial hypertension

The survey findings enable assessing the prevalence of latent hypertension, when the respondent is not aware of having high/elevated blood pressure.

The question asks, “Do you have high arterial blood pressure i.e. hypertension?” Measurement readings were cross-matched with the responses in order to understand the prevalence of latent hypertension. The results are presented in Table 12.

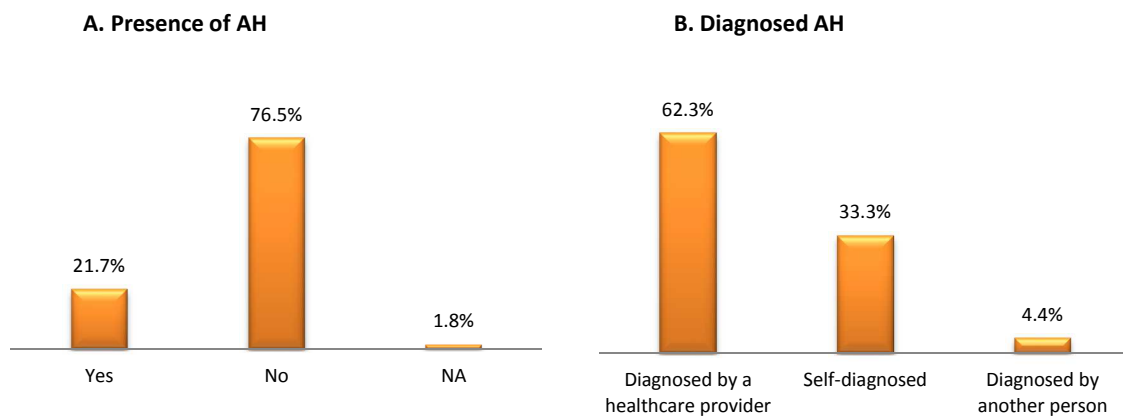
Table 12. Respondents who were not aware of having high/elevated arterial blood pressure

Hypertension present	Hypertension according to survey measurements		Total
	AP \leq 140/90 mmHg	AP \geq 140/90 mmHg	
No	61.1%	15.4%	76.5%
Yes	9.2%	12.4%	21.7%
NA	1.0%	0.7%	1.8%
Total	71.4%	28.6%	100.0%

- The Table data show that 15.4% of respondents believe that they do not have hypertension but the measurements revealed the contrary.
- Some 1.8% of participants did not know if they had hypertension, but the measuring revealed that AH was present in 0.7%.
- Another 9.2% reported having hypertension, but the measuring did not confirm it. In case of 3.9%, when respondent reported having hypertension, the latter was not detected by a healthcare provider.

Figure 27-A presents the proportion of respondents who reported having hypertension, and Figure 27-B presents how it was diagnosed (by who).

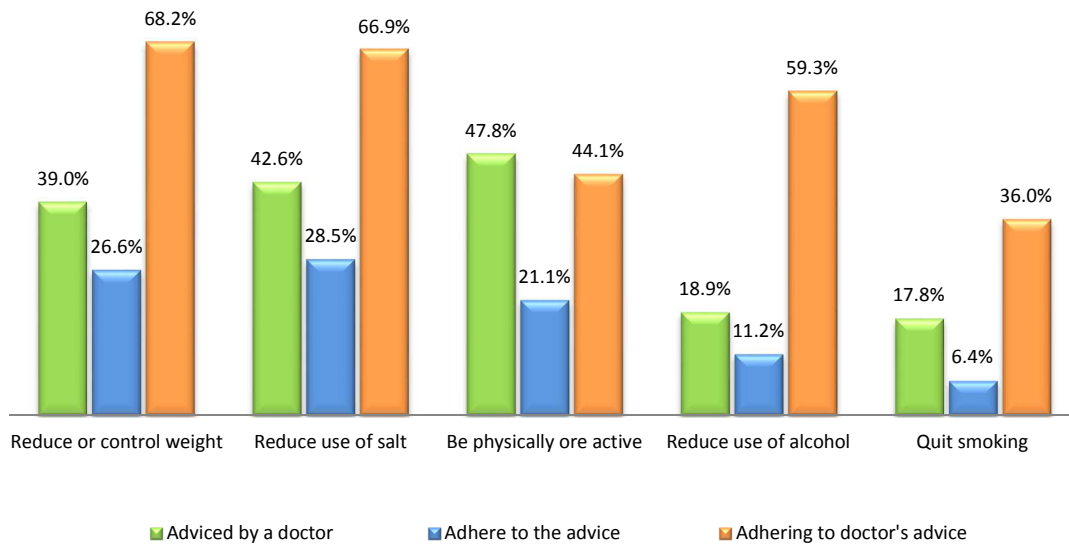
Figure 27. Presence of arterial hypertension, proportion of respondents who reported having hypertension (A.), diagnosed AH (B.), % of those who reported having hypertension



Respondents who reported having hypertension diagnosed by a healthcare provider were asked if the latter has advised on healthy lifestyle, in particular to lose weight, reduce use of salt, alcohol, be physically more active and quit smoking. To assess adherence respondents were asked if they follow the advices provided by healthcare specialist.

Figure 28 presents the proportion (from the total number of respondents) of respondents who were advised on healthy lifestyle by a healthcare provider. The Figure presents also the proportion of respondents who were diagnosed AH by a doctor and were consulted on healthy lifestyle (blue bar). The third column (green) shows what proportion of those who were consulted adheres to the doctor’s advices (equal to the ratio of blue column data to that of the orange).

Figure 28 Counseling by a healthcare provider to regulate AH (% of those who were diagnosed by a doctor), 2016



- It is noteworthy that people are rather sloppy in adhering to advices on how to monitor and control arterial pressure. Advices are followed by as little as 1/3 (36.0%) to 2/3 (68.2%) of respondents.

Hypertension monitoring

Effectiveness of the use of drugs prescribed by a doctor

Data describing the effectiveness of the drugs prescribed by a healthcare provider are presented in Table 13. Data are for respondents who were prescribed drugs by a doctor and present the proportion of people had high/elevated pressure during the survey measuring.

The Table data pinpoint the following:

- 80.4% of respondents were prescribed antihypertensive drugs by a doctor, but did not taken them during the last 24 hours (last 7 days), and during the survey measuring had high /elevated pressure.
- 58.5% reported taking antihypertensive drugs during the last 7 days but not during the last 24 hours, and during the survey measuring they had high/elevated pressure.
- 70.3% reported taking their drugs both last 24 hours and during the last 7 days, but during the survey measuring they had high/elevated pressure.

Data suggest that majority of people with hypertension do not take the prescribed drugs regularly, which in most cases is explained by temporary delusive improvement of the patient's health followed by termination of drug intake.

Table 13. Effectiveness of drugs prescribed by a doctor

Has a healthcare provider prescribed an antihypertensive drug to you? – Yes			
Did you take antihypertensive drugs during the last 7 days?	Did you take antihypertensive drugs during the last 24 hours?		Total
	No	Yes	
No	80.4%(20)	-	80.4% (20)
Yes	58.5% (19)	70.3% (103)	68.4% (122)
Total	70.0% (39)	70.3% (103)	70.2% (142)

The Table shows the effectiveness of antihypertensive therapy prescribed by a healthcare worker. Data present the proportion of people who had high/elevated pressure during the interview. Data are calculated for those who were prescribed drugs by a doctor. The number of cases is presented in brackets.

Measuring arterial pressure within the framework of preventive and screening programs

The WB Disease Prevention and Control Project was launched in 2013 with an aim to improve maternal and child healthcare services and early detection and control of selected NCD at the primary care level. It also aimed at improving the quality and effectiveness of services provided by pilot hospitals.

NCD screening project started 1st January 2015 within the framework of the Disease Prevention and Control Project. It will enable all 35 - 68 years old citizens to undergo free screenings at their outpatient clinics to detect arterial hypertension and diabetes at the early stages. All 30-60 aged women are examined for early detection and diagnoses of cervical cancer.

Starting from 2015 PHC settings implement free screenings of the population, which includes also measuring arterial blood pressure.

The level of AH monitoring by healthcare providers during the past 12 months and the population coverage were reviewed.

Figure 29 presents the proportion of 15 and older population who had their arterial blood pressure measured by a medical staff during the last 12 months, according to sociodemographic groups.

The Figure suggests that

- In 2016, 43.5% of 15 and older population had their arterial blood pressure measured by a healthcare providers.
- The rate is almost equal in high (45.2%) and low (43.9%) wealth quintiles.
- Nonetheless, the higher the educational level of the person, provided other conditions are identical, the higher is the likelihood of having blood pressure measured in 2016. Half (50%) of respondents with higher education, and some 40% of those with secondary and incomplete secondary education had their blood pressure measured.
- Every second 50 and older citizen had his/her blood pressure measured.
- The rate is higher in women (46.3%) than in men (40.2%),
- Also, it is higher in Yerevan (45.2%) than in peripheries (around 42%).

Figure 29. Measuring of arterial blood pressure by a healthcare provider (doctor or nurse) during the past 12 months, 2016

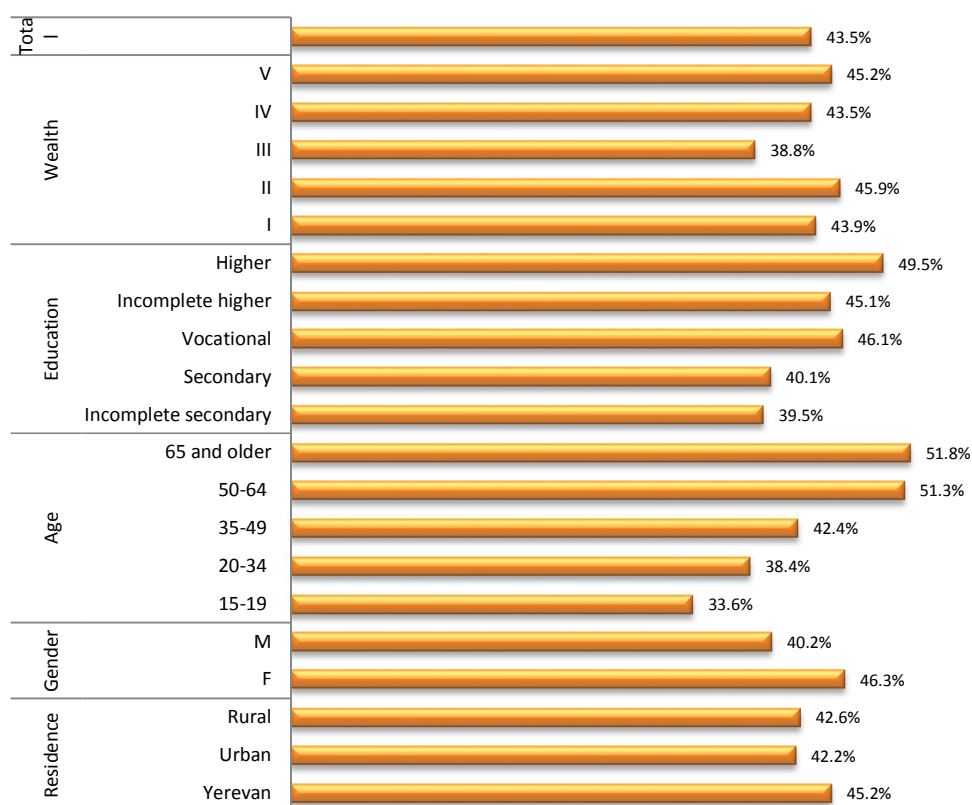
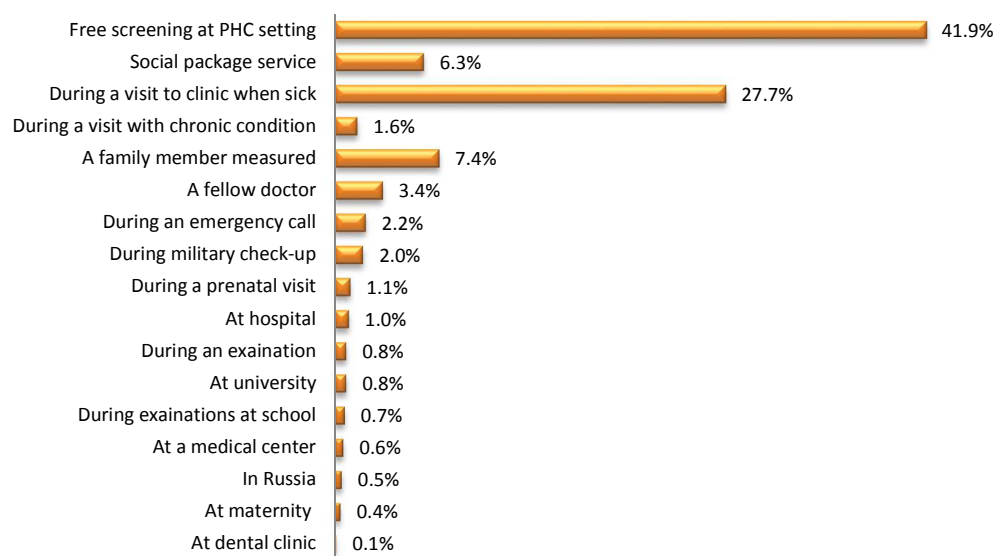


Figure 30 reflects on the conditions at which blood pressure was measured.

Data suggest that 41.9% of the population had their blood pressure measured by a medical staff within the framework of the MoH preventive screenings. In fact, 18.2% of 15 and older population of Armenia had their blood pressure measured within the framework of this project.

Figure 30. Arterial blood pressure measuring by a healthcare provider (doctor or nurse) during the past year



Public awareness of the harmful impact of high/elevated arterial blood pressure

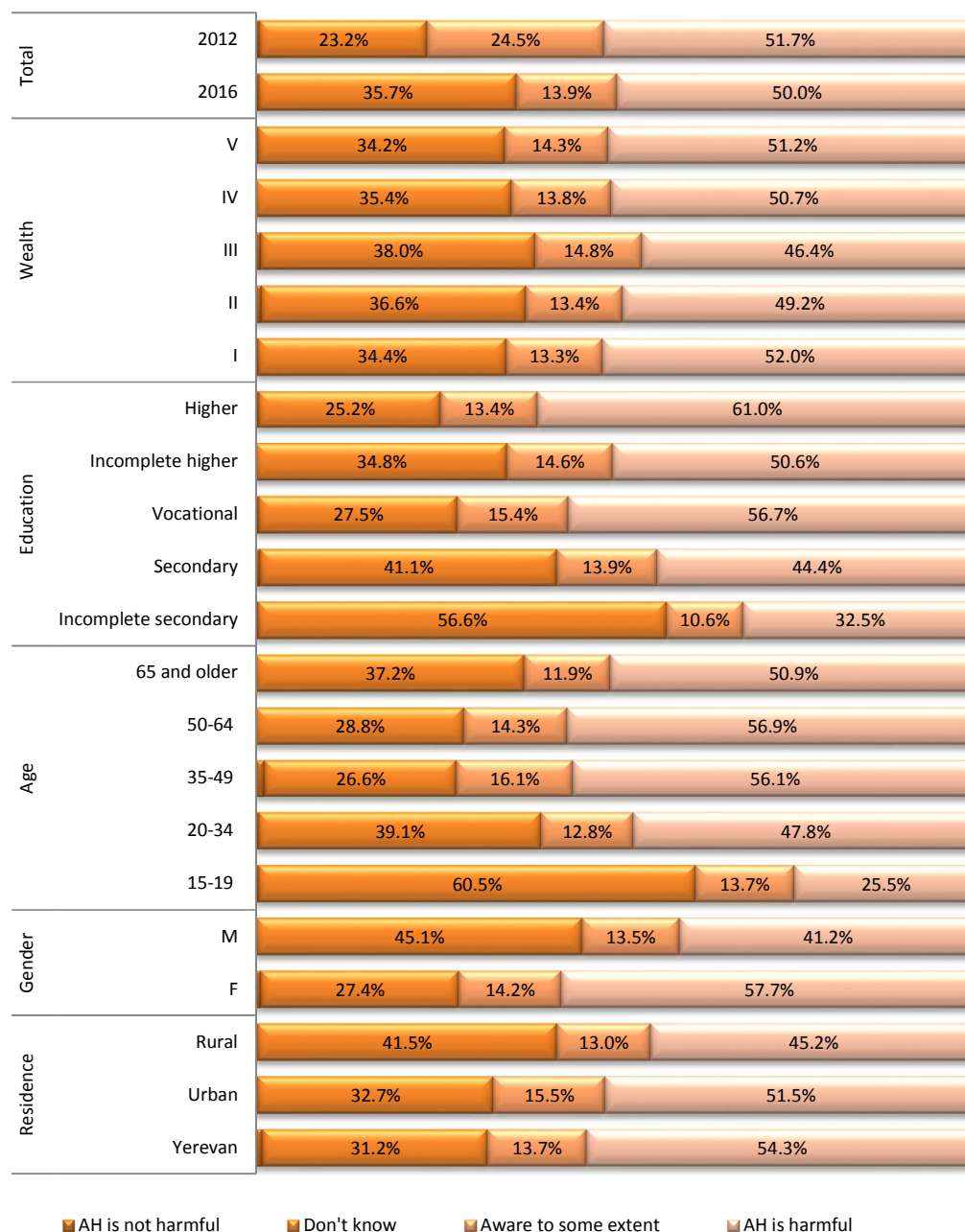
The survey studied public awareness of the harmful consequences of high/elevated arterial blood pressure (Figure 31), and also what chronic conditions can lead to development of arterial hypertension (Figure 32).

According to Figure 31

- The level of public awareness on harmful impact of arterial hypertension (50.0%) seemed to slightly decline (51.7%) between 2016 and 2012. Every 3rd person is aware of the harms of AH.
- Level of awareness depends on sociodemographic aspects, particularly
 - ✓ Those with higher educational attainment are relatively more knowledgeable.
 - ✓ The level of awareness is relatively higher among 35-65 aged as opposed to their younger or older peers.
 - ✓ Women are more knowledgeable than men.

- ✓ Awareness is higher in Yerevan than in marz cities, which are in better shape than the villages.

Figure 31. Public awareness of harmful impact of AH, 2016

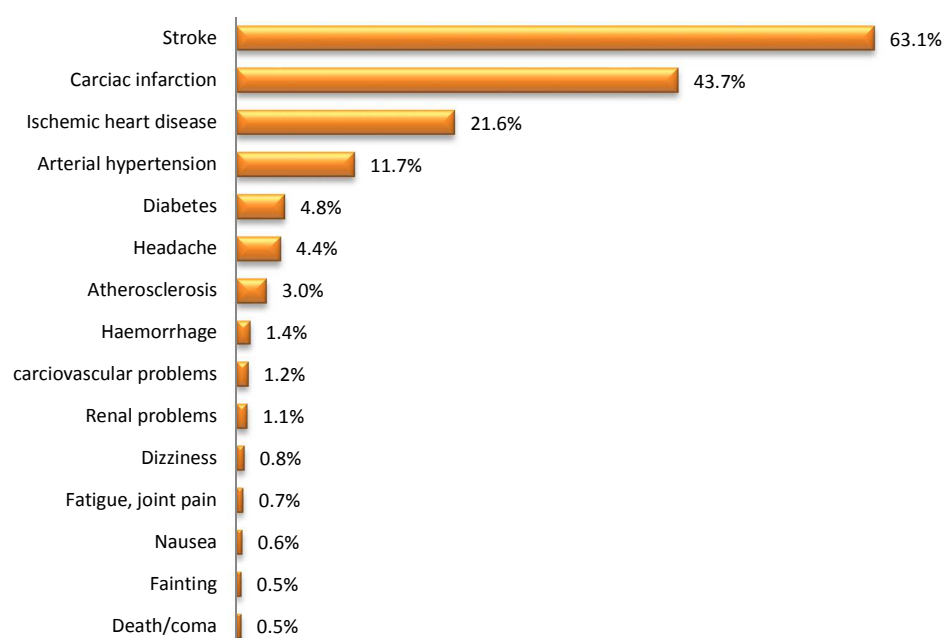


Respondents had the following perceptions of diseases caused by high/elevated blood pressure.

- Stroke was indicated by 63.1% of respondents who were aware or to some extent aware of the harms of AH.
- Infarction - 43.7%,
- Ischemic cardiac diseases - 21.6%,
- Arterial hypertension - 11.7% ,
- Diabetes - 4.8%:

Other diseases were named as well (Figure 32).

Figure 32. Diseases caused by AH (What diseases can develop due to AH - % of persons who reported to know or to some extent know about the harms of AH)



Findings of cholesterol measurement

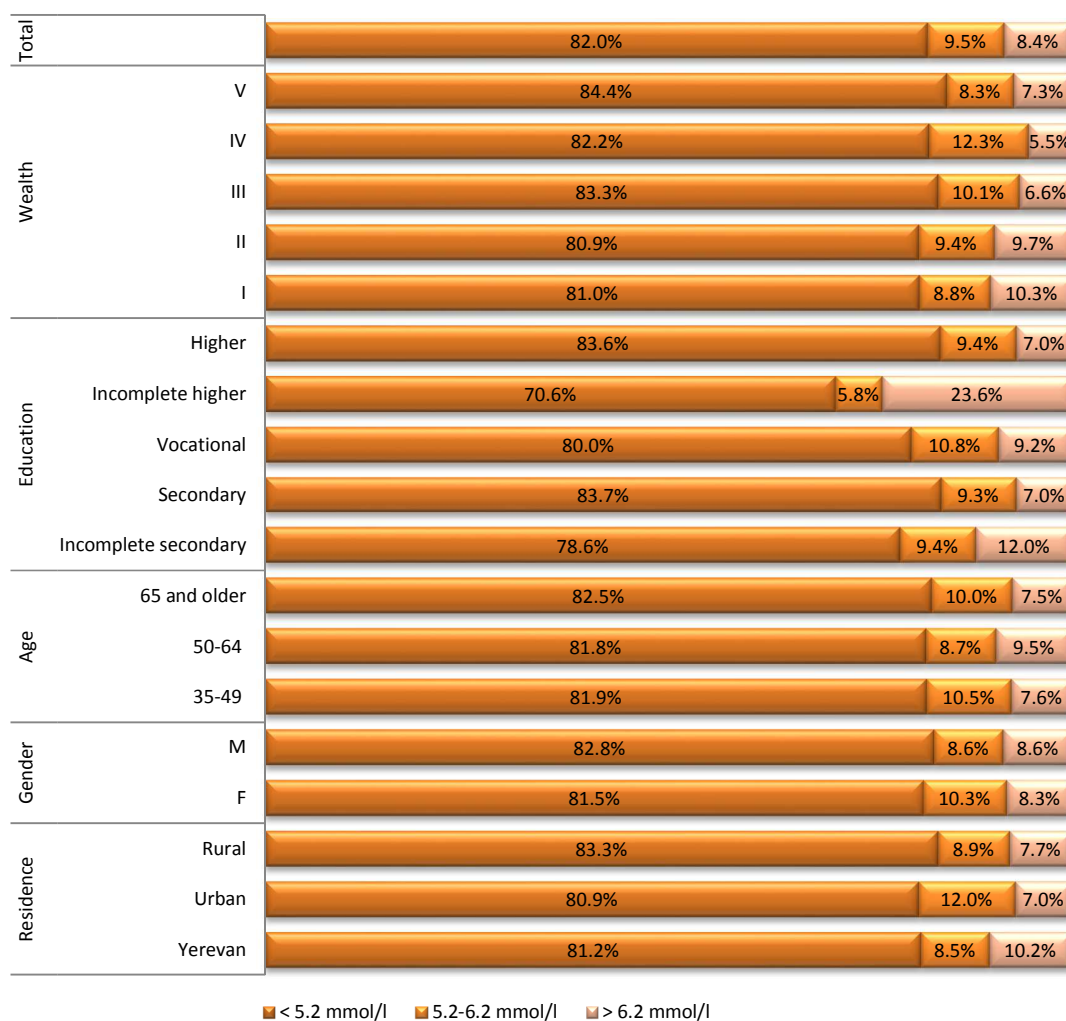
Within the framework of 2016 survey capillary blood cholesterol was measured in 35 and older respondents (a total of 1,191 surveyed) using Accutrend Plus monitor.

The following international criteria were applied to identify high level of cholesterol in respondents

- < 5.2 mmol/l – optimal
- 5.2 – 6.2 mmol/l – borderline high
- $6.2 \leq$ mmol/l - high

Figure 33 presents the results of cholesterol measurement according to sociodemographic characteristics.

Figure 33. Results of measuring the level of cholesterol in capillary blood according to sociodemographic groups, 2016



The Figure suggests that

- The level of cholesterol is high in 8.4% and close to the borderline in 9.5% of the population.
- The level of cholesterol in blood increases along with decline of **wealth**. If in V quintile it is high in 7.3%, in III quintile - 6.6%, in quintile I it accounts for 10.3%.
- The review of the level of cholesterol according to **educational** level of respondents brings to the conclusion that it is relatively higher in those with lower secondary education. The very high rate in the with incomplete higher education is most probably due to limited number of

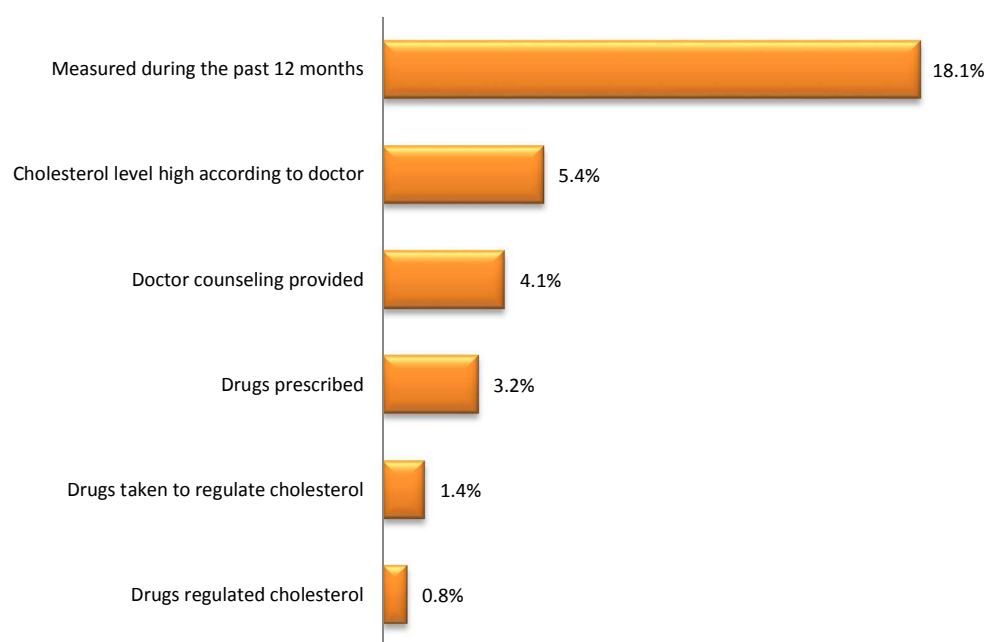
people in the group – 36 respondents in the 35 and older incomplete higher education group (with weighted data - 37).

- The level of cholesterol per **age** groups is relatively higher in 50-64 group.
- The rate is statistically similar among **males and females**.
- **Residence**-wise, the rate is higher in Yerevan than in marz cities and villages.

Review of the cholesterol test results

Figure 34 presents main findings of the study of cholesterol measuring. It shows that 18.1% of 15 and older population of Armenia had their blood cholesterol measured during the past 12 months (2016). High level was detected in 5.4%, 4.1% received corresponding counseling by a medical staff and 3.2% were prescribed medication to control the level of cholesterol in blood. Medication is used by 1.4% and 0.8% reported to have their cholesterol level successfully regulated by using prescribed drugs.

Figure 34. Results of the study of cholesterol measuring and adherence to relevant prescriptions, 2016



60.7% reported to have their cholesterol level regulated with prescribed medication, 18.9% reported that the drugs did not regulate the level and 20.4% could not answer the question (Figure 35).

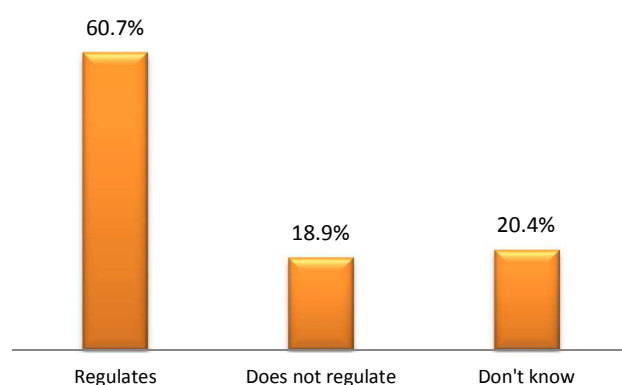
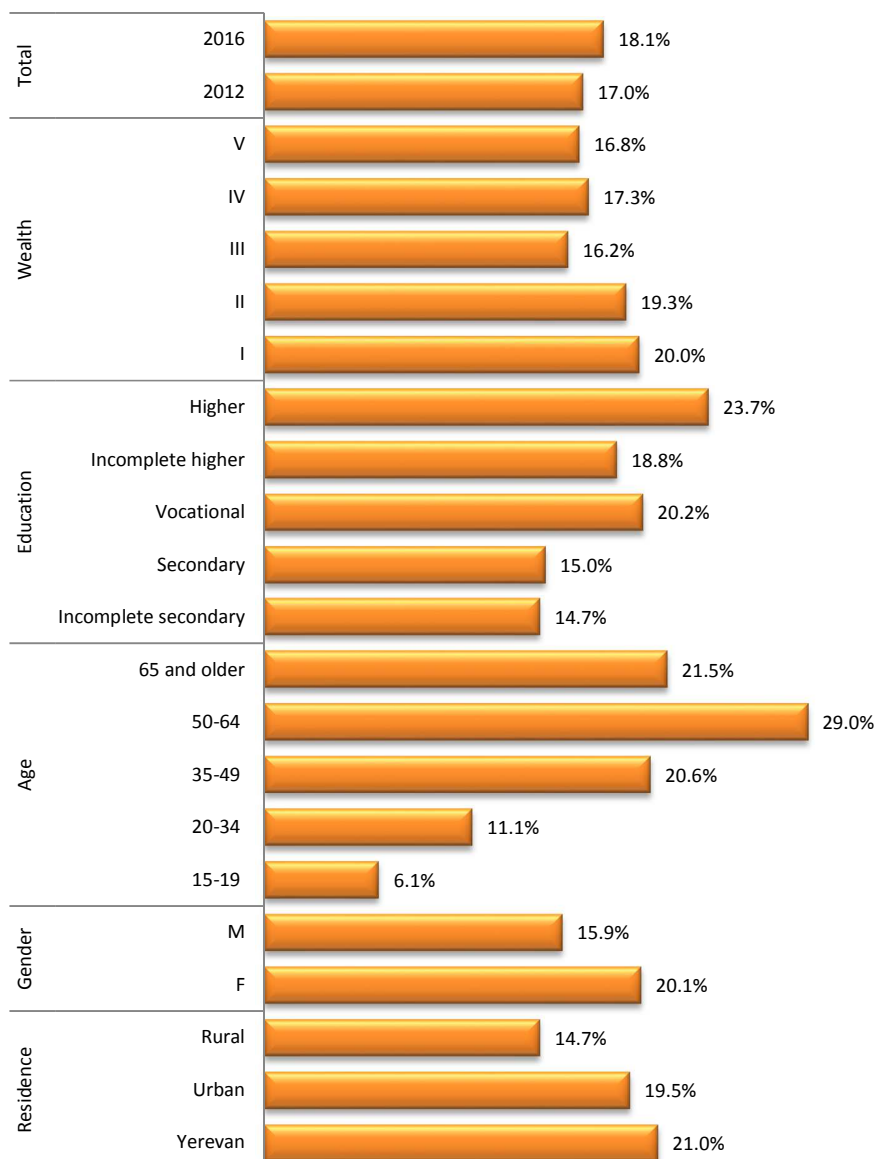
Figure 35. Effectiveness of drugs used to regulate the level of cholesterol, 2016

Figure 36 presents data on cholesterol measurements. According to them:

18.1% respondents of 15 and older age reported to have their level of cholesterol measured during 12 months preceding the 2016 survey. The rate was 17.0% in 2012.

- According to **wealth** groups, the rate of cholesterol measurement is higher in the lowest wealth quintiles I and II (20.0% and 19.3% correspondingly),
- According to the level of **education**, the rate is relatively higher in those with higher education (23.7%). The rate drops along with decline of the education level. In the incomplete secondary educational group the rate is 14.7%.
- Cholesterol measuring increases with the age. If in the 15-19 age group only 6.1% had their cholesterol measured during the past year, in 50-64 age group it accounts for 29.0%. The rate decreases in 65 and older age group –in 2016 it made up 21.5%.
- Cholesterol measuring level is higher in women (20.1%) than in men (15.9%),
- Residence-wise, the rate is higher in Yerevan 21.0%, than in other cities (9.5%) and villages (14.7%).

Figure 36. Cholesterol measuring according to sociodemographic groups, past 12 months

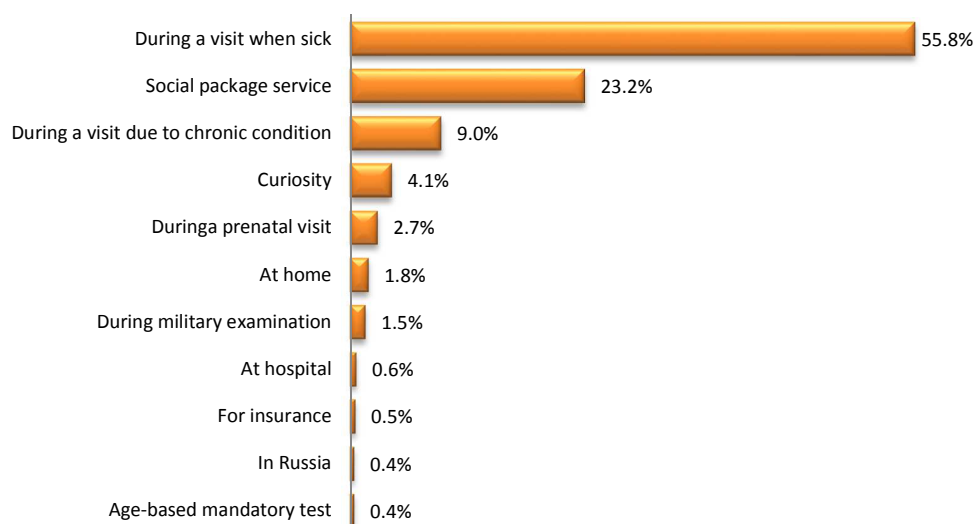


The study reviewed the projects or circumstances under which the respondent's cholesterol was measured (Figure 37).

- Most of measurements (55.8%) were taken when the respondent visited the clinic because of a disease.
- Some 23.2% reported to have their cholesterol measured within the scope of their social package.
- 9% had the level measured during a visit to the clinic due to a chronic condition.

- 4.1% was simply curious to know.
- 2.7% of pregnant women had their cholesterol level checked during a prenatal visit.

Figure 37. Cholesterol measurements during the past 12 months



Awareness of the harm of high level of cholesterol in the blood is presented in Figure 38.

- 31.3% of respondents reported to be aware of the harms of high cholesterol level. The situation has improved since 2012, when the rate was 28.3%.
- Awareness improves with education. Only 12.0% of respondents with incomplete secondary and almost half (47.5%) of those with higher education were aware of the harms of high cholesterol level.
- The highest level of awareness was recorded in the 35-49 and 50-64 age groups (38.5% and 37.2% correspondingly). It declines in 20-34, 65 and older age groups and reaches the lowest point (17.8%) in the 15-19 age group.
- Women are better aware (38.1%) of the harms of high cholesterol than men (23.7%),
- Awareness is higher in Yerevan (39.6%) than in marz urban (32.0%) and rural (23.4%) settlements.

Figure 39 reflects on diseases that can develop due to high level of cholesterol in the blood. According to the survey participants high level cholesterol can contribute to development of cardiac infarction (32.0%), ischemic heart disease (31.4%), obesity (24.5%), stroke (19.8%), diabetes (15.8%), atherosclerosis (13.1), arterial hypertension (10.9%), cancer (5.9%).

Figure 38. Public awareness of the harmful impact of high cholesterol level, 2016

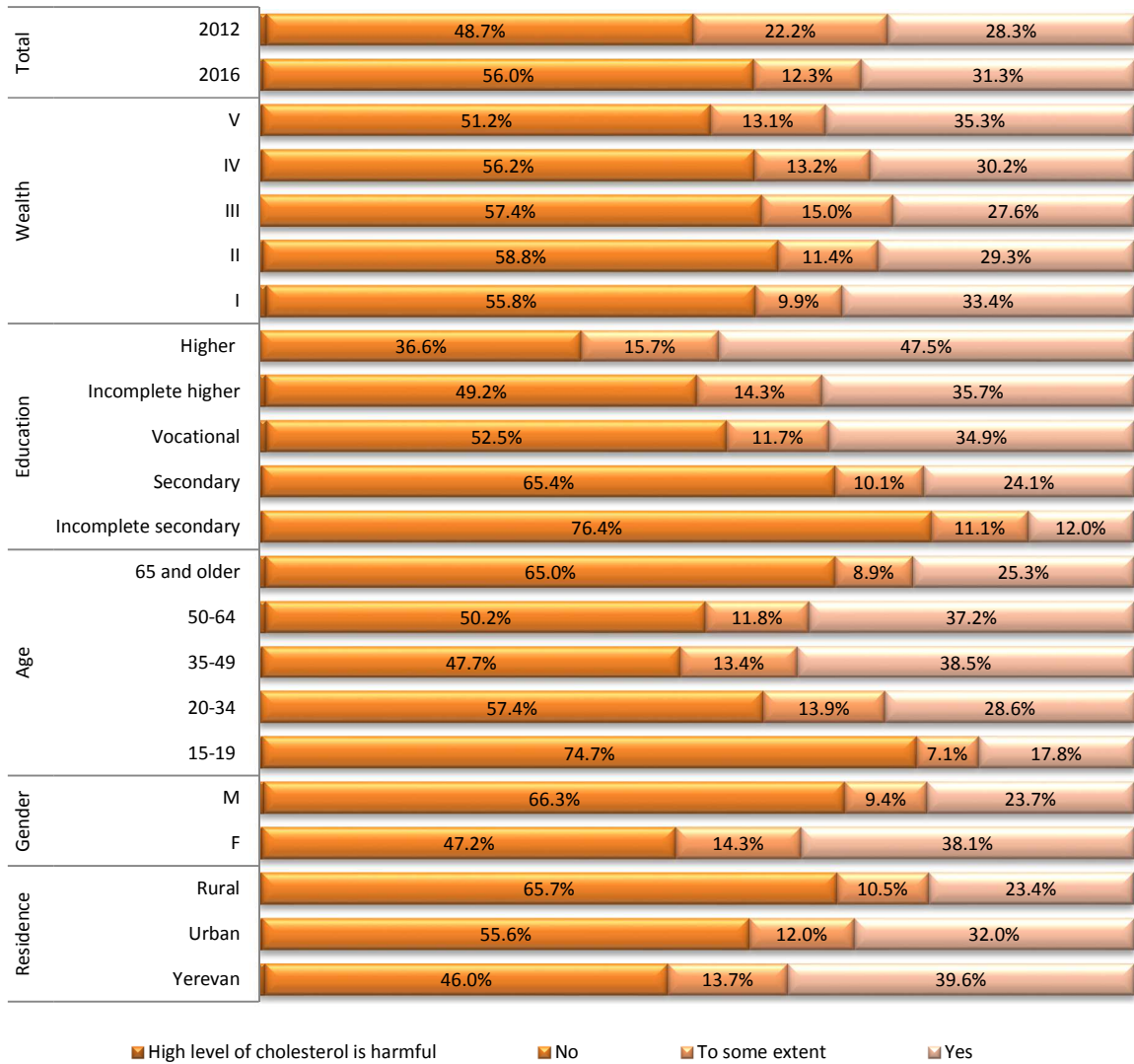
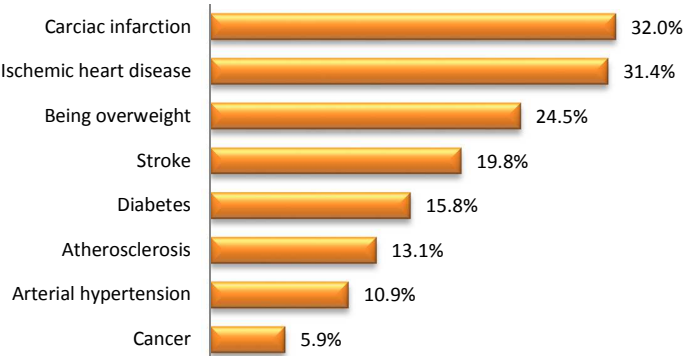


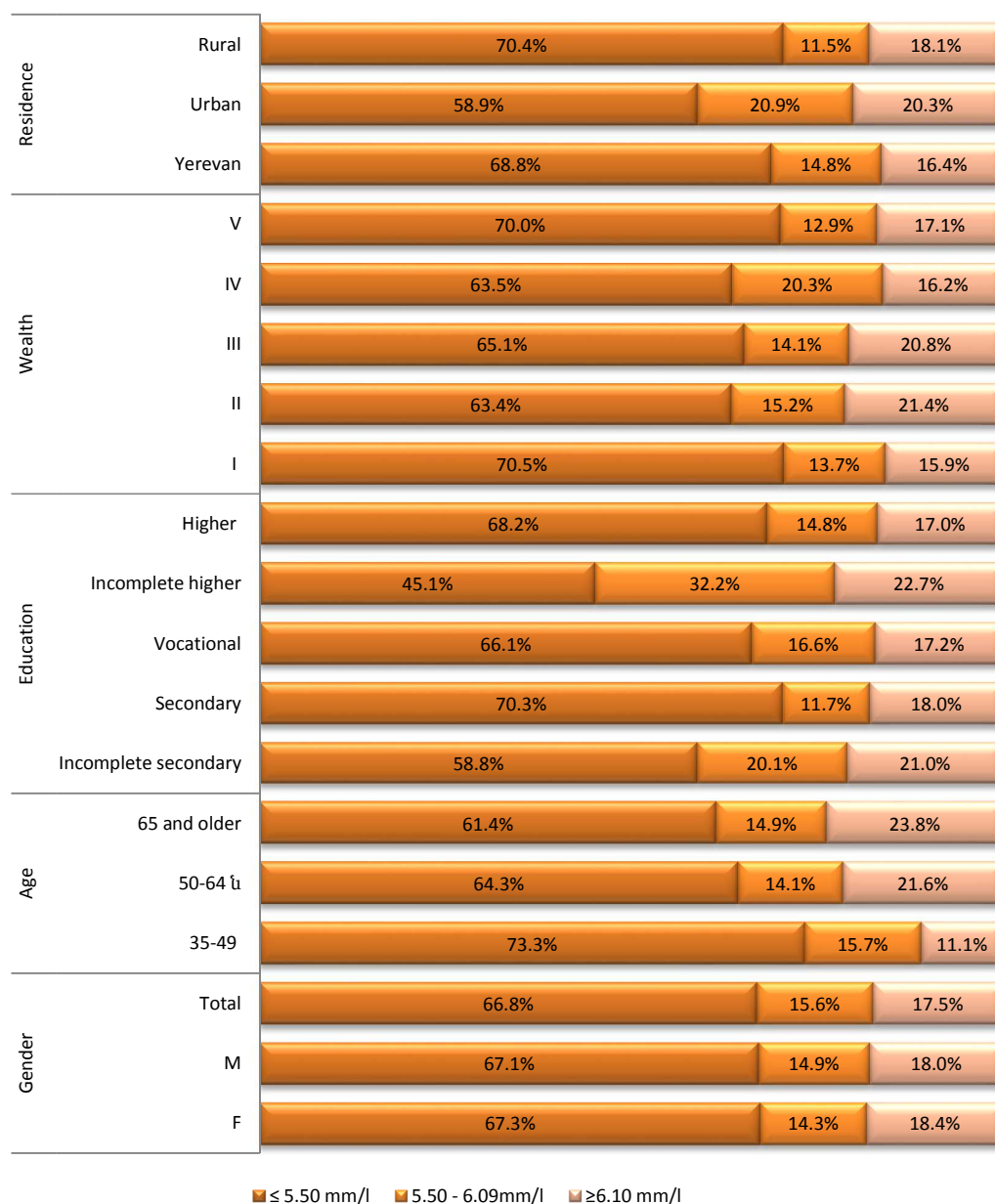
Figure 39. Diseases caused by high cholesterol level. 'What diseases can HCL cause?' % of respondents who reported knowing or to some extent being aware of the harms HCL causes) 2016



Results of measuring the level of glucose

The level of glucose was measured using ACCU-CHECK Performa device and disposable test strips. 6.1 mmol/l defined by WHO was taken as a threshold for high level of glucose. Glucose test was performed among 1181 respondents aged 35 and older. The results are presented in Table 40.

Figure 40. Results of measurements of the level of glucose in capillary blood



According to taken measurements

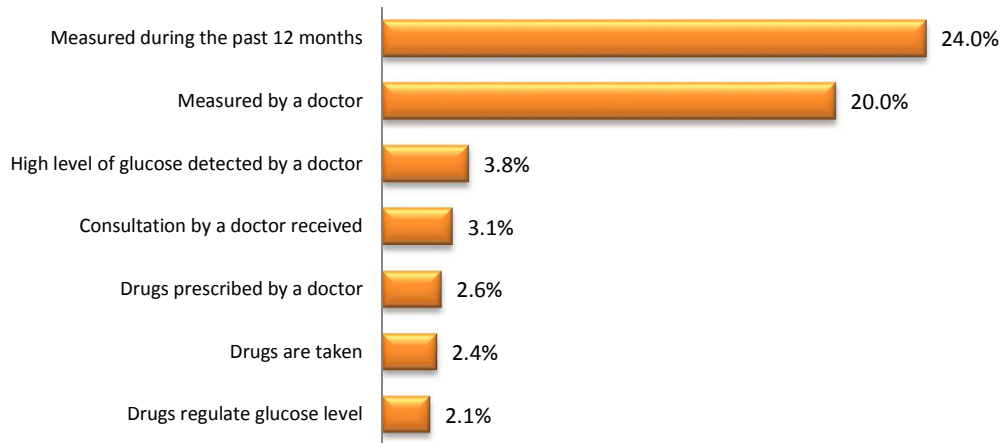
- High level of glucose (exceeding 6.1mmol/l) was detected in 19.0% of surveyed 35 and older population.
- According to wealth groups the highest rate was detected in quintiles II and III (22.5% and 22.8% correspondingly).
- The relative number of people with high glucose level increases as the educational level decreases. The rate is 16.6% among respondents with higher education, versus 20.9% for those with incomplete secondary level. The only exception is the group with incomplete higher education (24.4%).⁴
- The level of glucose in the 35-49 age group (10.9%) is essentially lower than in the 50-64 (21.1%) and 65 and older (23.1%) age groups.
- The share of females with high level of glucose (19.4%) is slightly higher than the share of males (18.5%),
- The relative proportion of respondents with high glucose level is higher in marz cities (21.1%), than in Yerevan (17.8%) and villages (18.9%).

Results of the study of the glucose level

Main results of glucose test are presented in Figure 41. According to the data 24% of 15 and older population had their blood glucose level measured during the past 12 months (2016), of which 20% had it measured by a doctor, 3.8% reported to have high/elevated level of glucose as recorded by a doctor, 3.1% were consulted by a doctor, 2.6% were prescribed drugs, 2.4% reported taking drugs to regulate glucose level and 2.1% reported to have their glucose level successfully regulated by drugs.

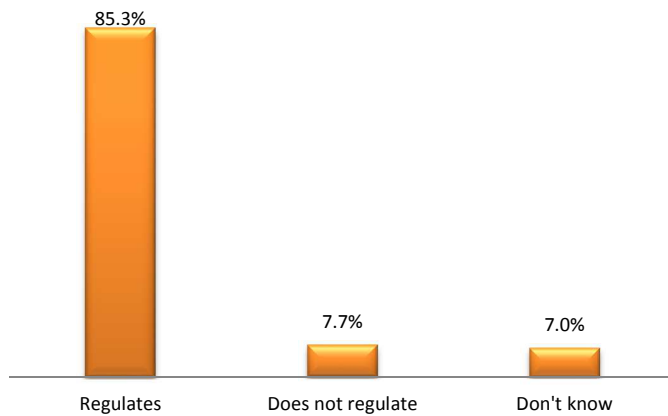
⁴ *Incomplete higher education group demonstrated same abnormal picture in connection with cholesterol level as well. This may result not only from the small number of the group representatives, but also the measurement process itself.*

Figure 41. Main findings of glucose tests, 2016



85.3% of respondents who take drugs to regulate glucose level reported to have their glucose level regulated successfully, 7.7% reported that drugs did not regulate glucose level, and 7.0% could not answer the question (Figure 42).

Figure 42. Effectiveness of drugs taken to regulate glucose level



Measurement of blood glucose in 15 and older population during the past 12 months (2016) according to sociodemographic groups is presented in Figure 43. According to the data

- In 2016, 24.0% of 15 and older population had their blood glucose level checked. The rate exceeds the level of 2012 (18.6%).

- Relatively better is the situation in **wealth** quintile II (26.1%).
- According to **educational** level, the rate is relatively higher in the group with higher education (29.5%) and secondary vocational education (27.7%).
- The rate increases with the **age**. If in 15-19 age group 9.1% had their blood glucose level measured, in 50-64 age group the rate is 34.8% and slightly lower (32.1%) among 65 and older population.
- **Females** had their glucose level measured more often (28.3%) than males (18.9%).
- The rate is slightly higher in **Yerevan** (26.9%), than in marz urban (22.5%) and rural (22.2%) settlements.

Figure 43. Findings of glucose measurements during the past 12 months, 2016

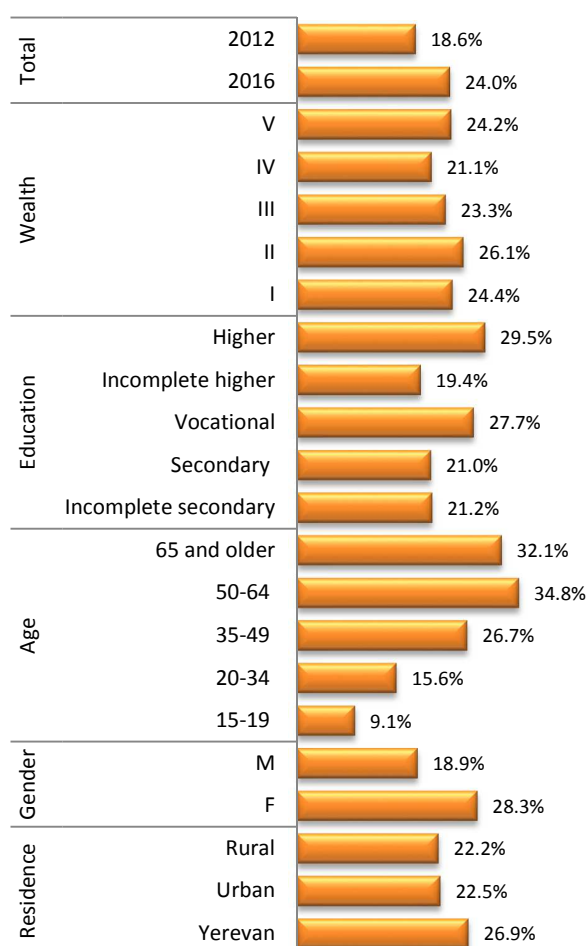
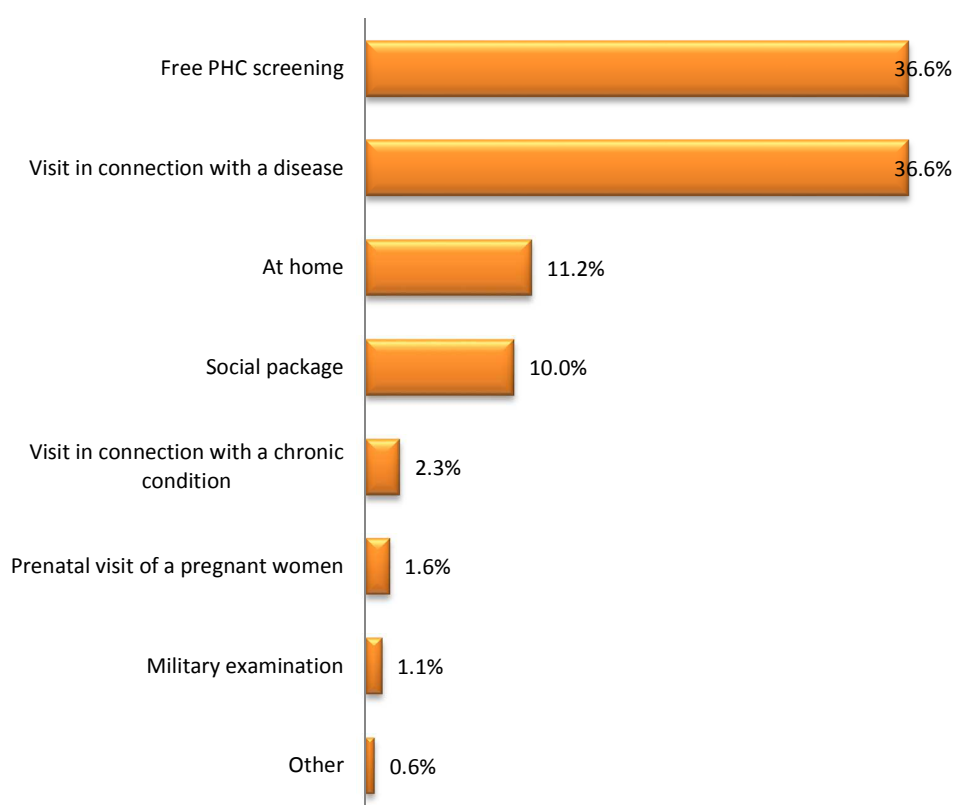


Figure 44 presents data on projects or circumstances under which respondents' glucose level was measured. In most cases the measurements were taken at polyclinics and ambulatories within the framework of free screenings (36.6%), a visit in connection with a disease (36.6%), at home (11.2%), within the scope of social package services (10%), during a visit in connection with a chronic condition (2.3%), a prenatal visit (1.6%) and military examination (1.1%).

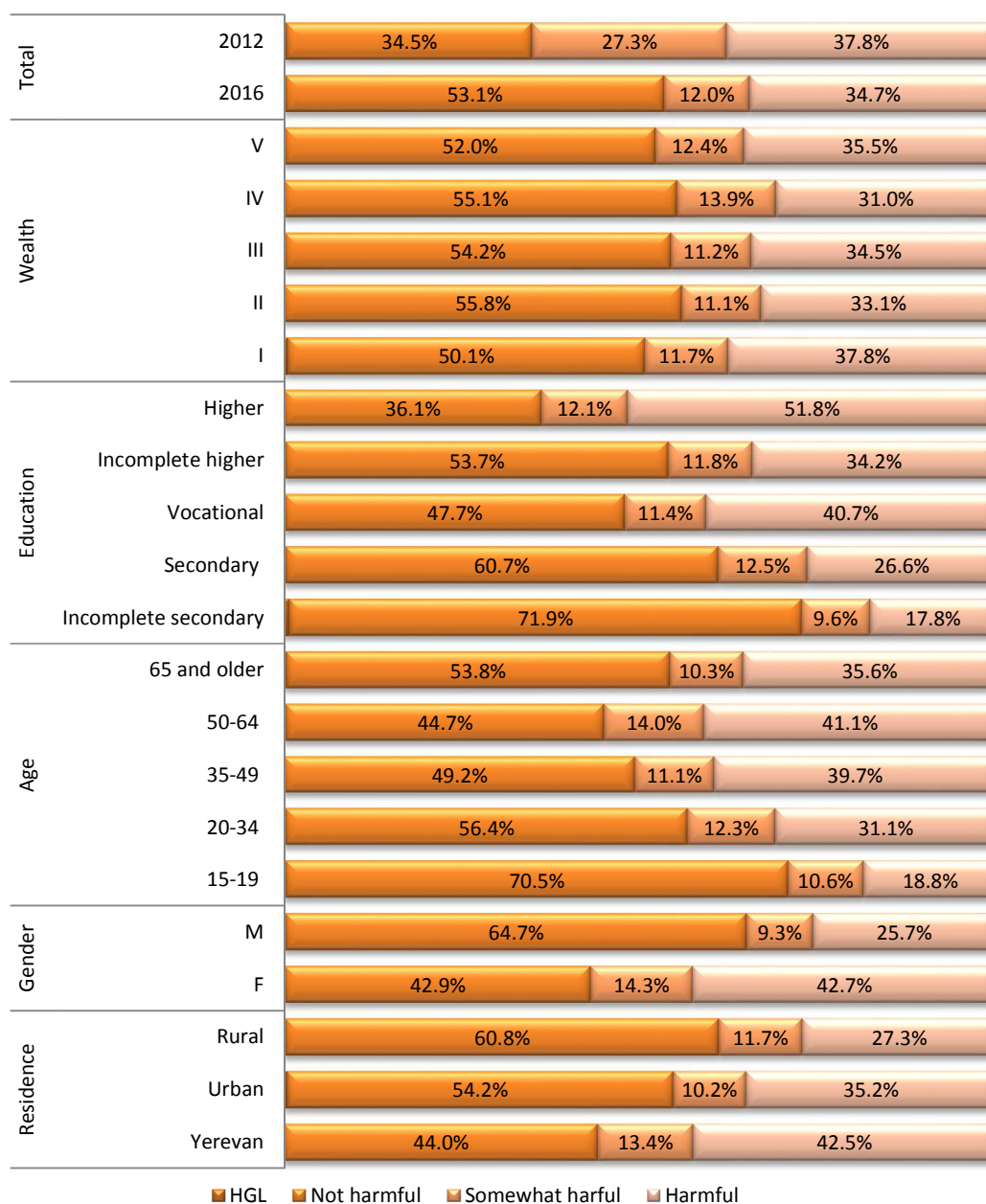
Figure 44. Conditions at which glucose level was measured during the past 12 months, 2016



Public awareness of the harms of high/elevated glucose level in the blood is described in Figure 45.

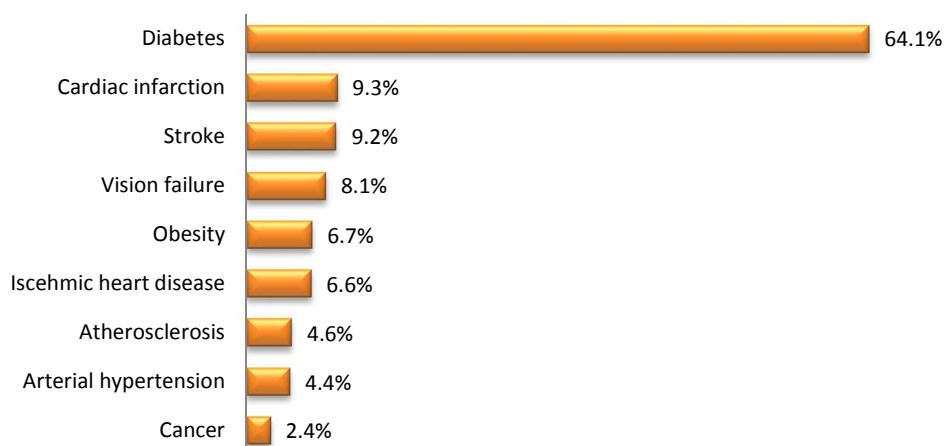
- According to 2016 survey, 34.7% of the population is aware of the harms of high glucose level, which is less than in 2012 (37.8%).

Figure 45. Public awareness of the harms of high glucose level in the blood, 2016



Most prevalent perception of high/elevated blood glucose level is that it may lead to development of diabetes (64.1%), cardiac infarction (9.3%), stroke (9.2%), vision failure (8.1%), obesity (6.7%), ischemic heart diseases (6.6%), atherosclerosis (4.6%), arterial hypertension (4.4%), and cancer (2.4%).

Figure 46. Diseases induced by high glucose level (What diseases can HGL cause? % of respondents who reported knowing or somewhat being aware of the harms of HGL), 2016



Being overweight

To assess the prevalence of overweight or obesity among adults, individual height and weight measurements were taken during the data collection for the surveys and Quetelet $W(\text{kg})/H^2(\text{m})^2$ formula was used to identify the respondent's body mass index (BMI).

BMI categories are as follows:

- Underweight = <18.5
- Normal weight = 18.5–24.9
- Overweight = 25–29.9
- Obesity = BMI of 30 or greater

BMI exceeding 25.0 is an alarm about being overweight.

Figure 47 presents the prevalence of overweight and obesity among 15 and older population and the Figure 48 the breakdown of BMI categories per sociodemographic groups.

According to Figure 47

- The rate of being overweight and obese accounts for 51.2% of 15 and older population of Armenia, versus 52.1% in 2012.
- According to wealth groups obesity is more prevalent in quintiles II (54.0%) and I (53.3%). In higher wealth quintile the rate accounts for 51.9%.

- The problem is more evident in the group with secondary vocational education (59.2%) as opposed to the other groups. In the group with incomplete secondary education the prevalence comprises 30.0%, which is due to the fact that majority in this group are students.
- The prevalence of being overweight increases with the age. In 15-19 age group it makes 13.0%, in 50-64 age group 73.9%. The rates declines slightly in the 65 and older age group, though still remaining quite high - 70.5%.
- Obesity (being overweight or fat) is more prevalent in females (54.1%), than in males (47.9%).
- The prevalence of being overweight seems to be equally distributed across Yerevan and marz urban and rural settlements.

Figure 47. Prevalence of overweight and obesity according to sociodemographic groups, 2012, 2016

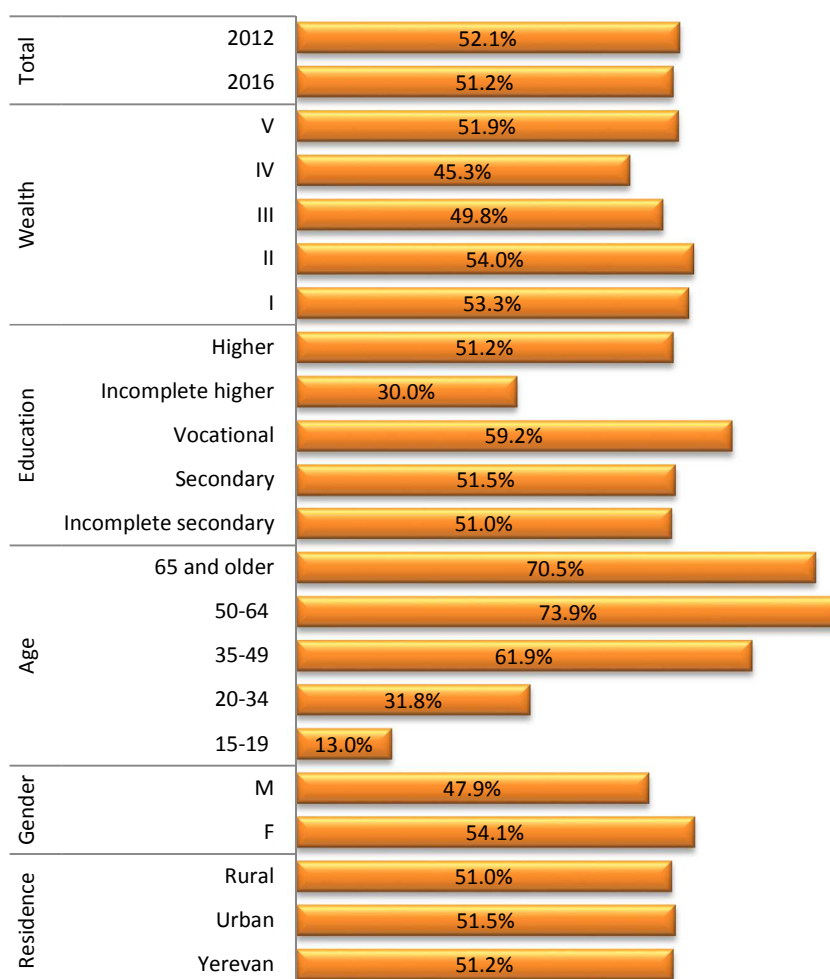


Figure 48. BMI categories according to sociodemographic groups, 2012, 2016

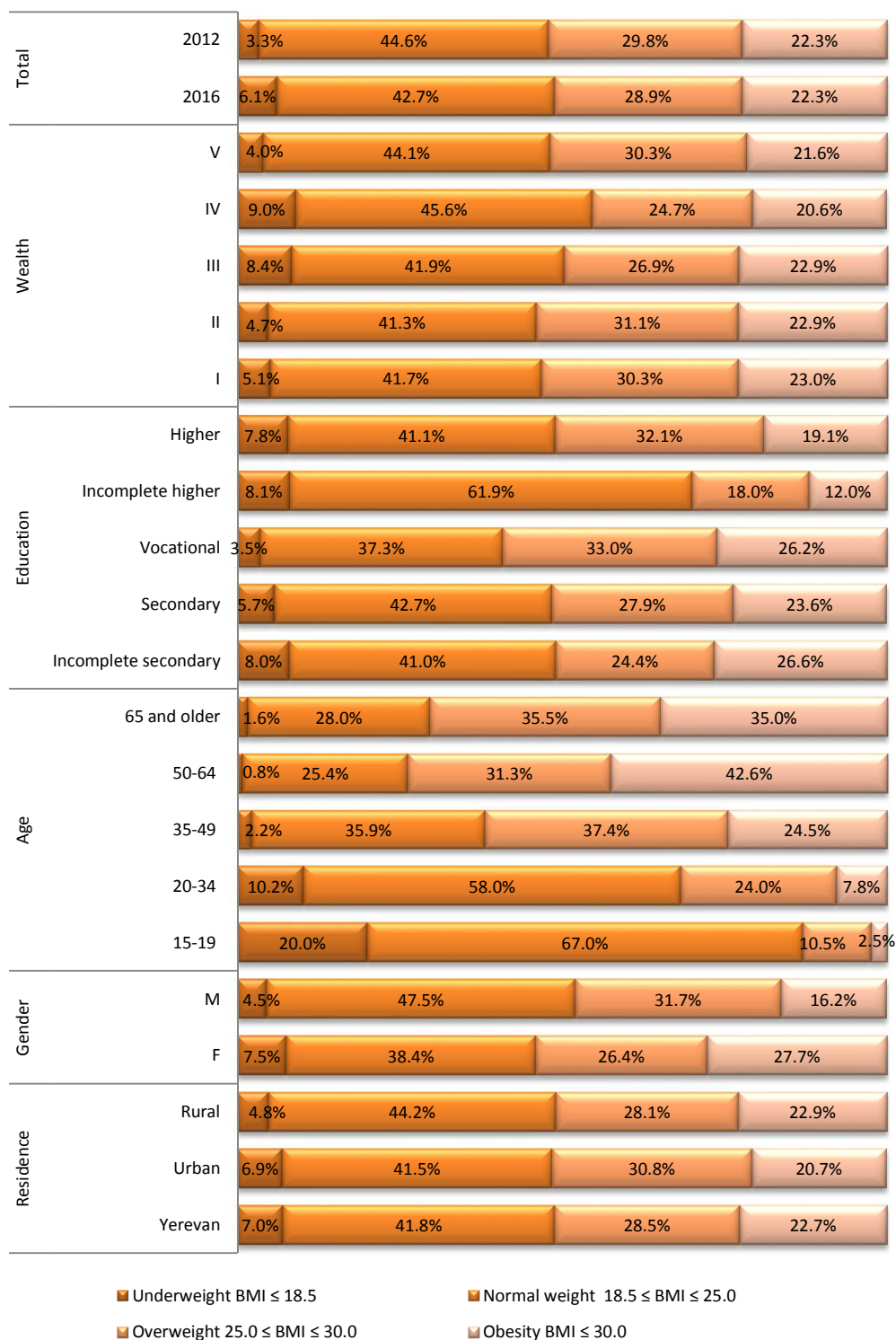
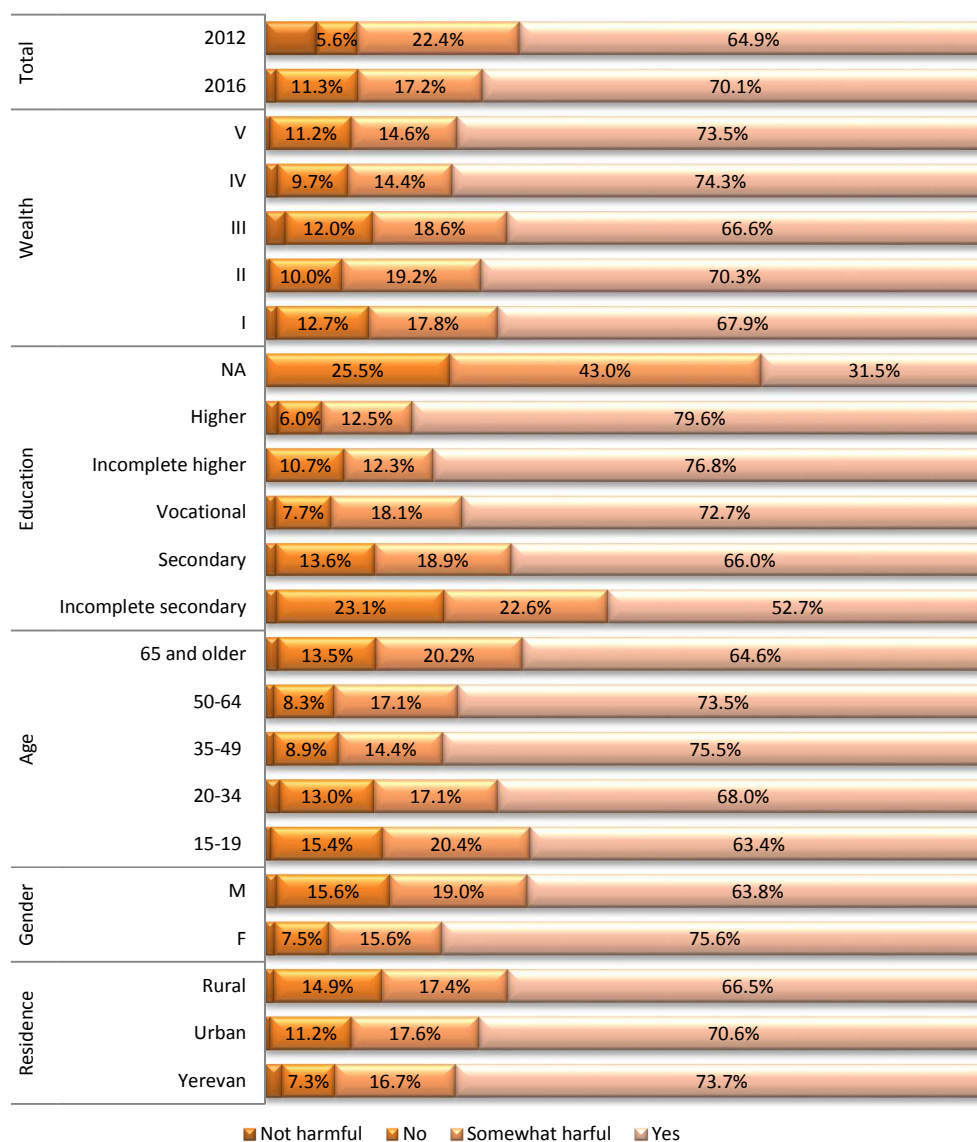


Figure 49. Public awareness of the harms of being overweight, 2012, 2016



Use of tobacco

Use of tobacco in males is the most prevalent and harmful behavioral risk factors. The rate of daily smokers was taken as an indicator of the prevalence of this risk factor.

The number of smoking men significantly exceeds the number of smoking women⁵. That’s why anti-tobacco campaigns are mostly targeted at male population.

The survey data show that:

⁵Some researchers believe that use of tobacco in women has a hidden nature, due to cultural specifics of the country and is not fully reflected in sociological studies.

- The number of daily smokers has increased between 2012 and 2016 in both males and females (Table 14).
- The proportion of daily smokers in 15 and older population did not change between 2012 and 2016 (26.2%). However the proportion of daily smoking males increased from 48.7% to 53.4%, and of daily smoking women from 1.3% to 2.3%.
- In addition, the proportion of non-daily smokers has also increased.

Table 14. Frequency of tobacco use with gender breakdown, 2012, 2016

Gender	Year	Daily smokers	Not daily smokers	Do not smoke
Male	2012	48.7%	2.3%	49.0%
	2016	53.4%	2.4%	44.2%
Female	2012	1.3%	0.2%	98.5%
	2016	2.3%	0.7%	97.0%
Total	2012	23.0%	1.2%	75.8%
	2016	26.2%	1.5%	72.3%

The proportion of daily smokers according to age groups is presented in Table 15. As the Table shows 15.1% of 15-19 years old males are daily smokers. The rate increases drastically in 20-34 and 35-49 age groups by 64.4% and 62.1% correspondingly. It remains very high in 50-64 age group (56.6%) and drops sharply in 65 and older age group (30.3%).

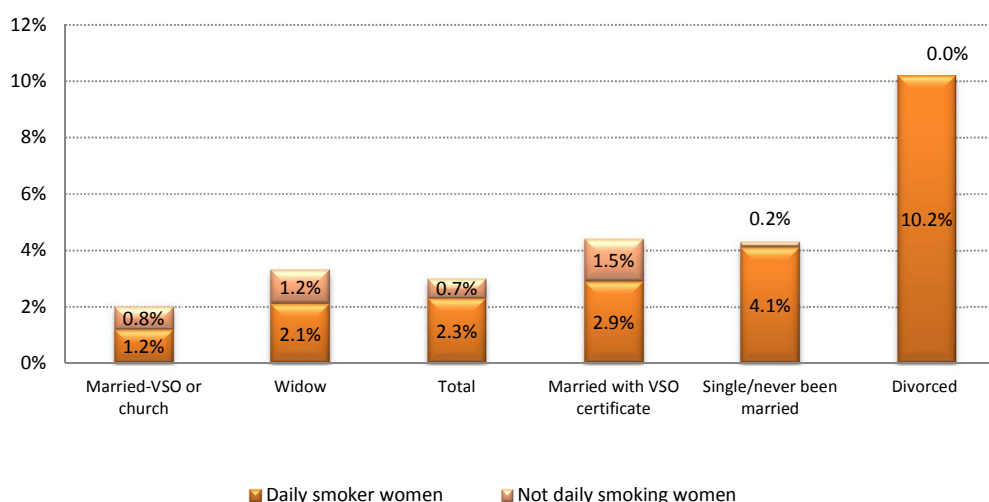
The rate of daily smoking **women** aged 15-19 is 0.4%. It increases with the age, reaching 1.9% in 20-34 age group, 3.0%, in 35-49 age group and 3.8% in 50-64 age group.

Table 15. Proportion of daily smokers with gender-age breakdown, 2016

	Age	Gender		Total
		F	M	
Age	15-19	0.4%	15.1%	7.8%
	20-34	1.9%	64.4%	32.5%
	35-49	3.0%	62.1%	30.8%
	50-64	3.8%	56.6%	27.9%
	65+	1.2%	30.3%	12.8%
	Total		2.3%	53.4%

- The number of daily smokers in women is linked to their marital status (Figure 50).
- If 1.2% of formally married (certified by vital statistics office or church) women smoke every day, the rate is higher among those not officially married (2.9%), not married/single (4.1%) or divorced (10.2%).

Figure 50. Proportion of smoking women according to marital status, 2016



One of the anti-tobacco measures enforced in Armenia is posting health warnings on cigarette boxes. The absence of such warning means that the product was imported through illegal channels. Interviewers have asked smoking respondents to show the health warning on their cigarette box. The survey revealed that

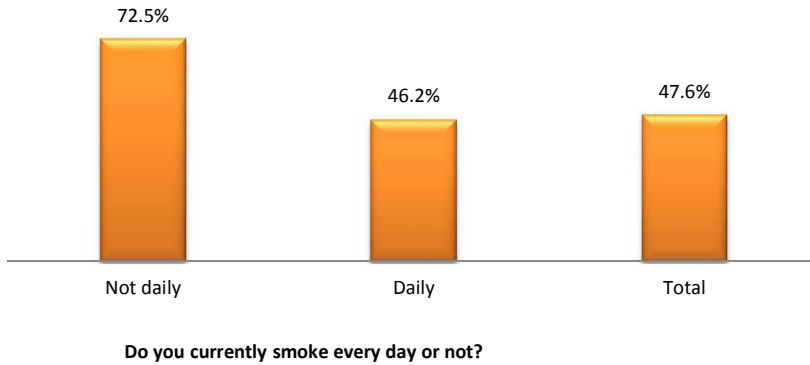
- 98.5% of studied cigarette boxes had a health warning in Armenian language. Some 1.4% of respondents smoke a pipe which has no health warning and 0.1% contains health warning in a foreign language (Table 16).

Table 16. Type of tobacco used, 2016

		%
Can you show the cigarette smoked by your household members?	With health warning in Armenian language	98.5%
	Pipe	1.4%
	Foreign	0.1%
	Total	100.0%

The survey studied attempts of quitting smoking. The daily and not-daily smokers were asked if they had thought about quitting smoking during the past 12 months.

Figure 51. Attempts to quit smoking during the past 12 months (% of positive responses), 2016



According to Figure 51

- **Nearly half of smokers in Armenia (47.6%) reported attempting to quit smoking during the past 12 months.**

Different people intensively persuade daily smokers to quit smoking (Figure 52), in particular

- All smokers reported to receive ‘quit smoking’ advices by their relatives during the past 12 months.
- 94% of smokers reported to be advised to quit smoking by ‘surrounding people’.
- Family was reported by 78.5%.
- Doctor/healthcare provider was mentioned by 29.1%.

Nonetheless effect of such advises is too modest and the number of smokers has increased between 2012 and 2016.

Figure 52. Proportion of persons who have advised daily smokers to quit smoking during the past 12 months



The survey revealed the proportion of respondents who smoked in the past.

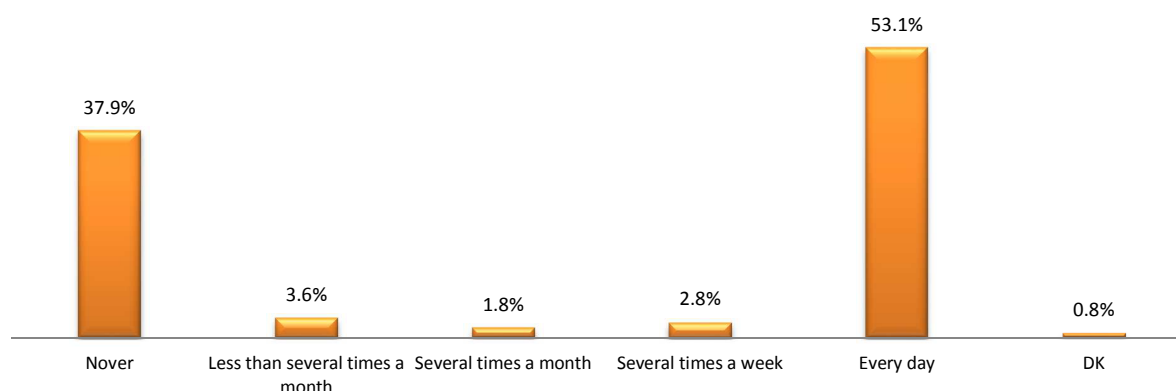
- 37.9% of currently not smoking males used to smoke in the past.

The survey studied the number of passive smokers at home and workplace. To assess the proportion of passive smokers at home respondents were asked how often does someone, including the respondent, smoke in his/her home.

The proportion of passive smoker families is presented in Figure 53. Data show that

- 53.1% of Armenian families are daily passive smokers and 2.8% are passive smokers who are exposed to tobacco smoke several times a week.
- Only 37.9% of respondents reported that nobody smokes at their home.

Figure 53. Frequency of tobacco use at home, 2016



The proportion of passive smokers in the workplace is presented in Table 17.

According to the survey findings

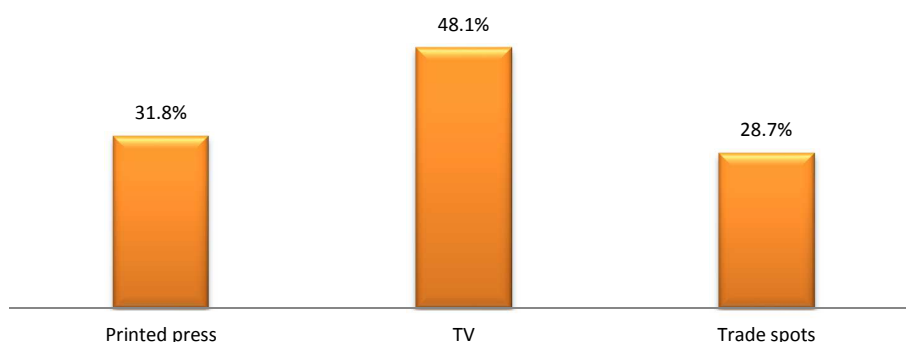
- 39.7% of employees are passive smokers who smoke in closed areas in the workplace and 73.5% are passive smokers who smoke in both open and closed areas.

Table 17. Use of tobacco in a closed area in the workplace during the past 30 days, 2016

		Do you work mostly in a closed or open area?			
		Closed	Both	Open	Total
Did someone use tobacco in a closed area in your workplace during the past 30 days?	No	58.2%	26.5%	38.3%	50.8%
	Yes	39.7%	73.5%	54.4%	47.3%
	DK	2.1%	0.0%	7.3%	1.9%
	Total	100.0%	100.0%	100.0%	100.0%

'Visibility' of anti-tobacco efforts in Armenia is presented in Figure 54.

Figure 54. Visibility of anti-tobacco efforts in Armenia (Health warnings on TV, radio, in printed press, at trade spots during the past 30 days), 2016



Awareness of the harm of smoking is presented in Table 18. A separate column shows respondents' awareness according to not smokers, not daily smokers and daily smokers.

Table 18. Public awareness of diseases caused by use of tobacco, 2016

What diseases can smoking cause?	Frequency			
	Don't smoke	Not daily smokers	Daily smokers	Total
Lung cancer	88.1%	86.6%	77.1%	85.2%
Ischemic heart disease (infarction)	21.6%	19.9%	22.2%	21.8%
Chronic bronchitis	12.9%	7.1%	12.3%	12.6%
Stroke	10.9%	15.5%	13.9%	11.8%
Throat cancer	12.0%	11.3%	11.1%	11.8%
Bronchial asthma	10.1%	6.9%	10.3%	10.1%
Miscarriage	4.9%	4.2%	4.9%	4.9%
Harm to fetus	5.3%	4.2%	3.5%	4.8%
Infertility	4.6%	4.2%	3.5%	4.3%
Impotence	4.0%	4.2%	4.5%	4.1%

- Overwhelming majority of respondents (85.2%) mentioned lung cancer. In fact awareness among daily smokers is much lower (77.1%), than among non-smokers (88.1%).
- Ischemic heart disease was mentioned by 21.8% of respondents.
- This is followed by (in decreasing order) chronic bronchitis (12.6%), stroke (11.8%), cancer (11.8%), bronchial asthma (10.1%), miscarriage (4.9%), harm to fetus (4.8%), infertility (4.3%) and impotence (4.1%).

Respondents were asked if population is against or for increase of tobacco taxes.

- 44.6% of respondents supported increase of tobacco taxes. 51.9% of non-smokers and 25.6% of daily smokers were also for the increase (Figure 55).

Figure 55. Population perception of tobacco tax increase

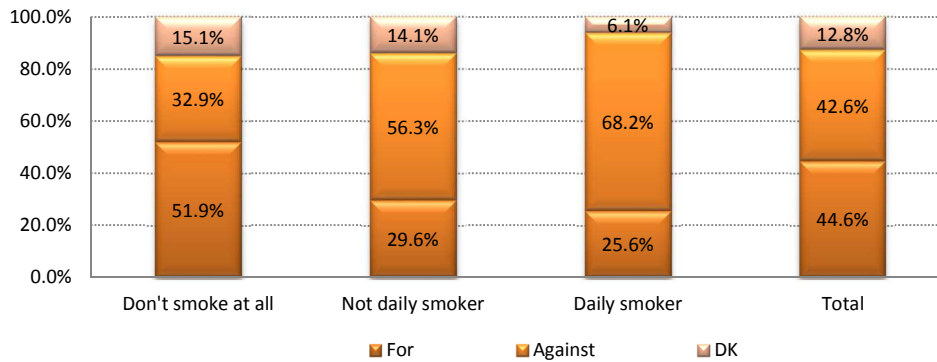
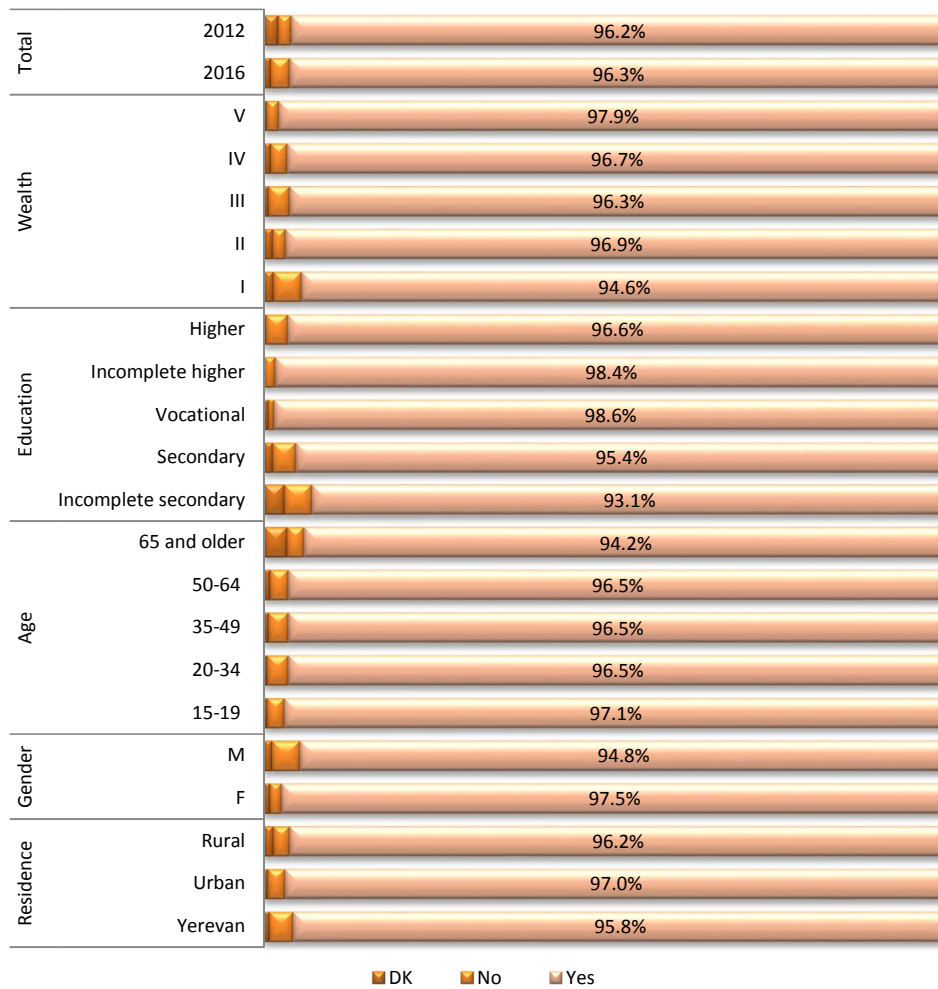


Figure 56. Awareness of the harm of secondary smoking, 2016



Use of alcohol

The prevalence of alcohol abuse in 15 and older population, as a risk factor, was assessed according to the WHO definition and methodology. ***The survey assessed the proportion of those who consume 20 grams or more of pure alcohol on daily basis.*** The questionnaire asks about types of alcohol beverages consumed by respondents, converting it to equivalent amount of pure alcohol consumed per day.

For that purpose below content of pure alcohol in different types of drinks was considered.

- Beer - 0.04 g/ml,
- Wine - 0.0927 g/ml,
- Liquor - 0.1227 g/ml,
- Vodka - 0.3227 g/ml

The proportion of respondents consuming 20 grams or more of pure alcohol per day is presented in Figure 57.

- **The proportion of those consuming 20 grams or more of pure alcohol per day has increased from 6.3% to 7.9% between 2012 and 2016.**

Since men are more likely than women to become addicted to alcohol, consumption of 20 grams and more of pure alcohol is considered a risk factor in males.

- **The proportion of those consuming 20 grams or more of pure alcohol per day has increased from 11.2% to 16.3% between 2012 and 2016.**

Figure 57. Prevalence of consumption of alcohol by 15 and older population according to sociodemographic groups, 2012, 2016

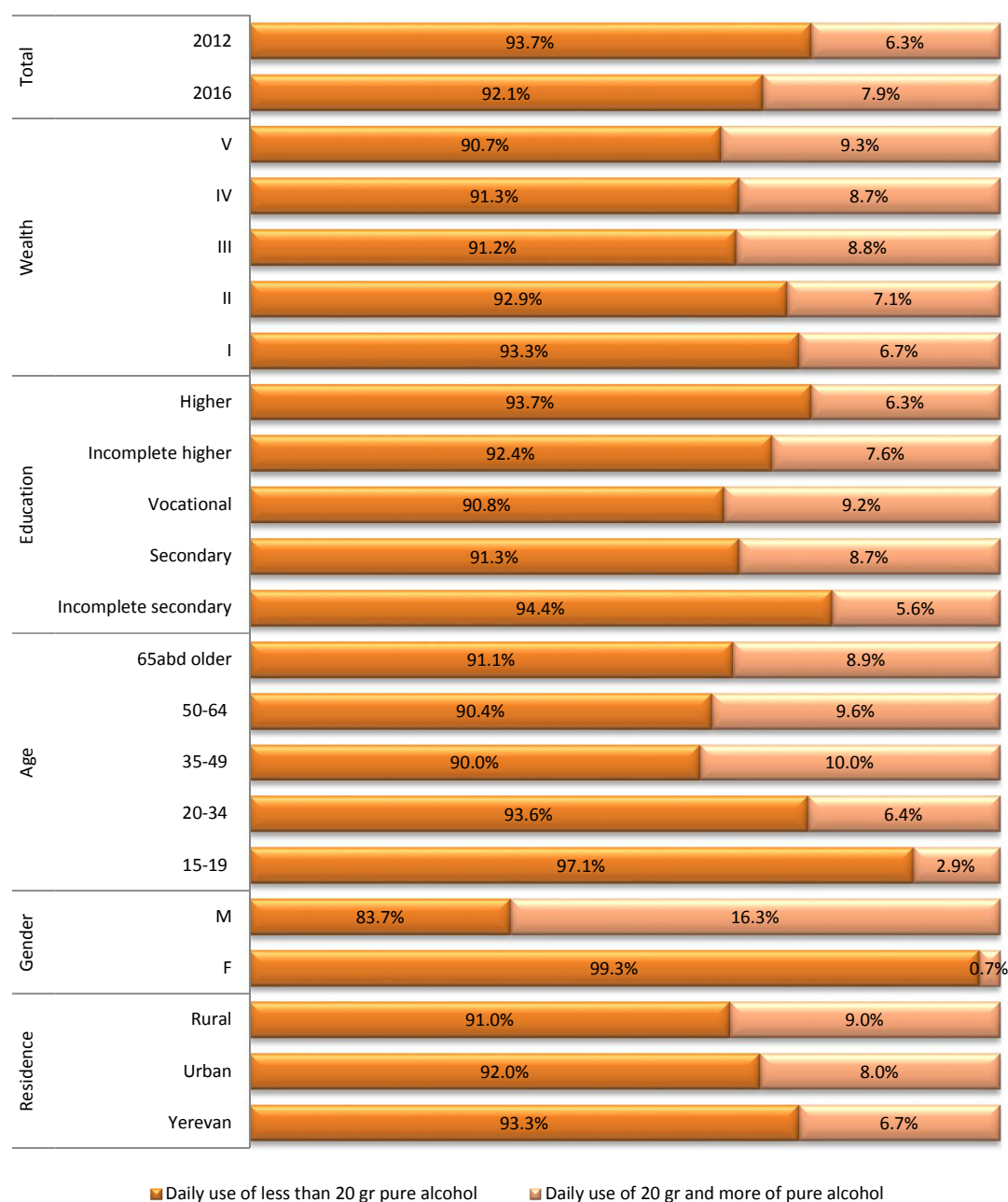


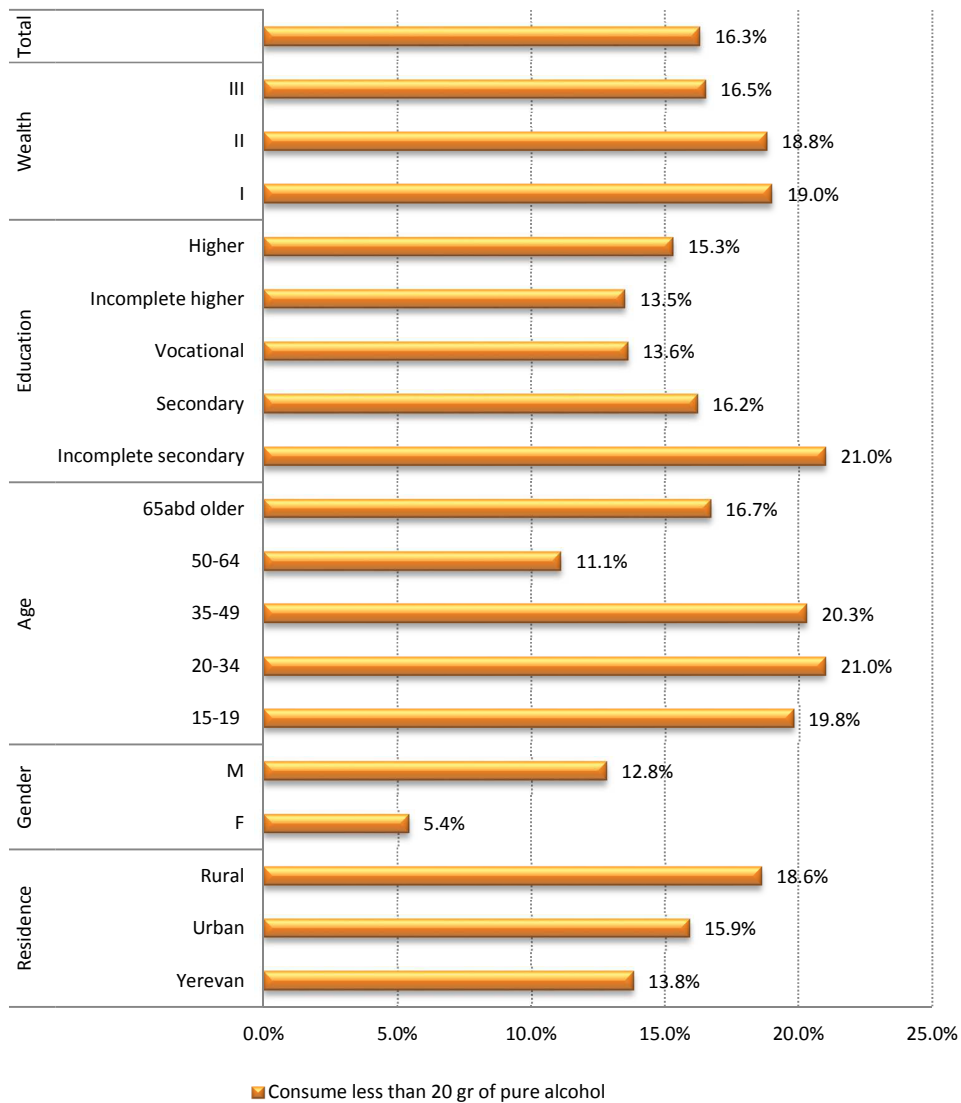
Figure 58 presents consumption of alcohol by 15 and older population according to sociodemographic groups.

The data suggest that:

The highest rate is in wealth quintiles IV (18.8%) and III (19.0%), as opposed to low wealth quintile (13.5%).

- According to educational level, the rate is higher in the group of respondents with secondary vocational education (21.0%), followed by secondary (16.7%) and incomplete higher (16.2%) education groups. The lowest rate is recorded in those with higher (13.6%) and incomplete secondary (11.1%) education.
- Age-wise, the leaders are those aged 50-64 (21.0%), 65 and older (20.3%) and 35-49 (19.8%). The rate accounts for 12.8% in the 20-34 age group and 5.4% in the 15-19 age group.

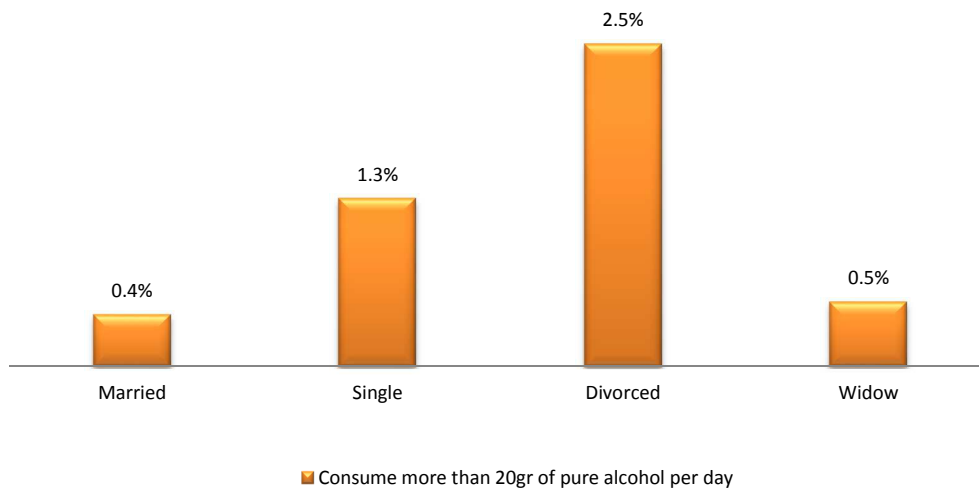
Figure 58. Prevalence of alcohol consumption in 15 and older males, 2016



The rate of alcohol consumption in **females** according to age and marital status is as follows:

- 20 gr and more of pure alcohol is consumed by 0.7% respondents. The highest rate (1.5%) is recorded in 35-49 age group.
- The rate of alcohol consumption in single women is 1.3%. It decreases in the group of married women (0.4%), accounts for 0.5% in widows and 2.5% among divorced (Figure 59).

Figure 59. Alcohol consumption in women according to marital status, 2016



According to the surveys, public awareness of the harms of alcohol abuse is rather high.

- In 2016 some 74.2% of respondents reported to be aware of the harmful effects of alcohol abuse, whereas in 2012 the rate accounted for 71.6%.
- The rate is relatively higher in the well-off group, respondents with higher education, 20-64 age group, females and Yerevan residents.

Figure 60. Public awareness of 15 and older population of the harmful impact of alcohol abuse, 2012, 2016



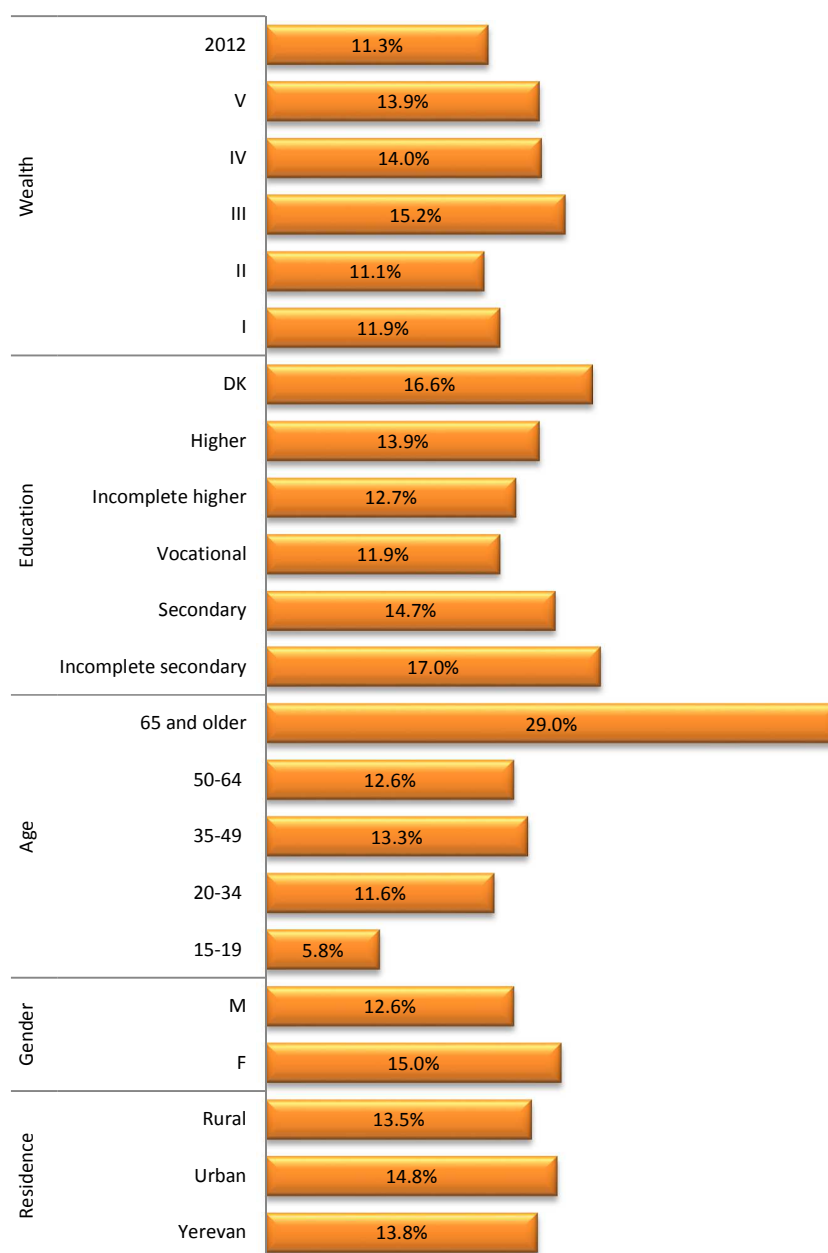
Source: HSPA 2012, 2016

Physical inactivity

The indicator of physical activity is defined based on the proportion of population who practice sedentary lifestyle.

- **Physical inactivity** is defined as less than 30 minutes per week of light exercise.
- Prevalence of physical activity and sedentary lifestyle for the population age 15 and older by sociodemographic groups is presented in Figure 61.
- In 2016 the total proportion of physically inactive population accounted for 13.9%, which is higher than in 2012 (11.3%).
- Physical inactivity is relatively higher in quintile I (16.6%), and **wealth** quintiles IV (15.2%) and V (14.0%).
- According to **educational** level, the rate of physical inactivity is relatively higher in incomplete secondary (17.0%), secondary (14.7%) and higher (13.9%) education groups, and is the lowest in those with secondary vocational education (11.9%).
- **Age**-wise, the rate of sedentary lifestyle is the lowest in 15-19 age group (5.8%). The rate increases with the age and varies within 11.5-13.5% range (in 20-34, 35-49 and 50-64 age groups), and comprises 29.0% in the 65 and older age group.
- Physical inactivity is more prevalent in **females** (15.0%) than in males (12.6%).
- The rate of physical inactivity does not vary much across types of **residence**.

Figure 61. Breakdown of physical inactivity in 15 and older population according to sociodemographic groups, 2012, 2016



More than 91% of the population is aware of the harmful impact of physical inactivity.

Figure 61 A . Pravelence of physical inactivity among 15 and older population by social-demographic groups (150 minutes per week for medium and heavy physical work performance), 2016

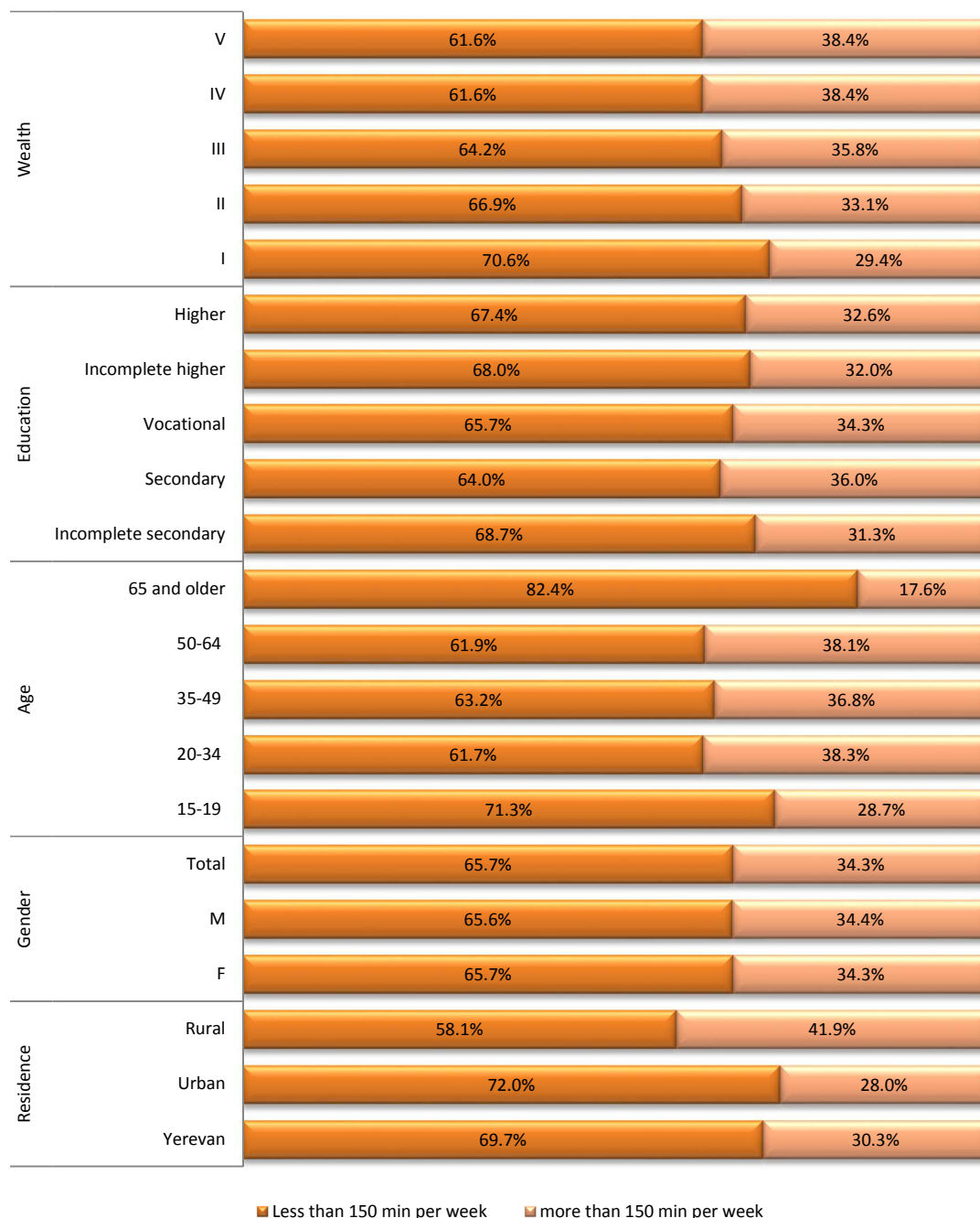
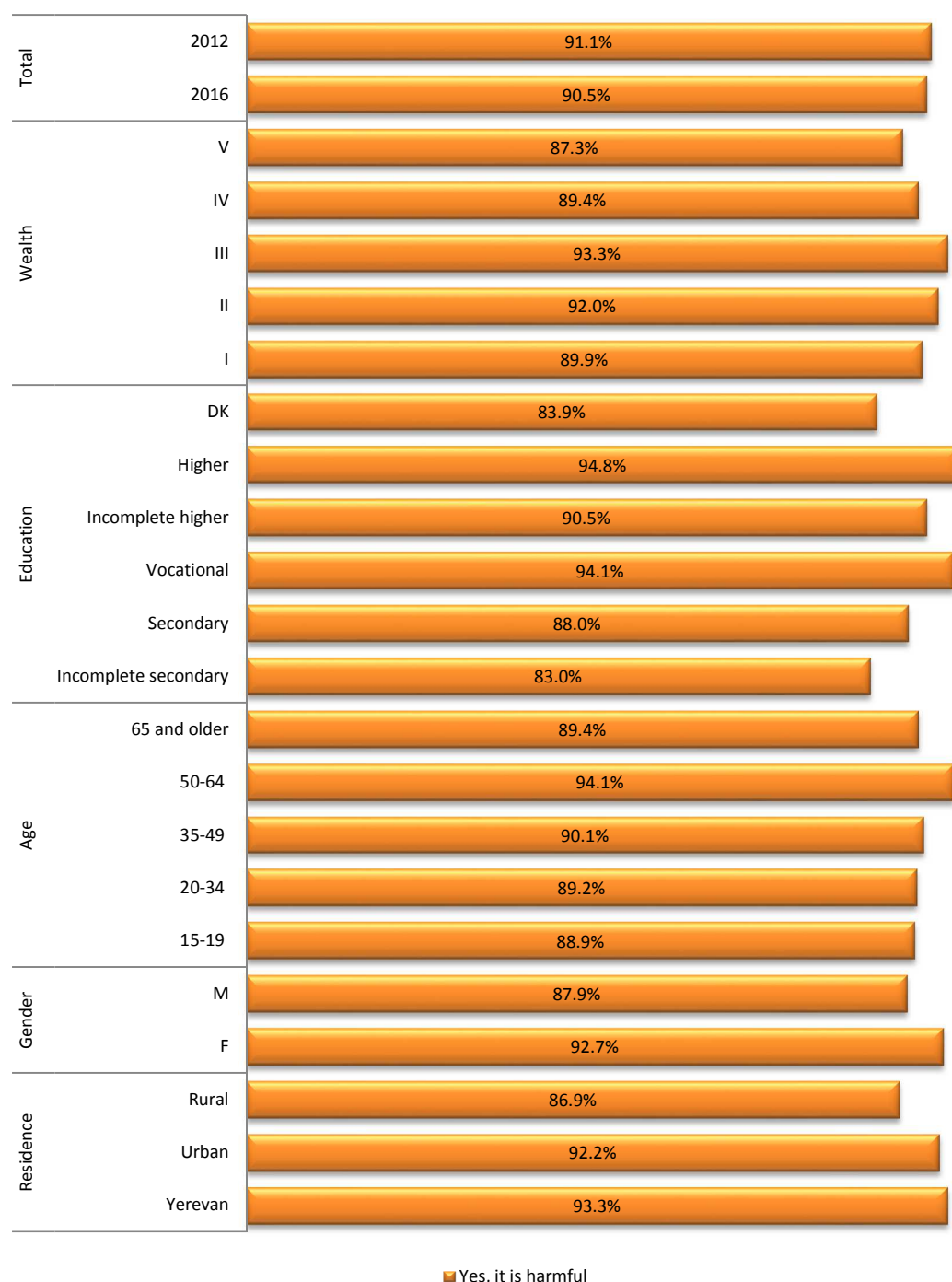


Figure 62. Awareness of 15 and older population of the harmful impact of physical inactivity, 2012, 2016



Use of salt

Most of Armenian adults use more salt than needed by consuming traditional Armenian dishes (salty cheese, sausages, pickled vegetables, canned food, including meats, fish, etc.).

Ready food and cans have very high content of salt even if they do not taste too salty.

Restricting use of salt

Restriction of salt consumption helps regulating high/elevated arterial pressure without medication. Hence when consulting patients on self-regulation of AH doctors recommend reducing intake of salt, which helps

- Reducing AH, thus the risk of stroke, cardiac infarction, renal diseases.
- Removing excess fluid from the body thus reducing cardiac load.
- Enhancing normal functioning of kidneys and maintaining adequate water salt balance.
- Reducing the swelling of the abdomen and the legs.
- Reducing the risk of kidney stones.
- Strengthening and maintenance of the musculoskeletal system.
- Defining biochemical factors.

To assess use and abuse of table salt, the survey team conducted biochemical laboratory tests to define urinary sodium and creatinine levels.

Within the framework of 2016 survey the use of salt was assessed through an inquiry.

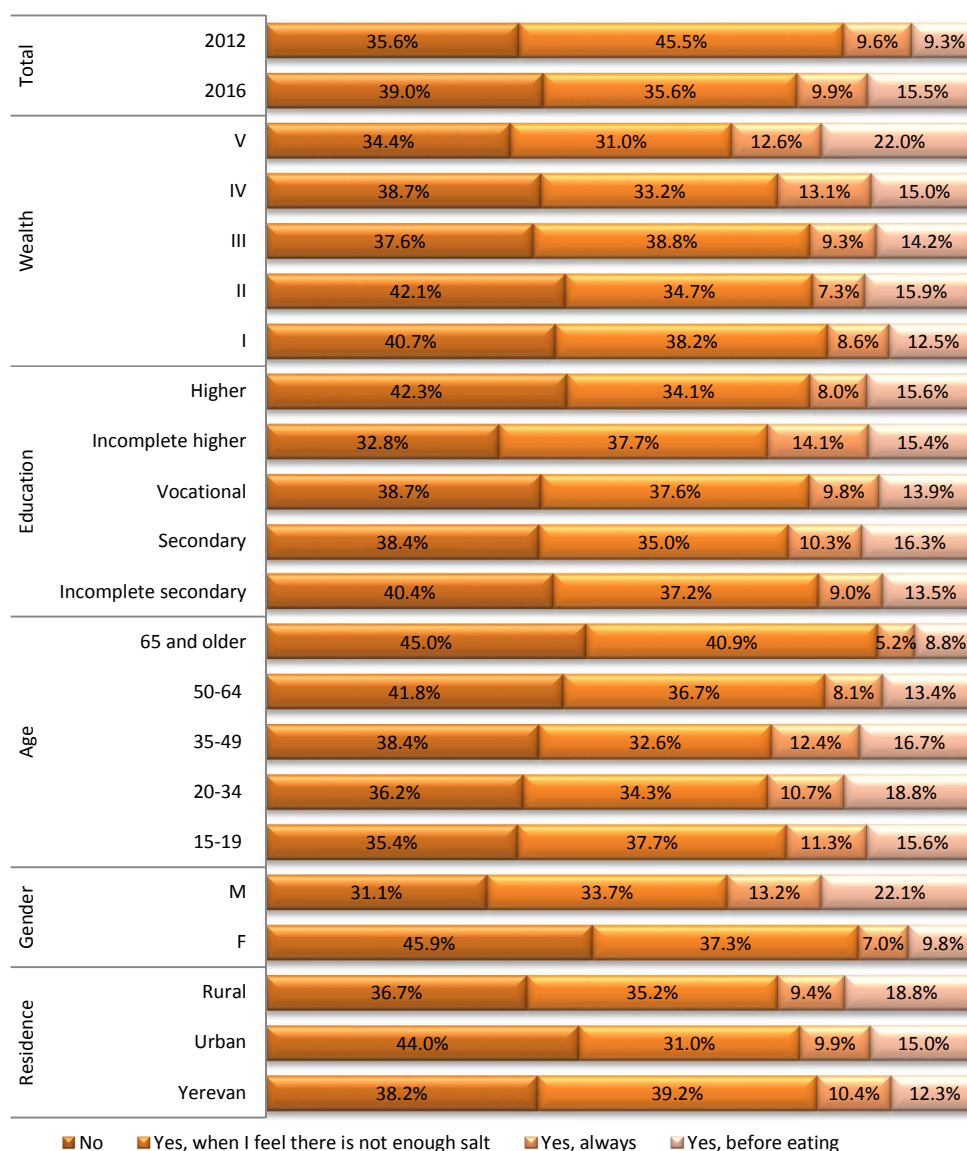
The survey tool included questions asking if respondents add extra salt to the food before even eating.

According to the data

- Taking additional salt was reported by 15.5% of respondents of the 2016 survey, as opposed to 9.3% recorded in 2012 (Figure 63).
- The habit of abusing sodium is more common in high **wealth** groups.
- Young participants are more prone to abusing salt. 15.6% of the 15-19 and 18.8% of the 20-34 age group respondents reported adding salt to the food before eating. This unhealthy habit declines with age which may be due to NCD and adherence to doctor's recommendations. In 65 and older age group it comprises 8.8%.
- Abuse of salt is especially prevalent in males (22.1%) and is twice higher than in females (9.8%).

- Excess intake of salt is especially prevalent in rural population (18.8%), than in urban (15.0%) and Yerevan (12.3%).

Figure 63. Consumption of salt according to sociodemographic groups (% of respondents), 2012, 2016



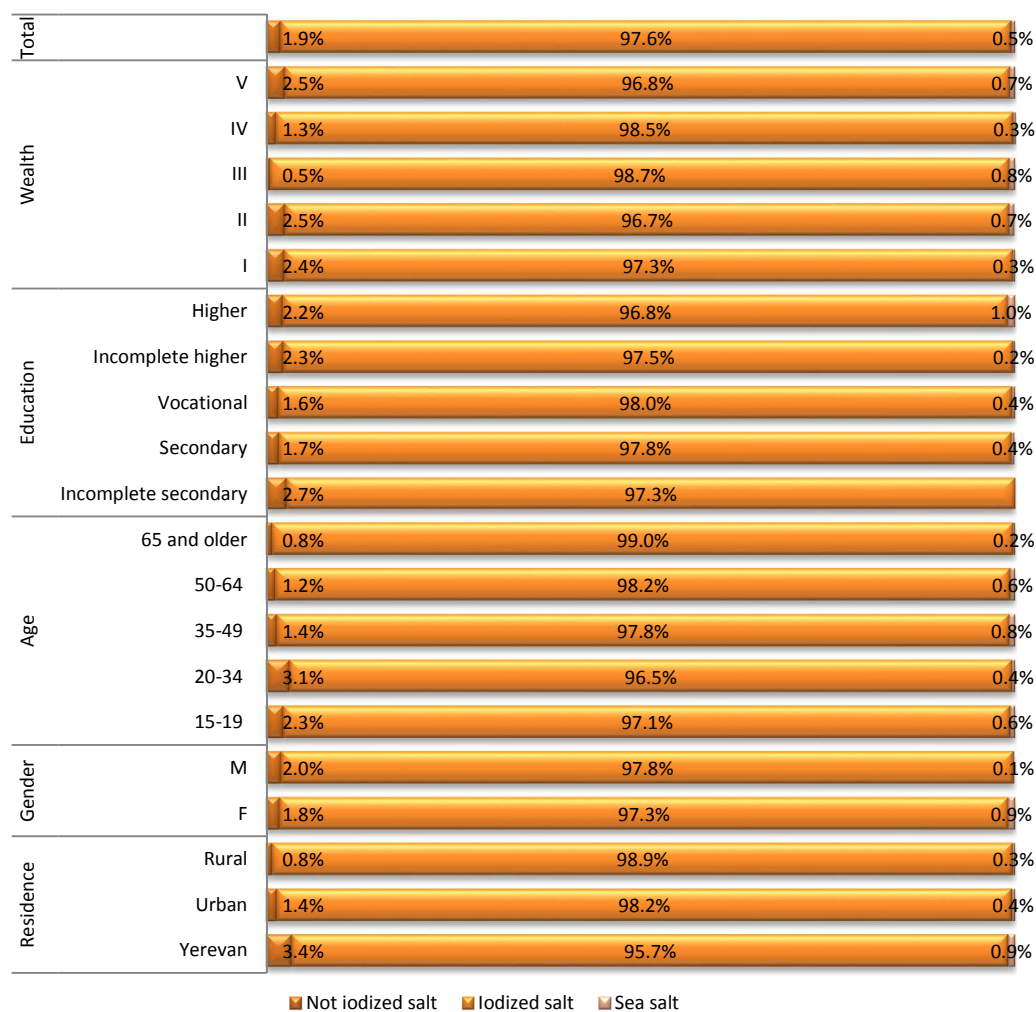
Armenia, being a mountainous country is considered an area of endemic iodine deficiency. Hence disorders due to iodine deficiency is a serious public health problem. In response to the requirements of Article 6 of the RA Law on Sanitary Epidemiological Safety of the Population of the Republic of Armenia; the Declaration adopted by the 1992 International Conference of Nutrition Issues (Rome),

the Agreement of 31.05.2001 On Prevention of Iodine Deficiency in CIS Countries ratified by the President of Armenia on 13.03.2002, the Ministry of Health attached special importance to addressing this public health challenge.

Iodine deficiency may lead to disabilities, such as deafness, squint, intellectual disability and others. In 2004 the RA Government, appreciating the importance of this problem, adopted the National Program on Control and Prevention of Iodine Deficiency in RA Population, thus providing legal framework for the use of iodized salt and prevention of the consequences of iodine deficiency in Armenia.

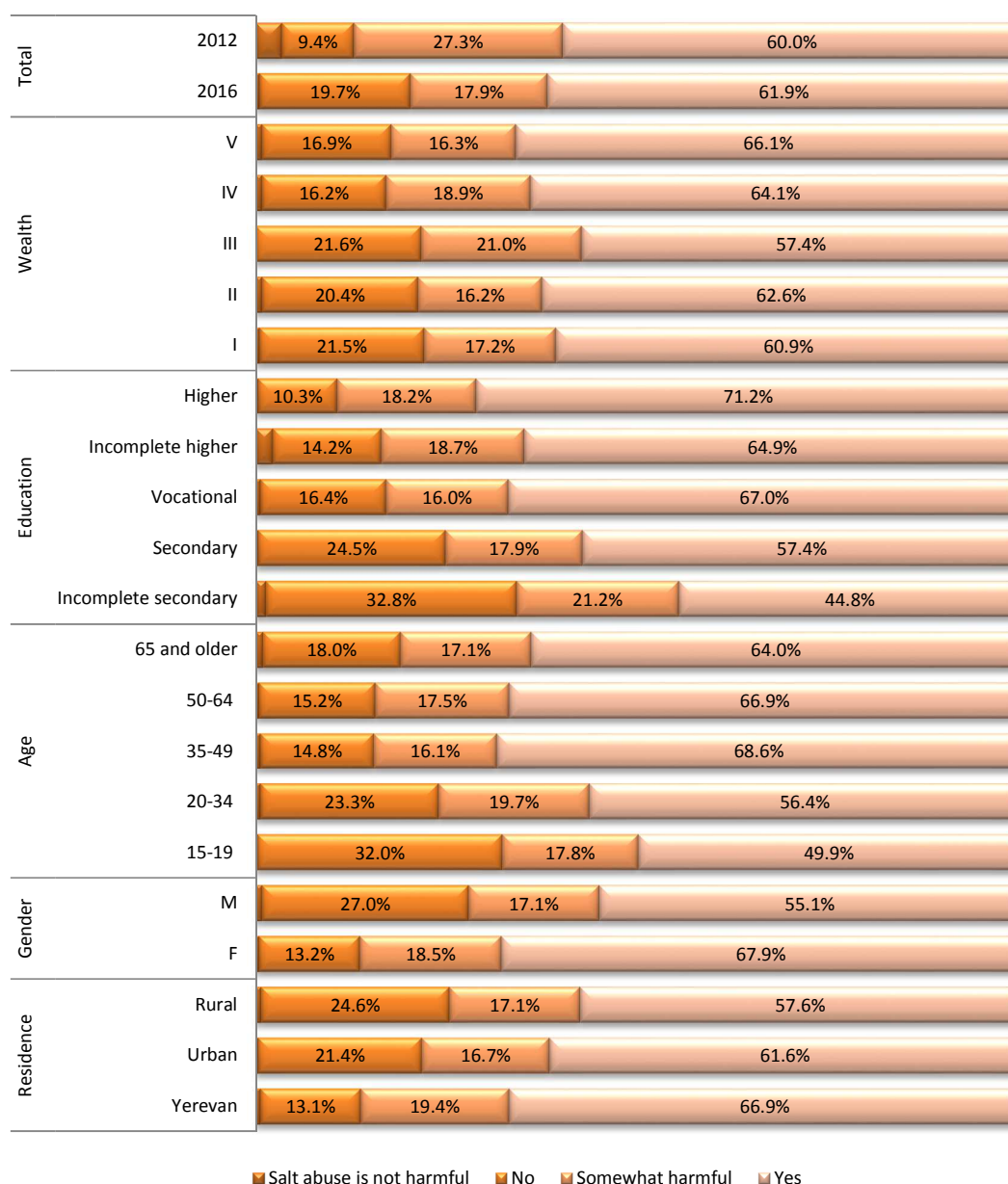
Since the country implements salt iodization program, the alternative survey findings suggest the following trends.

Figure 64. Use of types of table salt by the population according to sociodemographic groups, 2012, 2016



- Majority (97.6%) of the population consumes iodized salt, 1.9% uses not iodized salt and 0.5% uses sea salt.
- 60% reported to be aware of the harmful impact of salt abuse.

Figure 65. Public awareness of the harmful impact of salt abuse according to sociodemographic groups, 2012, 2016



Consumption of fats

Table 19 presents consumption of fats by the RA population. According to the survey data:

- Most of respondents (87.0%) use vegetable oil and 59.7% reported using **cream butter**.
- 40.7% cook meals with **ghee**.
- As little as 8.2% use lard or other types of fat.
- Use of margarine was reported by 4.6%.

Use of fats across geographic areas was as follows:

- Respondents from Yerevan and other urban settlements mostly use vegetable oil, whereas in rural areas clarified butter (ghee) is more popular (60.2%), as opposed to marz cities (35.4%) and Yerevan (22.5%).
- Use of lard and other animal fat in villages (12.6%) and cities (10.0%) is significantly more common than in Yerevan (2.1%).
- Residence-wise, no essential differences were recorded as regards use of cream butter.

Table 19. Use of fats when preparing foods, according to types of fat

Type	Yerevan	Urban	Rural	Total
Vegetable oil	92.4%	90.3%	80.2%	87.0%
Cream butter	61.8%	60%	57.7%	59.7%
Ghee	22.5%	35.4%	60.2%	40.7%
Lard	2.1%	10.0%	12.6%	8.2%
Margarine	2.8%	5.4%	5.7%	4.6%
Do not use fat	0.1%	0.2%	0.7%	0.4%

Screen time (sitting at a computer)

One of the 21st century diseases is spending too much time in front of screens both in the workplace and at home. Sedentary lifestyle coupled with excessive **screen time** is linked to negative health consequences.

Computers, both the monitor and the central processing units, are a serious source of electromagnetic radiation. The impact is long-term, often exceeding 12 hours per day. Rules of use of computer equipment recommend daily exploitation not exceeding 6 hours. Goes without saying that the harm of sitting in front of IBM long evening hours is especially big.

Electromagnetic radiation is especially harmful for immune, nervous, endocrine and genital systems. The immune system reduces the amount of special defensive ferments in the blood and weakens cellular and immunological defenses.

Endocrine system releases excess adrenaline in the blood and suppresses cardiovascular system, which causes blood thickening and cells do not receive enough oxygen. The nervous system changes are evident.

Excess screen time leads to development of ‘occupational’ diseases, such as osteochondrosis, inflammation of interphalangeal joints of the hand, tendon bursitis, astigmatism, light phobia, short-sightedness, diseases of pelvis minor, hemorrhoid and other ailments. In fact, modern computers are harmful in case of excess use.

Duration of screen time (computer, internet) was for the first time studied within the framework of the 2016 HSPA. Respondents were asked, “*Usually how much time do you spend sitting in front of a computer during business days?*” and “*Usually how much time do you spend sitting in front of a computer during the week-end?*”

Response options included the following:

- Not at all
- Less than 1 hour per day
- 1-2 hours per day
- 3-4 hours per day
- More than 5 hours per day

Figures 66 and 67 present the breakdown of screen time according to business days and week-ends. Figure 68 shows intensive computer use at free time on business days and week-ends. The Figures show the number of respondents using computer for 3-4 hours and more than 5 hours per day.

- Intensive computer use is defined as screen time equal to **5 hours and more per day**.

Figures 66 and 67 suggest that screen time does not differ much on business days and week-ends.

As Figure 68 shows

- Sitting in front of a computer for 5 and more hours on **business** days was reported by 7% and 3 and more hours by 14.8%.
- The rate of those using computer for more than 5 hours is the highest in **Yerevan** (9.4%), followed by marz cities (5.7%) and villages (5.6%).

- **Age-wise**, sitting in front of a computer for 5 and more hours was reported most of all by 15-19 (12.7%) and 20-34 (11.8%) age group.
- According to **educational** level, the highest rate was recorded in respondents with incomplete higher education (12.3%) and higher education (11.2%).
- As regards **wealth** groups, spending 5 hours and more in front of a computer during business days was relatively lower in quintile I (5.2%).

Figure 66. Screen time on business days, by sociodemographic groups 2016

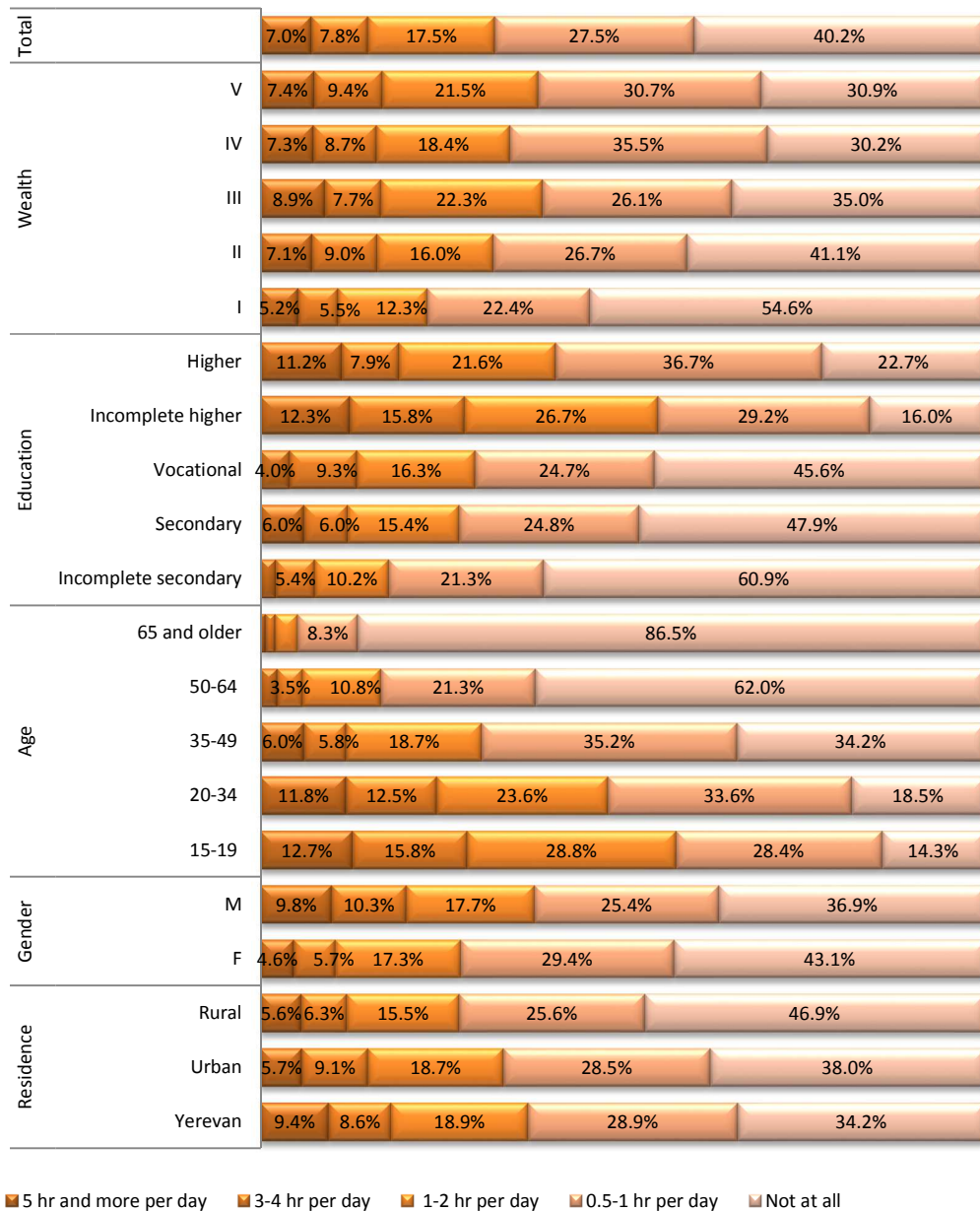
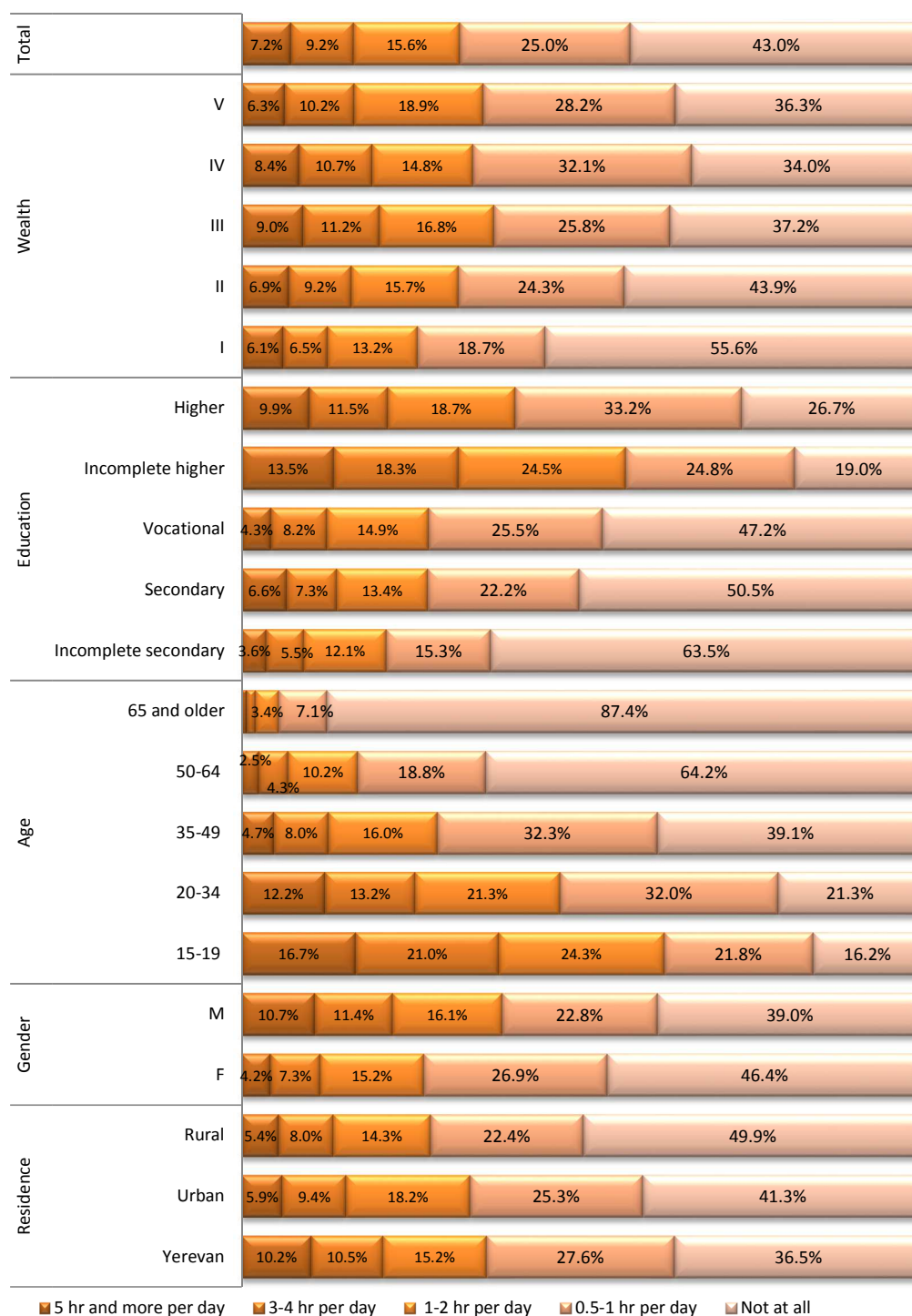


Figure 67. Screen time on the weekends by sociodemographic groups, 2016



Figure/Table 68. Screen time on weekends by sociodemographic groups. 2016

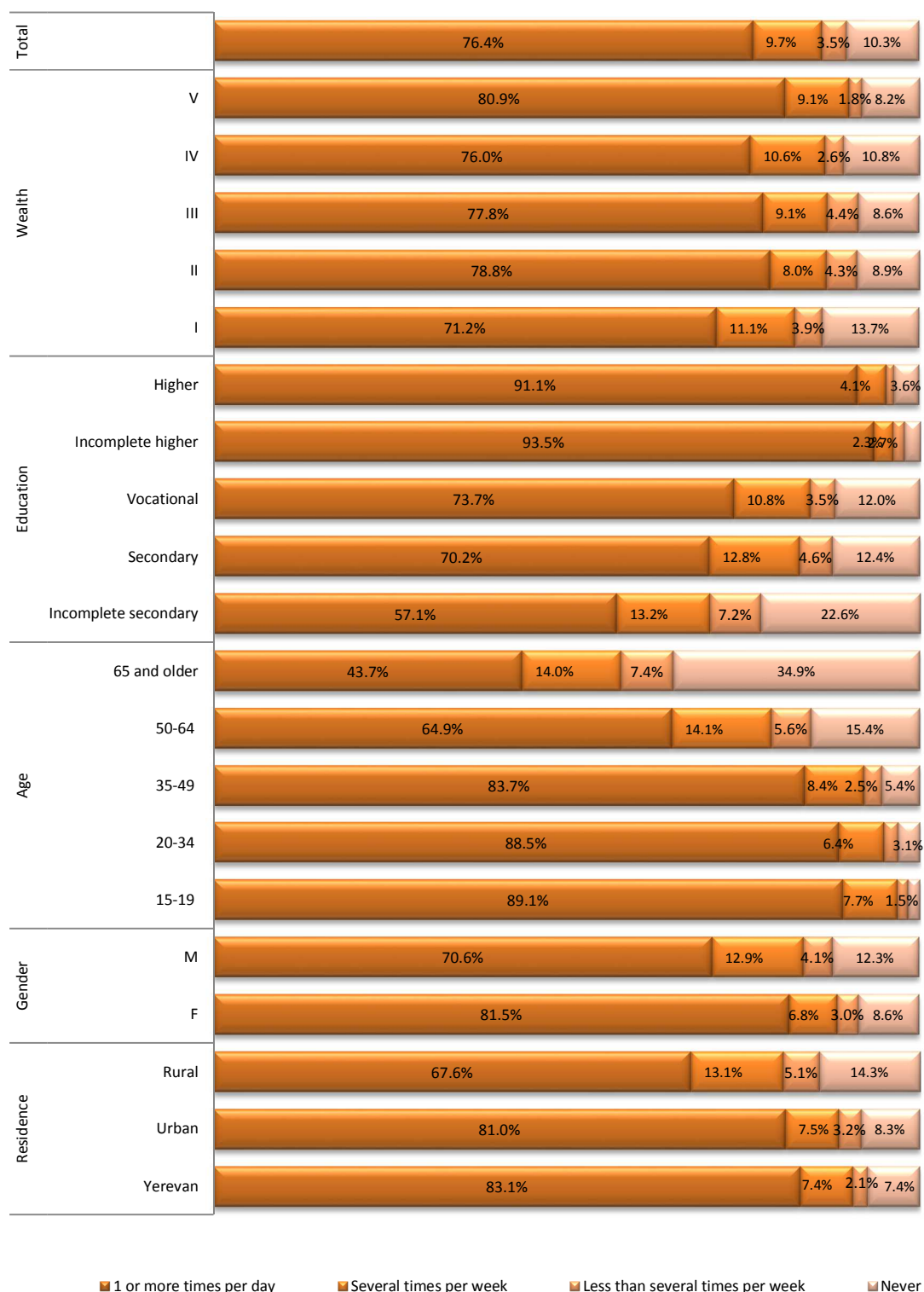
Characteristics	Category	How many hours u use the computer per day on your free time		
		5 and more hours	3-4 hours	3 and more hours
Residence	Yerevan	9.4%	8.6%	18.1%
	Urban	5.7%	9.1%	14.8%
	Rural	5.6%	6.3%	11.9%
Sex	Female	4.6%	5.7%	10.2%
	Male	9.8%	10.3%	20.1%
Year	15-19 y.o.	12.7%	15.8%	28.5%
	20-34 y.o.	11.8%	12.5%	24.2%
	35-49 y.o.	6.0%	5.8%	11.9%
	50-64 y.o.	2.3%	3.5%	5.9%
	65 and >	0.7%	1.3%	2.0%
Education	lower secondary	2.1%	5.4%	7.6%
	secondary	6.0%	6.0%	12.0%
	vocational	4.0%	9.3%	13.3%
	Incomplete higher	12.3%	15.8%	28.1%
	Bachelors degree	11.2%	7.9%	19.1%
	DA	0.0%	16.1%	16.1%
Wellbeing	I	5.2%	5.5%	10.7%
	II	7.1%	9.0%	16.1%
	III	8.9%	7.7%	16.6%
	IV	7.3%	8.7%	16.0%
	V	7.4%	9.4%	16.9%
Total		7.0%	7.8%	14.8%

Oral hygiene

The survey reflected on oral hygiene practiced by 15 and older population. The findings are presented in Figure 69.

- 76.4% of population maintains adequate oral hygiene and 10.3% reported not brushing teeth at all.
- Proper oral hygiene was reported most of all by respondents with higher (91.1%) and incomplete higher (93.5%) education and only 57.1% of those with incomplete secondary education.
- Only 43.7% of 65 and older and 89.1% of 15-19 years old respondents reported brushing their teeth every day.
- 67.7% of rural population and 83.1% of Yerevan respondents reported brushing their teeth every day.
- **Gender-wise**, 70.6% of males and 81.5% of females maintain proper oral hygiene.
- According to wealth groups, the lowest rate was recorded in quintile I (71.2%).

Figure 69. Maintaining adequate oral hygiene, according to sociodemographic groups, 2016



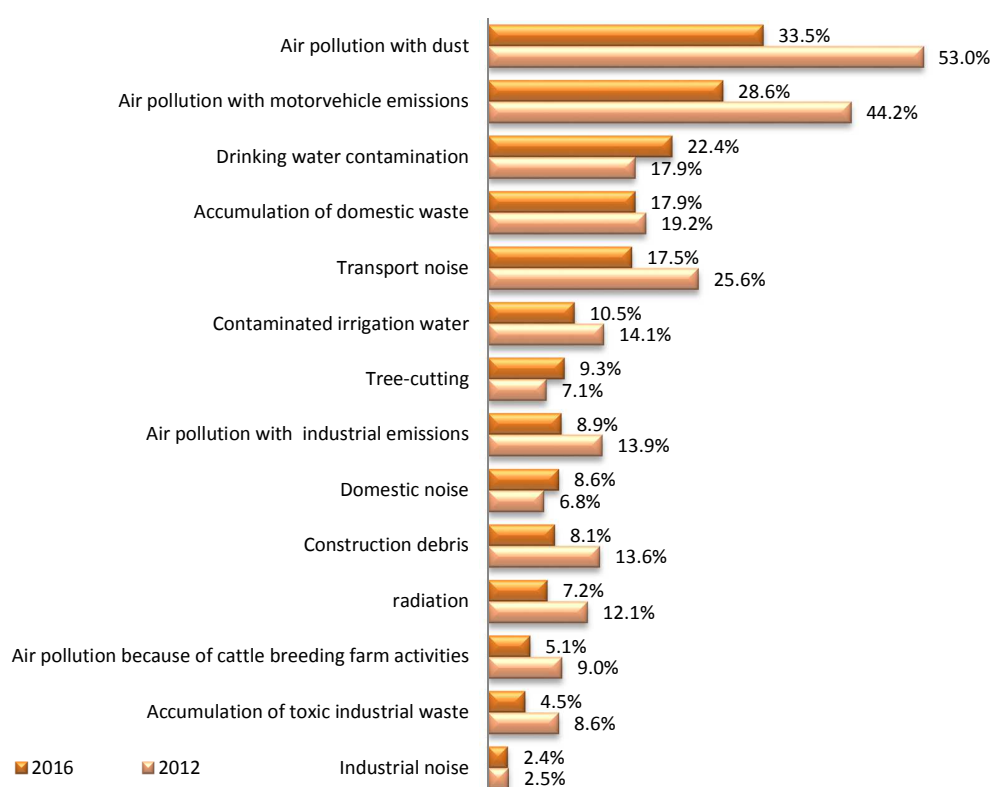
Prevalence of environmental and domestic risk factors

Domestic risk factors relate to environmental factors that have an impact on population health, such as access to clean water, sewage and waste disposal facilities, air and soil pollution as well as the noise. The 2009 and 2012 HSPA surveys included questions on the location of drinking water faucets, location of toilet facilities, waste disposal, presence of sewage system, apartment heating, waste collection and ambient air quality. Selected results for the prevalence of other domestic risk factors are also discussed.

The HSPA 2012 and 2016 findings on environmental and domestic risk factors by prevalence and residence are presented in Figure 70.

Data suggest that **the most prevalent factors of environmental pollution result not from the ill behavior of the population, but the nature of economy and governance.**⁶

Figure 70. Prevalence of domestic risk factors, 2012, 2016



⁶ From the first sight it can be thought that accumulation of domestic solid waste results from people's behavior. But in reality if waste is collected in one place, it means that there are population groups/households/ that have no specified place for waste collection, so they spontaneously organize dumpsites in the most convenient for them place. Hence a last **managerial step** is left to be done – place waste receptacles and unload them regularly.

As the Figure pinpoints

- According to the 2016 survey most prevalent domestic risk factors included air pollution with dust and motorvehicle emissions.
- Overall, according to respondents, prevalence of domestic risk factors has declined between 2012 and 2016, in particular air pollution with dust, motorvehicle emissions, accumulation of domestic waste, transport noise, air pollution with industrial emissions, accumulation of construction debris, air pollution due to cattle breeding farm activities, and accumulation of toxic industrial waste.

Prevalence of domestic risk factors across settlements is presented in Table 20.

Data of the Table are presented in declining order of prevalence. The column Diagram presents the prevalence of risk factors across settlements. The height of diagrams are compatible with a given risk factor only. They enable quickly identifying the prevalence of risk factors according to residence.

Table 20. Prevalence of domestic risk factors according to residence

Domestic Risk Factors	Yerevan	Urban	Rural	RA
C. Air pollution with dust	36.1%	37.8%	28.6%	33.5%
D. Air pollution with motorvehicle emissions	37.7%	33.0%	17.6%	28.6%
A. Drinking water contamination	11.4%	27.3%	29.3%	22.4%
K. Accumulation of domestic waste	19.0%	20.8%	15.1%	17.9%
N. Transport noise	25.1%	21.0%	8.5%	17.5%
B. Contaminated irrigation water	1.8%	7.4%	20.3%	10.5%
L. Tree-cutting	8.3%	11.9%	8.7%	9.3%
E. Air pollution with industrial emissions	9.3%	12.6%	6.4%	8.9%
Q. Domestic noise	12.8%	11.5%	3.1%	8.6%
H. Construction debris	10.8%	9.6%	4.7%	8.1%
M. radiation	3.1%	10.7%	8.7%	7.2%
F. Air pollution because of cattle breeding farm activities	1.6%	6.5%	7.3%	5.1%
G. Accumulation of toxic industrial waste	4.4%	5.7%	3.9%	4.5%
P. Industrial noise	3.1%	3.8%	0.9%	2.4%

According to the Table

- Air pollution with motorvehicle emissions and transport noise were reported by most survey participants from Yerevan.

- Air pollution in Yerevan and other urban settlements is mostly due to accumulation of dust and domestic waste and construction debris. Domestic and industrial noise is reported by majority of respondents.
- Tree-cutting, air pollution with industrial emissions and accumulation of toxic industrial waste significantly contribute to worsening of ambient air quality and its pollution. This problem was especially reported in marz cities.
- Cities and villages in peripheries complained of contamination of drinking water, high radiation level, and air pollution due to activities of cattle farms.
- Respondents in rural areas highlighted contamination of irrigation water.

Sanitation and hygiene risk factors

Sanitation and hygiene risk factors included the following:

Existence of a sewage system

The survey studied

- Existence of a sewage system
- Location of the toilet
- Apartment/house heating

Location of the toilet

Figure 71 presents findings of the survey as regards availability of toilet in the apartment/house.

- The toilet facility is located inside the apartment/house in most cases in **Yerevan** (96.6%), in other cities (90.6%), and less than half (48.8%) of rural houses. Overall, 76.1% of the population of Armenia has a toilet facility located inside the house.
- In rural areas toilet of 51.1% of households is located in the backyard.
- The location of the toilet does not differ much according to **wealth** groups (Figure 72).

Figure 71. Toilet location according to residence, 2016

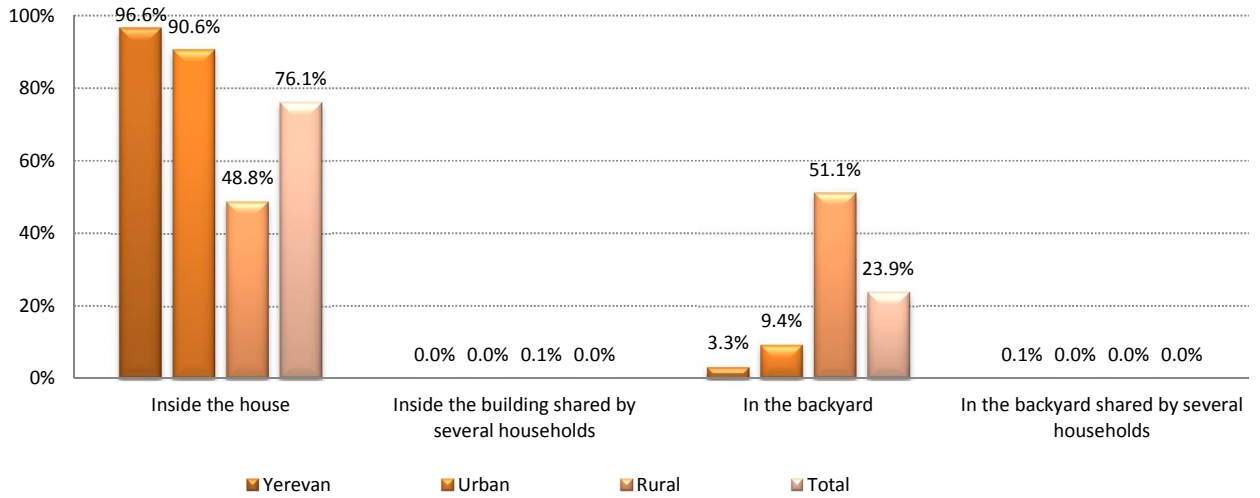
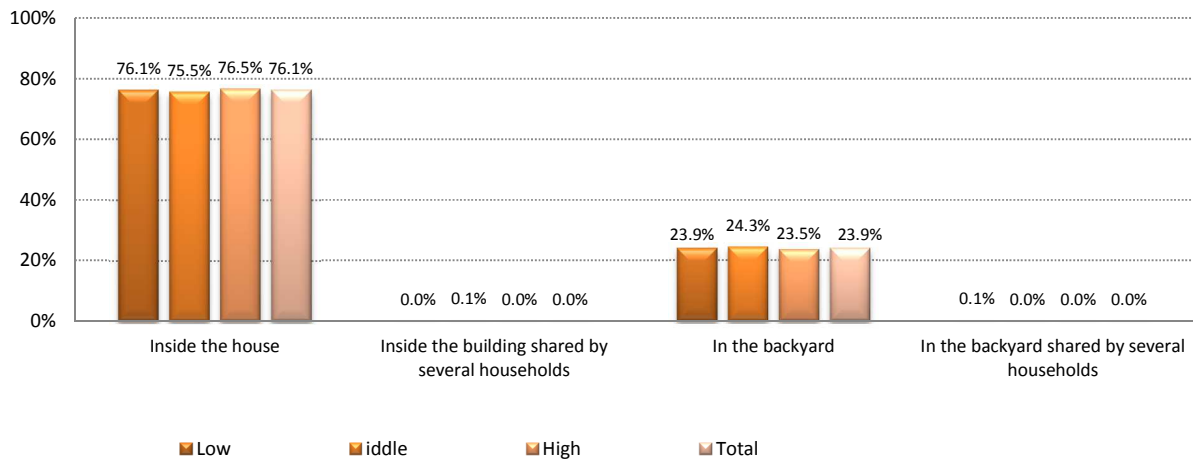


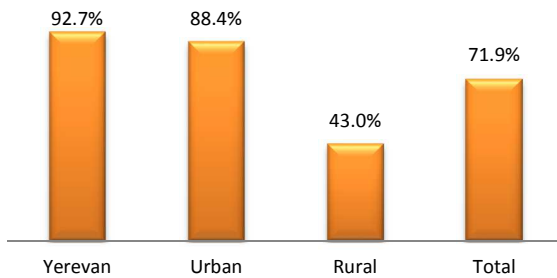
Figure 72. Toilet location according to wealth groups, 2016



Availability of a **wastewater disposal** system inside the house is presented in Figure 73.

- Sewage system is available in apartments of 92.7% of respondents in Yerevan. In other cities of Armenia the rate is 88.4% and in villages 43.0%.

Figure 73. Availability of a sewage system according to the residence, 2016



Apartment/house heating

The most prevalent risk factor related to apartment heating is the use of firewood and /or coal, which is practiced by 37.8% of households in Armenia. Main forms of house heating in Armenia during winter season are presented in Figure 74.

- Firewood or coal is used to heat apartment by 37.8% of the survey participants.
- The second most prevalent heating form is individual boiler, which is installed in apartments/houses of 23.1% of respondents.
- Gas stoves are used by 20.4%.
- Electric heaters are in the 4th place (11.0%).
- All four heating forms are used by 92.2% of households in Armenia.

Distribution of the main forms of apartment/house heating according to residence and wealth groups is presented in Table 21.

- Most prevalent form of house heating in Yerevan is individual boiler (38.9%), gas stove (27.1%) and electric heater (19.9%).
- In urban areas most respondents reported gas stove (29.7%) and wood stove (28.4%), followed by electric heater (14.5%).
- Wood and charcoal stoves are most common form of house heating in villages (71.2%), individual boilers (9.8%) and gas stoves (8.7%) are less practiced, and electric heaters are almost not used (0.8%).

Figure 74. House/apartment heating in winter, 2016

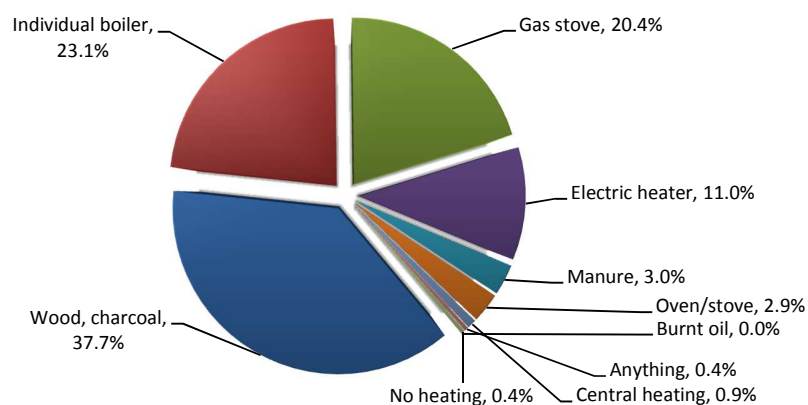


Table 21. Apartment/house heating in winter according to residence and wealth groups, 2016

Heating type	Residence			wellbeing			Total
	Yerevan	Urban	Rural	Low	Medium	High	
Wood, coal	7.3%	28.4%	71.2%	32.3%	36.1%	45.5%	37.7%
Individual heating system	38.9%	21.4%	9.8%	14.6%	26.3%	30.4%	23.1%
Gas heater	27.1%	29.7%	8.7%	28.9%	18.9%	11.9%	20.4%
electrical heater	19.9%	14.5%	0.8%	17.1%	10.7%	4.2%	11.0%
manure	0.0%	1.2%	6.8%	2.3%	3.0%	3.9%	3.0%
Oven/stove	4.0%	3.4%	1.6%	3.2%	2.8%	2.7%	2.9%
Central heating	1.4%	0.7%	0.7%	0.2%	1.6%	1.2%	0.9%
Anything	0.2%	0.5%	0.4%	0.5%	0.4%	0.2%	0.4%
No heating	1.1%	0.1%	0.0%	0.9%	0.2%	0.0%	0.4%
Burnt oil	0.1%	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

According to wealth groups the most prevalent ways of heating the apartment/house are as follows:

- Use of wood/charcoal stoves was reported by 44.7% of quintile V, individual heating system by 32.5% and gas stoves by 11.8%.
- 30.0% of quintile I respondents reported using wood/charcoal stoves, 12.9% - individual heating system, 28.5% - gas stoves and 20.4% - electric heaters.

The fact that well-off households use wood/charcoal stoves to heat the apartment is explained by the fact that most of participants in this group are rural residents (Table 22).

Table 22. Heating of households and houses by well-being groups ,2016

Residence	Wealth quintile					Total
	I	II	III	IV	V	
Yerevan	36.6%	21.1%	20.9%	12.3%	9.2%	100.0%
Urban	34.1%	24.8%	17.6%	14.7%	8.9%	100.0%
Rural	15.8%	16.4%	18.5%	21.1%	28.1%	100.0%
Total	27.8%	20.1%	19.2%	16.4%	16.6%	100.0%

4. UTILIZATION OF HEALTHCARE SERVICES

An effective health system implies delivery of maximally effective and adequate health care services to the population against compatible level of resources.

According to the WHO definitions there are three types of access:

- **Financial:** when the ability to access care is limited due to financial restrictions of the household.
- **Geographic:** when the ability to access care is limited due to physical distance of the health settings or their absence.
- **Information:** when the ability to access care is limited due to lack of information and citizens' not being aware of their rights to health services.

According to NSS data published in 2014, some 30% of the population of Armenia were considered poor, which implies that 3 out of 10 residents is below the poverty threshold (monthly income of AMD 40 264). Compared with 2013 the poverty level has declined by 2‰, which means that financial barriers to access of health care services are a key challenge for the country.

In 2014 the extreme poverty level continued to exceed that of the 2008 by 0.7 ‰ and the general poverty level by 2.4 ‰ (or 8.7%).

The problem of physical access to care and the current situation is conditioned with strongly uneven distribution of the population cross the country. In 2014 poverty differences across marzes and Yerevan varied compared with the mean national poverty level. Higher mean national level was recorded in Shirak, Kotayk, Lori, Gegharkunik and Tavoush marzes. The highest poverty rate was detected in Shirak marz where 44% of population is below poverty threshold. Poverty rates in 2014 have exceeded those of 2008 on both the national level and in all marzes and Yerevan city, except for Aragatsotn, Ararat, Kotayk and Vayots Dzor marzes. Nonetheless, a much quicker increase was recorded in Tavoush and Yerevan (1.3 times), Armavir and Syunik (1.2 times).

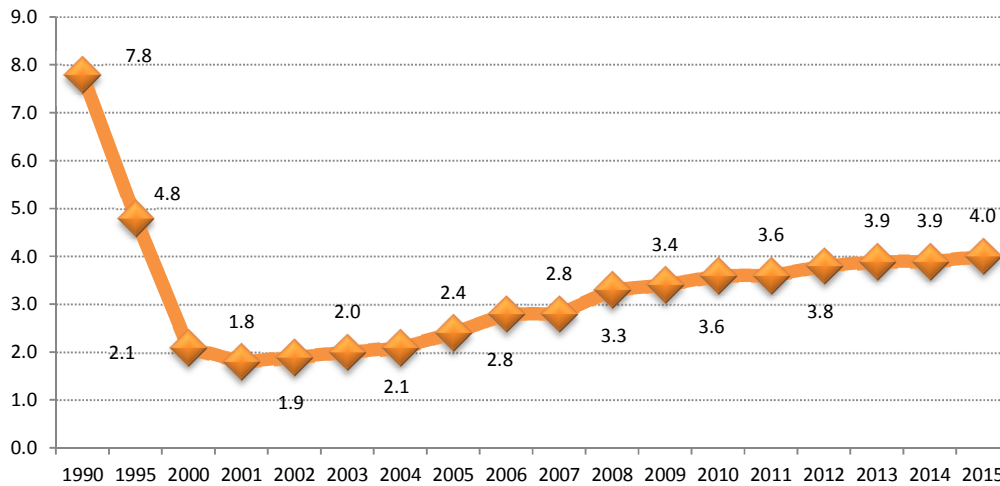
The capital city of Yerevan hosts 34.4% of the country population, marzes 29.6% and villages 36%. The population of two marz cities – Gyumri and Vanadzor - significantly outnumber those of other marz towns. That is why the dominating majority of health facilities and especially the specialized ones are located in Yerevan. In this regard both Gyumri and Vanadzor are in better situation. This uneven distribution of inpatient settings resulted in very high concentration of doctors (including the qualified ones) in Yerevan. A factor contributing to worsening of physical access to care is the

mentality of the population: most of people tend to believe that the quality of care in marz hospitals is lower than in Yerevan, which makes part of marz residents seek inpatient care in the capital. To improve access to marz hospital care the health system optimization strategy envisages establishment of a multi-profile hospital in each marz and making tangible investments, providing modern instruments and equipment and creating all necessary conditions for delivery of care.

Despite the variety of different benefits and regulations facilitating utilization of healthcare services, many people are not aware of them and make voluntary or forced out-of-pocket spendings which could be avoided. So, informational barrier to health care deserves special attention.

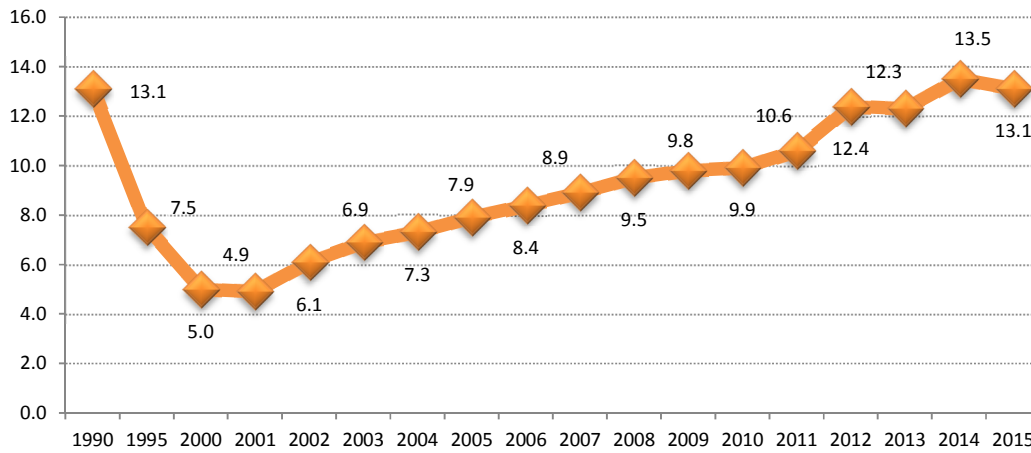
The number of per capita per annum outpatient visits and the number of per capita per annum hospital admissions in Armenia declined abruptly between 1990 and 2015 (Figures 75 and 76). The indicators increased from 2000 supported with the significant economic growth in the country. Nonetheless the rate of hospital visits increased more than that of outpatient ones, because most of population passes by outpatient settings and turns to narrow specialists of hospitals.

Figure 75. PHC per capita visits, 1990, 1995 and 2000-2015



Source: NHIAC, 2015

Figure 76. Annual hospitalization rate per 100 population, 1990, 1995 and 2000-2015



Source: NHIAC, 2015

The presented indicators can be explained as figures reflecting increased access to both inpatient and outpatient services by the population.

The hospitalization rate for Armenia is higher than the rates for Azerbaijan and Georgia, and below the rate of Turkey, CIS, EU-26 and EU-27 countries. A similar picture is seen in outpatient visits (Figures 77 and 78).

Figure 77. Hospitalization rate per 100 population, selected countries and country groups, 2014

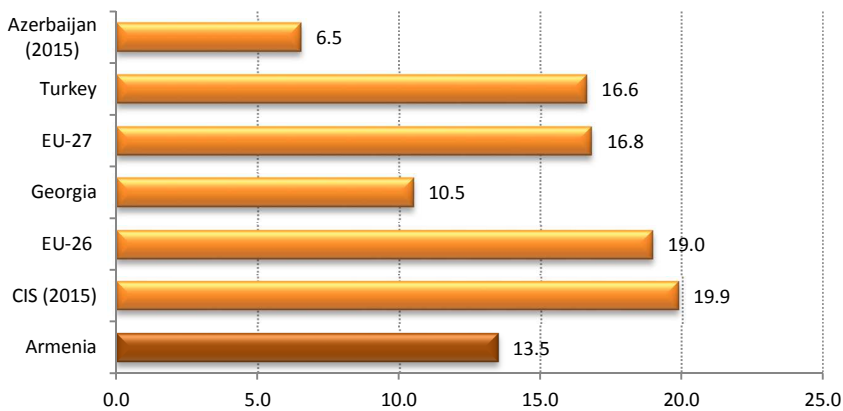
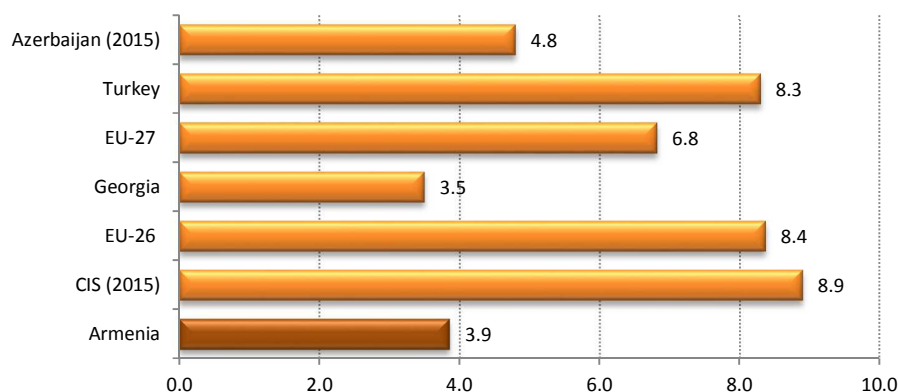


Figure 78. Ambulatory visits per capita, selected countries and country groups, 2014



Source: HFA-DB, WHO, 2016

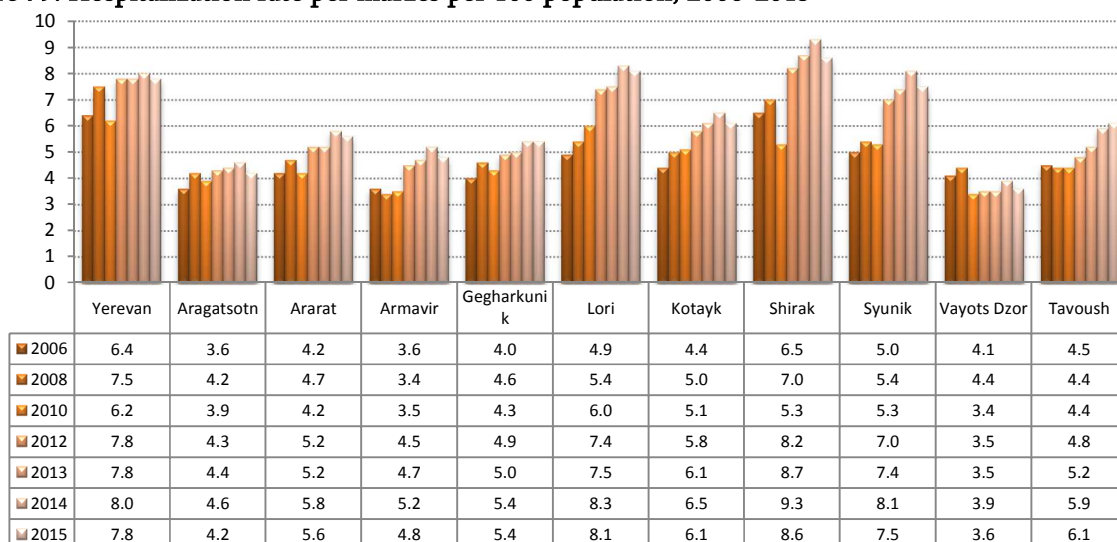
Hospitalization across marzes

Figure 79 shows hospitalization rate between 2006 and 2015 per marz, per 100 population. The Figure evidences that:

- Hospitalization rates have increased in all marzes between 2010 and 2014. But in 2015 some decline was detected compared with the previous year, except for Gegharkunik marz. Drastic decline of hospitalization was recorded in Shirak and Syunik marzes.

This fact is probably the result of regional population migration or the absence of relevant specialists in marz hospitals.

Figure 79. Hospitalization rate per marzes per 100 population, 2006-2015

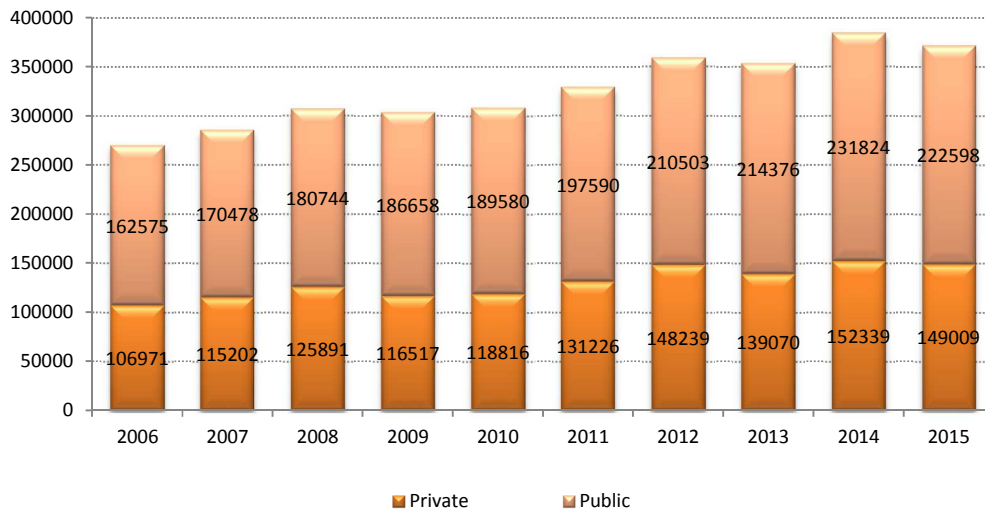


Source: HSPA, 2015

It is noteworthy that

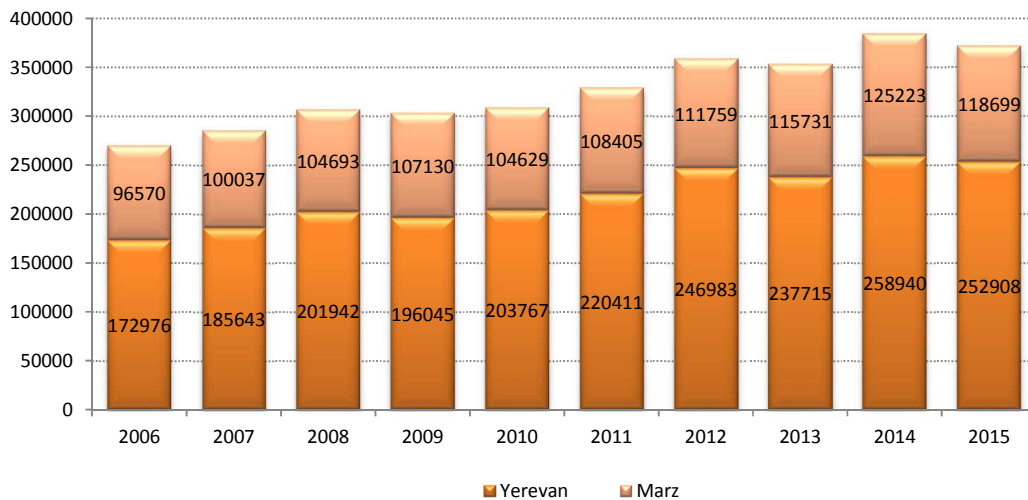
- The number of both public and private hospital admissions has increased between 2012 and 2014, but showed a declines tendency in 2015 (Figure 80).
- Figure 81 shows that the number of marz hospital admissions has significantly increased between 2012 and 2014.

Figure 80. Public and private hospital admissions (absolute figures), 2006-2015



Source: HSPA, 2015

Figure 81. Number of patient admissions, Yerevan versus marz hospitals (absolute figures), 2006-2015

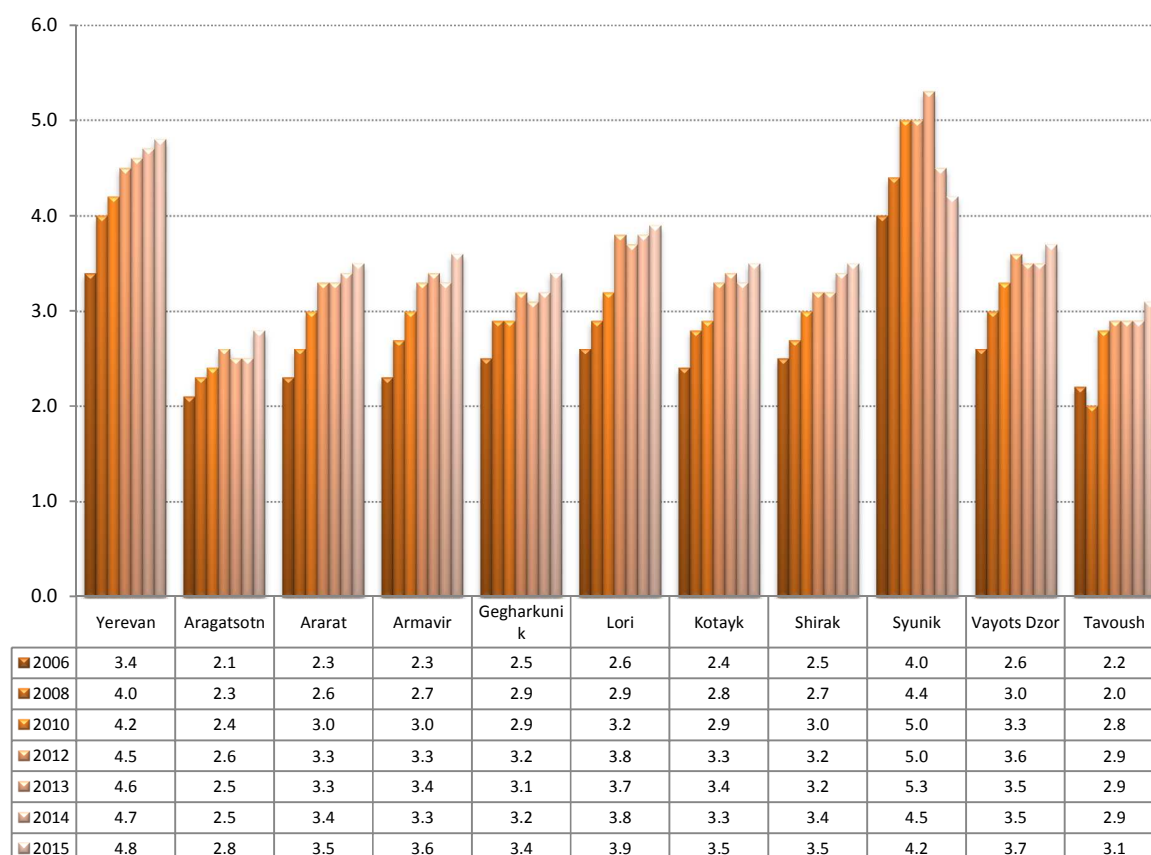


Source: HSPA, 2015

Ambulatory visits across marzes

Marz breakdown of ambulatory visits shows different dynamics. An increase of per capita ambulatory visits is evident in all marzes between 2015 and 2016, which means that **population access to ambulatory care improved due to implemented reforms.**

Figure 82. Annual ambulatory visits per capita, by marz, 2006-2015



Source: HSPA, 2015

5. ACCESS TO HEALTHCARE SERVICES

The survey studied challenges related to the access to healthcare services, in particular reasons of not seeking medical care when there was a perceived need⁷.

- The number of 15 and older individuals who did not seek medical care when there was a perceived need has almost doubled between 2009 and 2016. The rate increased from 19.2% in 2009 to 35.2% in 2012 and reached 36.8% in 2016 (Figure 83).

Figure 83. Number of 15 and older population not seeking medical care when there was a perceived need, 2009, 2012 2016

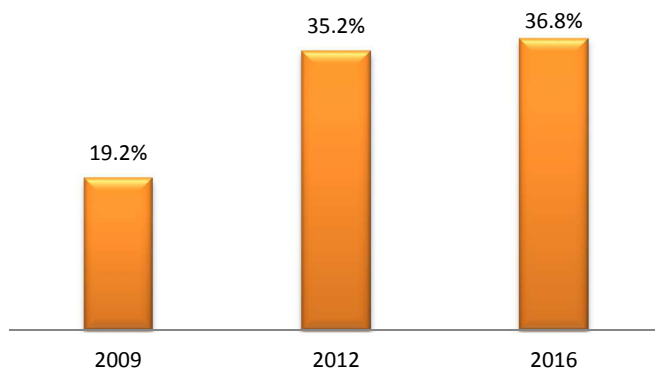


Figure 84 presents main reasons behind not seeking medical care by 15 and older population when there was a perceived need during 2009, 2012 and 2016.

According to Figure 84, the main reason for not seeking care was insolvency. In 2006 the rate was higher (17.2%) than in 2009 (15.0%), but lower than in 2012 (22.6%).

The second reason indicated by respondents was lack of time. This reason was mentioned by 1.2% (6 times less) in 2009 and by 7.3% in 2016.

The proportion of population who practiced self-treatment accounted for 4.6% in 2016, which implies twofold increase compared with 2009.

⁷HSPA 2012 Report presents data on the number of persons who did not seek medical care when there was a perceived need. Respondents could choose more than one response from provided multiple options. This Report presents the main reason for not seeking care within the framework of 2009, 2012 and 2015 surveys.

Figure 84. Main reason for not seeking medical care when there was a perceived need, % of 15 and older population, 2009, 2012 2016

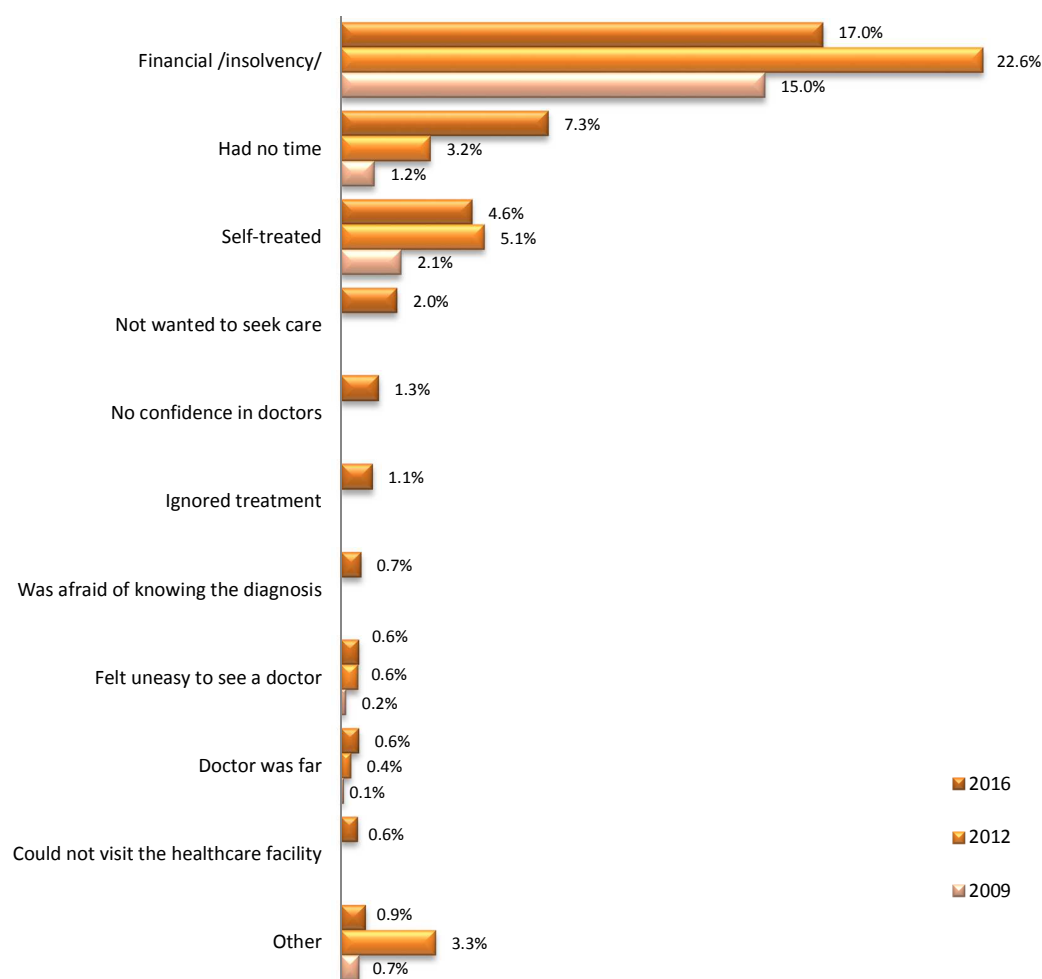


Figure 85 presents the main reason for not seeking care when there was a perceived need and the proportion of population who did not seek care during the reference year when there was a need.

Main reasons include financial difficulties (insolvency), having no time to deal with own health problems and self-treatment.

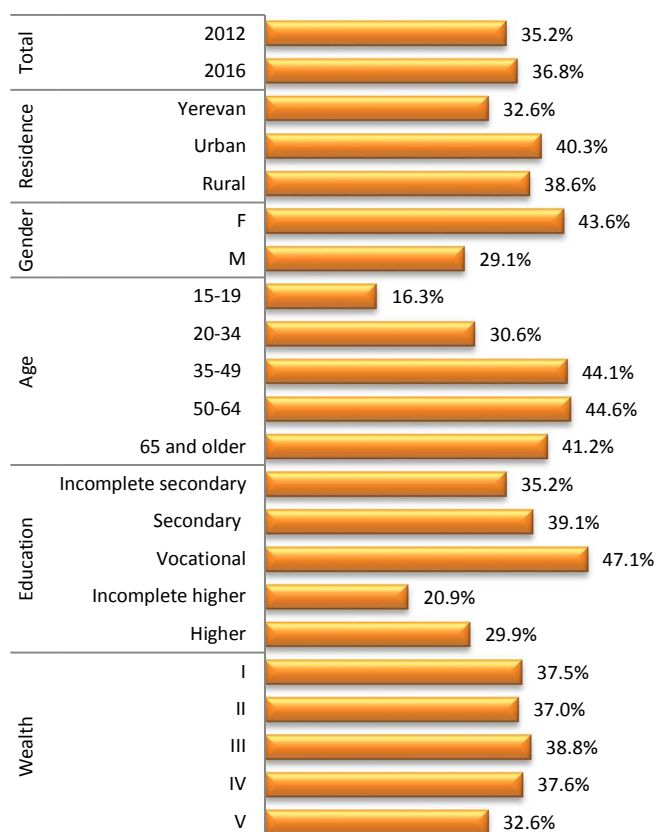
If the prevalence of not seeking care when there was a perceived need is reviewed in terms of proportions, the latter has significantly dropped between 2009-2016 (77.9% in 2009 versus 46.2% in 2016).

On the other hand, the rate of not seeking care because of having no time has essentially increased, i.e. from 6.2% in 2009 to 19.9% in 2016.

Figure 86 presents the number of individuals who did not seek care when there was a perceived need, according to sociodemographic groups:

- Not seeking care when needed is more prevalent in marz cities (40.3%) and villages (38.6%). Only 32.6% of Yerevan respondents reported such behavior.
- The rate is significantly higher in women (43.6%) than in men (29.1%).
- This behavior is more common in 35 and older age group. The rate is within the 41-45% range. In 15-19 age group only 16.3% reported not seeking medical care when there is a perceived need.
- Education-wise, not seeking care is more prevalent among those with secondary vocational education (47.1%). The lowest rate (20.9%) is recorded in those aged 18-25 with incomplete higher education group.
- According to wealth groups, the rate varies from 37.0 to 38.8% in quintiles I-IV and accounts for 32.6% in the most well-off group.

Figure 86. Proportion (%) of 15 and older population who did not seek medical care when there was a perceived need during the past one year, 2016



Physical access to healthcare facilities

To assess physical access to healthcare facilities (HCF) the survey studied how the population reaches different types of HCF (outpatient, inpatient, pharmacy and maternity) and how much time do they spent to access the clinic.

The number of population who can get to a HCF in less than 20 minutes in their most usual manner (as recommended by WHO) was taken as the key indicator of physical access to a healthcare facility.

Table 23 shows how population reaches different HCFs, according to residence.

- Walking to the polyclinic was mentioned by 43% of Yerevan population, driving or taking taxi by 33%. Most common way of reaching an inpatient facility is driving or taking taxi (reported by 50%), walking (22%) and taking public taxi (23%). Overwhelming majority of respondents (92%) reported walking to the pharmacy and the most common means of accessing a maternity hospital is driving or taking a taxi.
- In marz cities respondents mostly walk (55%) or drive (38%) to access polyclinics, and drive (54%) or walk (34%) to access a hospital. Pharmacies are accessed by walking (80%) and maternity hospitals by driving (61%) or walking (29%).
- In villages ambulatories or polyclinics are accessed usually by walking (47%) or driving (46%). Respondents mostly drive to a hospital (80%); drive (56%) or walk (34%) to a pharmacy and drive to a maternity (85%).

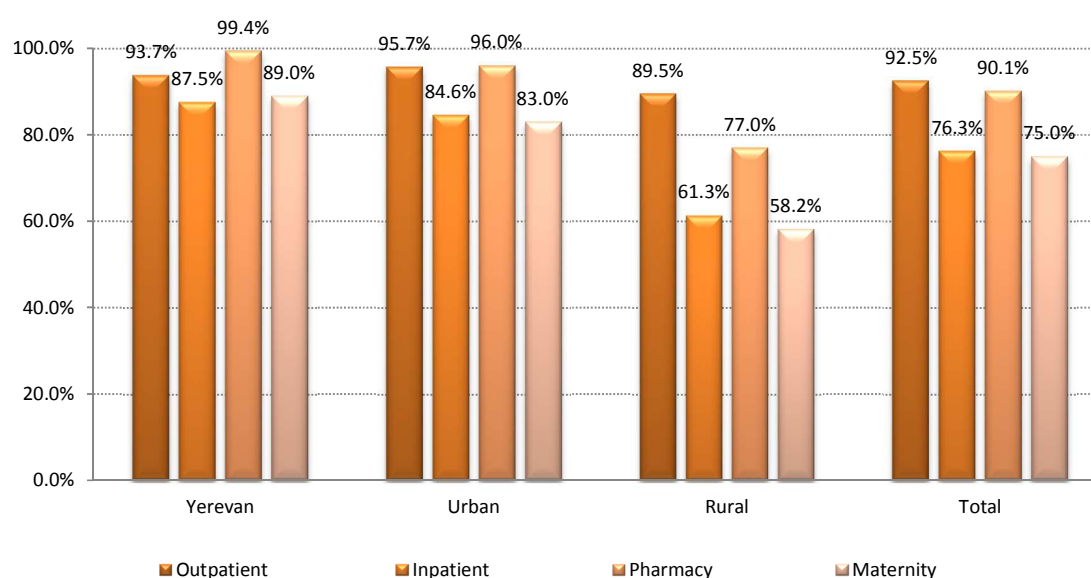
Table 23. Accessing a HCF according to the clinic profile and residence, 2016

Residence	HCF	Walking	By car/taxi	Public taxi	By bus	Total
Yerevan	PHC/ polyclinic, ambulatory	43%	33%	20%	5%	100%
	Hospital	22%	50%	23%	6%	100%
	Pharmacy	92%	6%	1%	1%	100%
	Maternity	18%	65%	14%	3%	100%
Urban	PHC/ polyclinic, ambulatory	55%	38%	6%	2%	100%
	Hospital	34%	54%	9%	3%	100%
	Pharmacy	80%	18%	2%	1%	100%
	Maternity	29%	61%	8%	3%	100%
Rural	PHC/ polyclinic, ambulatory	47%	46%	5%	3%	100%
	Hospital	4%	80%	10%	6%	100%
	Pharmacy	34%	56%	5%	5%	100%
	Maternity	2%	85%	8%	5%	100%
Total	PHC/polyclinic, ambulatory	47%	39%	10%	4%	100%
	Hospital	18%	63%	14%	5%	100%
	Pharmacy	66%	29%	3%	2%	100%
	Maternity	14%	72%	10%	4%	100%

Accessing a HCF in less than 20 minutes is presented in Figure 87, according to which

- Respondents reported rather good geographic access to PHC settings (92.5%) and pharmacies (90.1%).
- The problem of difficult-to-access healthcare facilities is reported in rural areas where the proportion of residents who access hospitals (61.3%) and maternities (58.2%) in less than 20 minutes is relatively low.

Figure 87. Geographic access to healthcare facilities in less than 20 minutes according to clinic profile and residence, 2016



Utilization of primary healthcare services

This section focuses on the following aspects of utilization of PHC services.

- Utilization patterns,
- Factual utilization for all purposes,
- Reasons for visiting a healthcare facility,
- Preventive activities and screenings by a healthcare provider,
- Visits to a HCF for treatment,
- Utilization of PHC services when sick,
- Affordability of drugs when on treatment,
- Referrals to hospital

Patterns of utilization of PHC services

Health system is more effective if the population firstly utilizes PHC services when there is a perceived need of seeking medical care.

Findings of the review of utilization of PHC services by 15 and older population demonstrate the following patterns (Table 24).

- 61.9% of respondents reported visiting PHC clinics when there is a perceived need of medical care. Of them 60.7% utilizes services of public PHC settings and as little as 1.2% apply to private clinics.
- Services of public PHC settings are more frequently consumed by rural population (69.3%), than by urban 60.1% and Yerevan 51.3% residents.
- 10.8% of respondents go directly to a hospital when sick.
- 9.4% does not visit any HCF and 5.7% practices self-treatment.
- 7.9% relies on a relative or friend who is a medical doctor. This rate is especially high in Yerevan (12.1%).

Table 24. Seeking medical care when sick

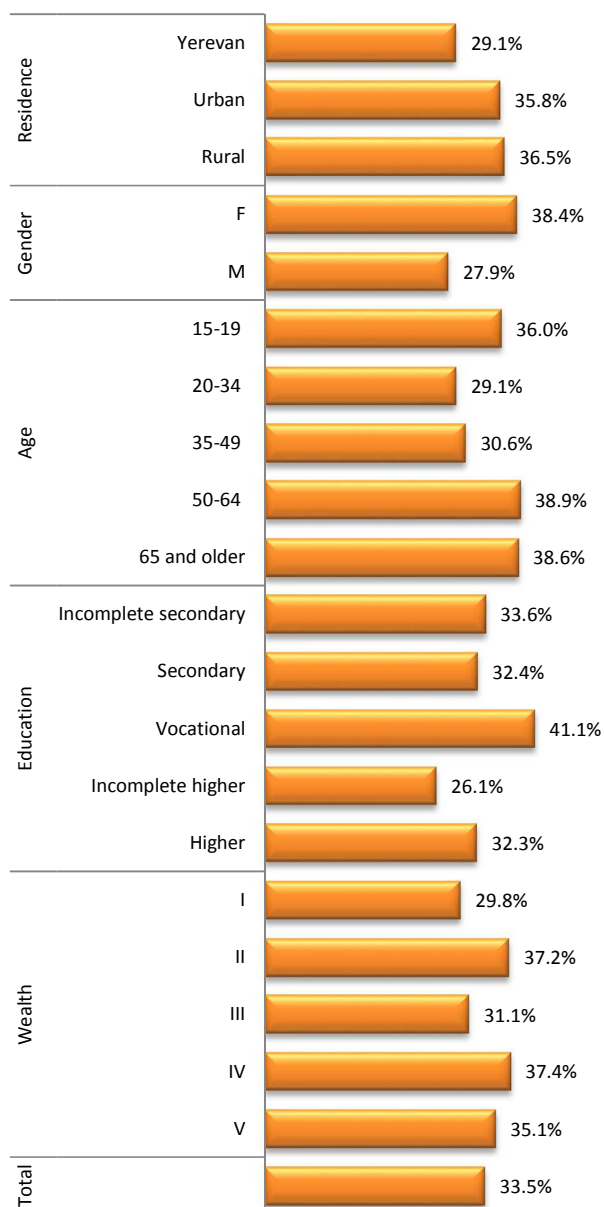
	Yerevan	Urban	Rural	Total
Public PHC clinic	51.3%	60.1%	69.3%	60.7%
Private PHC clinic	2.1%	1.5%	0.4%	1.2%
Total	53.4%	61.6%	69.7%	61.9%
Hospital	9.7%	10.5%	12.1%	10.8%
Do not apply to any clinic/doctor	9.7%	11.0%	8.1%	9.4%
Relative or friend who is medical doctor	12.1%	8.1%	4.1%	7.9%
Self-treatment	9.3%	5.5%	2.7%	5.7%
Other	5.1%	3.2%	3.0%	3.8%
Diagnostic center	0.3%	0.2%	0.3%	0.3%
Traditional methods/healers	0.3%	0.0%	0.1%	0.1%

Activity of PHC level***PHC visits***

- 33.5% of respondents reported to visit a PHC clinic (ambulatory/policlinic district or family doctor) when sick or in connection with health issues during the past 12 months.
- District or family doctors are visited by 36.5% of rural and 35.8% of urban population.
- The rate of female (38.4%) visits to PHC settings is 1.4 times higher than that of males (27.9%).

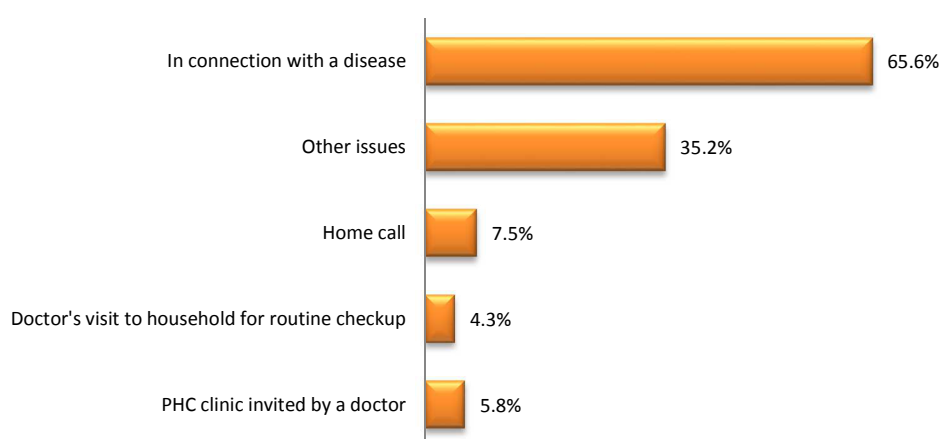
- Age-wise, the highest rate of PHC visits is recorded in the 15-19 age group (36.0%), followed by those aged 50-64 (38.9%) and 65 and older (38.6%).
- The highest level of PHC utilization is recorded in respondents with secondary vocational education (41.1%) and significantly lower in those with incomplete higher education (26.1%).

Figure 88. Visits to PHC district or family doctor during the past 12 months



Reasons for utilizing PHC services

- Two-thirds (65.6%) of population reported visiting a PHC doctor in connection with a disease (Figure 89), and one-third (35.2%) on other issues.
- The PHC doctor has visited 7.5% of population at home, in connection with a disease, and some 4.3% - for routine checkup.
- 5.8% reported to receive a call from their doctor inviting to the clinic.

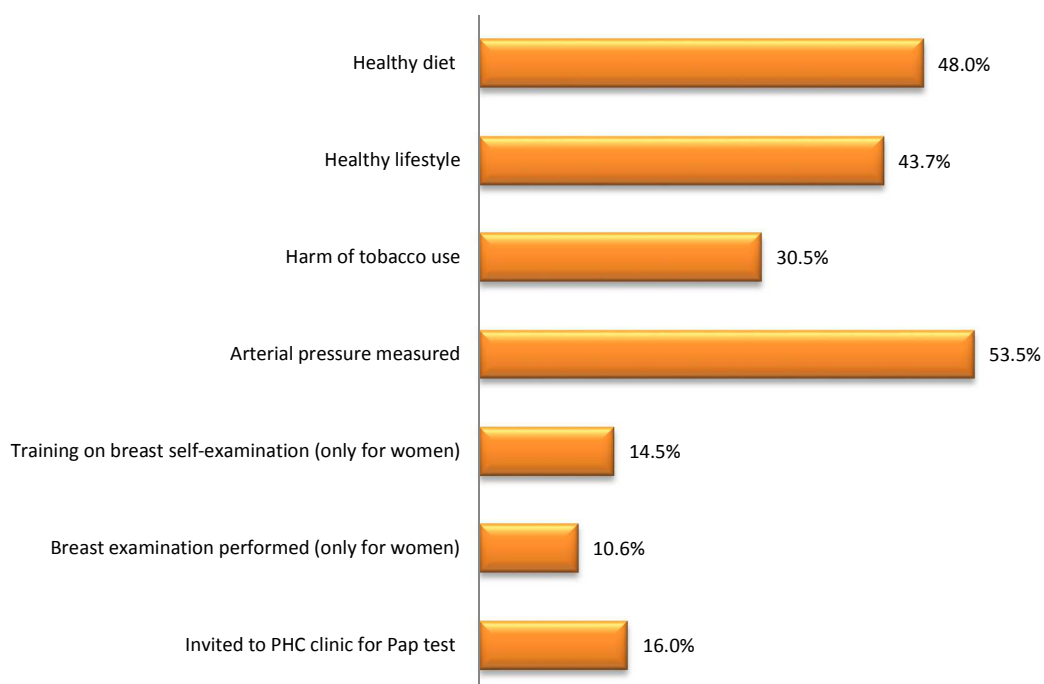
Figure 89. Reasons for PHC visits (respondents can choose more than one reply), 2016***Preventive actions by PHC doctors***

Data show that during the past year PHC doctors have performed the following preventive actions during a visit to the resident's home or to the HCF (Figure 90).

- Explained the importance of healthy diet to 48.0%,
- Explained the importance of healthy lifestyle to 43.7%,
- Explained the harms of tobacco smoking to 30.5%,
- Measured arterial blood pressure of 53.5%.

The following actions were performed among female population.

- Explained how to perform self-examination of breasts to 14.5%,
- Performed breast examination of 10.6%,
- Invited 16.0% of respondents to policlinic or ambulatory for PAP smear test.

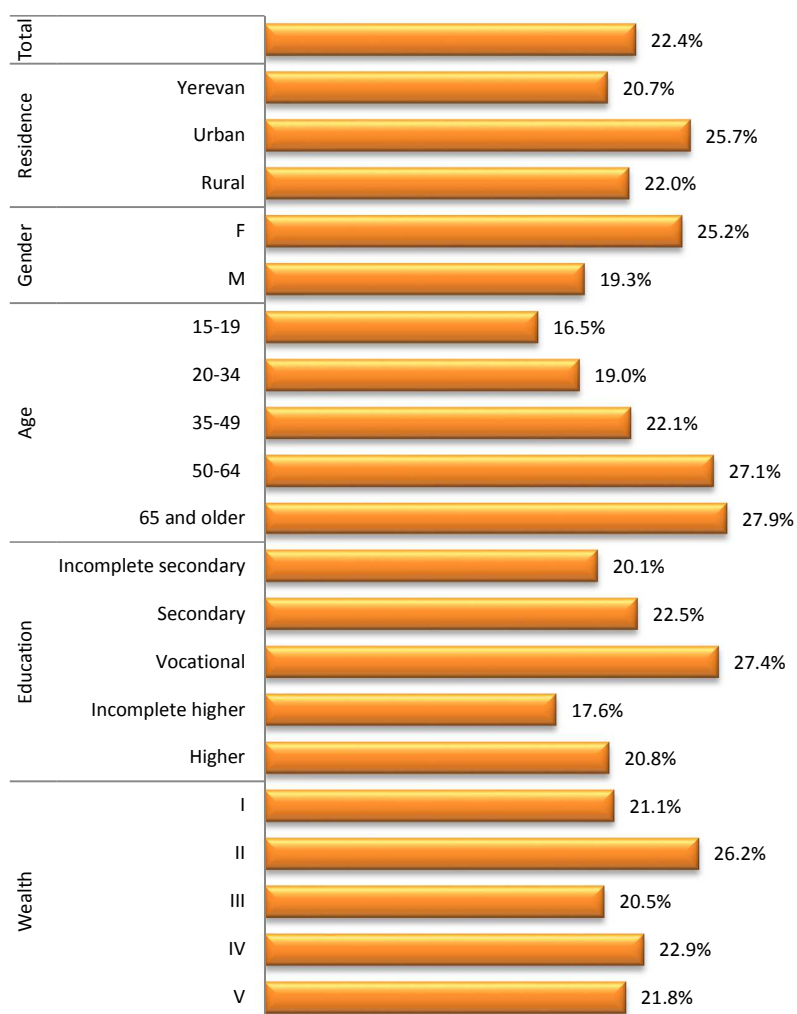
Figure 90. Preventive measures prescribed by the doctor during the past 1 year

Outpatient visits for treatment

The survey estimated the proportion of population who visited public HCF for treatment during the past 12 months, including health posts ambulatories, policlinics, public health centers, or family doctor's office, except for dental clinics.

- According to the survey findings 22.5% of 15 and older population visited a PHC clinics for treatment purposes during 2016.
- The rate was relatively higher in cities (25.7%), followed by villages (22.0%) and Yerevan (20.7%).
- Women paid a visit to a PHC clinic for treatment more often (25.2%) than men (19.3%).
- Age-wise the highest rate is recorded in 65 and older, as well as 50-64 years old population (27.9% and 27.1% correspondingly), and the lowest in those aged 15-19 (16.5%).
- According to educational levels, the highest rate of PHC visits for treatment was detected in those with secondary vocational education (27.4%), and the lowest in the incomplete higher education group (17.6%).

Figure 91. Population visits to PHC facilities for treatment of a disease during the past 12 months, according to sociodemographic groups, 2016



Outpatient visits in connection with a disease

Data in this section are based on PHC visits paid in connection with a disease. In cases when the respondent has visited a PHC clinic during the past 12 months in connection with more than one disease, the last case was considered.

According to procedures when visiting a PHC clinic the patient has to first of all see his/her district therapist or family doctor and then only, if necessary be referred to a narrow specialist.

Table 25 presents data on population behavior when visiting a PHC site, in particular who is visited first.

- One of the specifics of the population health behavior is that only 61% sees the district therapist or family doctor first when visiting a PHC clinic, and the 35.9% goes directly to the narrow specialist.
- The habit of seeing the narrow specialist directly is especially evident in public health centers, where 72.9% passes by the general practitioner. In policlinics the rate reaches 77.3%.

Table 25. Population health behavior, 2016

Type of clinic	Did you first of all see the therapist/family doctor or did you go directly to the narrow specialist during that visit?			
	Therapist/family doctor	Narrow specialist	Nurse	Total
Health post	86.6%	0.0%	13.5%	100.0%
Ambulatory	82.8%	5.4%	11.8%	100.0%
Public health center	25.5%	72.9%	1.6%	100.0%
Polyclinic	77.3%	22.2%	0.5%	100.0%
Total	61.0%	35.9%	3.2%	100.0%

Reasons for not seeing the district therapist or family doctor first of all when visiting a PHC are presented in Figure 92. Most prevalent reasons are as follows:

- Patient thought s/he needed a narrow specialist (25.8%),
- Patient did not trust the therapist (24.4%),
- Others advised to see the narrow specialist (19.4%),
- District therapist or family doctor was absent (15.1%).

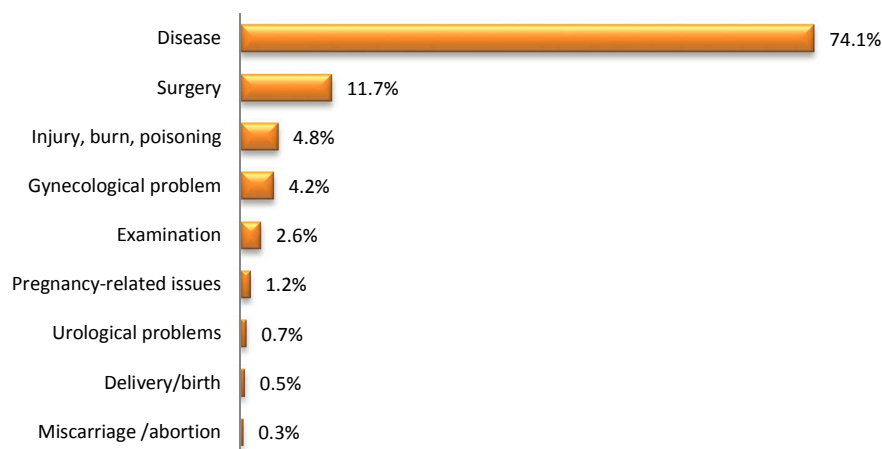
Figure 92. Reasons for seeing the PHC narrow specialist, 2016



Reasons for visiting a PHC site are presented in Figure 93.

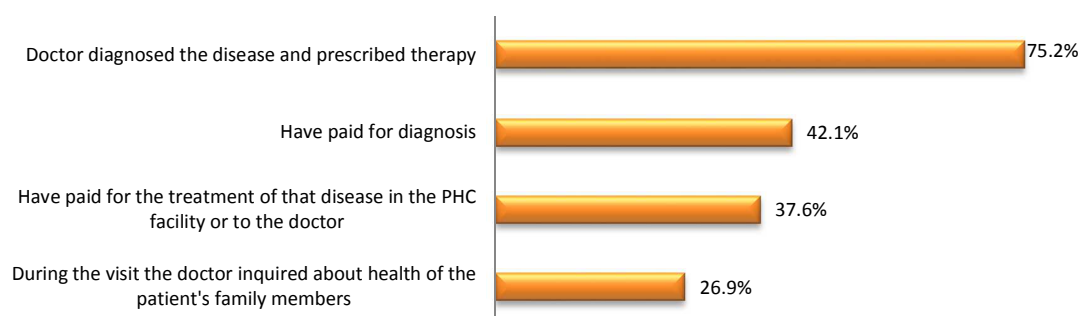
- **Visits in connection with urological and gynecological problems were treated as separate categories.**

Figure 93. Reasons for ambulatory visit



- During a visit in connection with a disease, the PHC doctor diagnosed an ailment, gynecological and urological problem in 75.2% of cases (Figure 94).
- In 42.1% of cases the patient had paid for diagnosis.

Figure 94. Diagnosis and payments at the PHC site



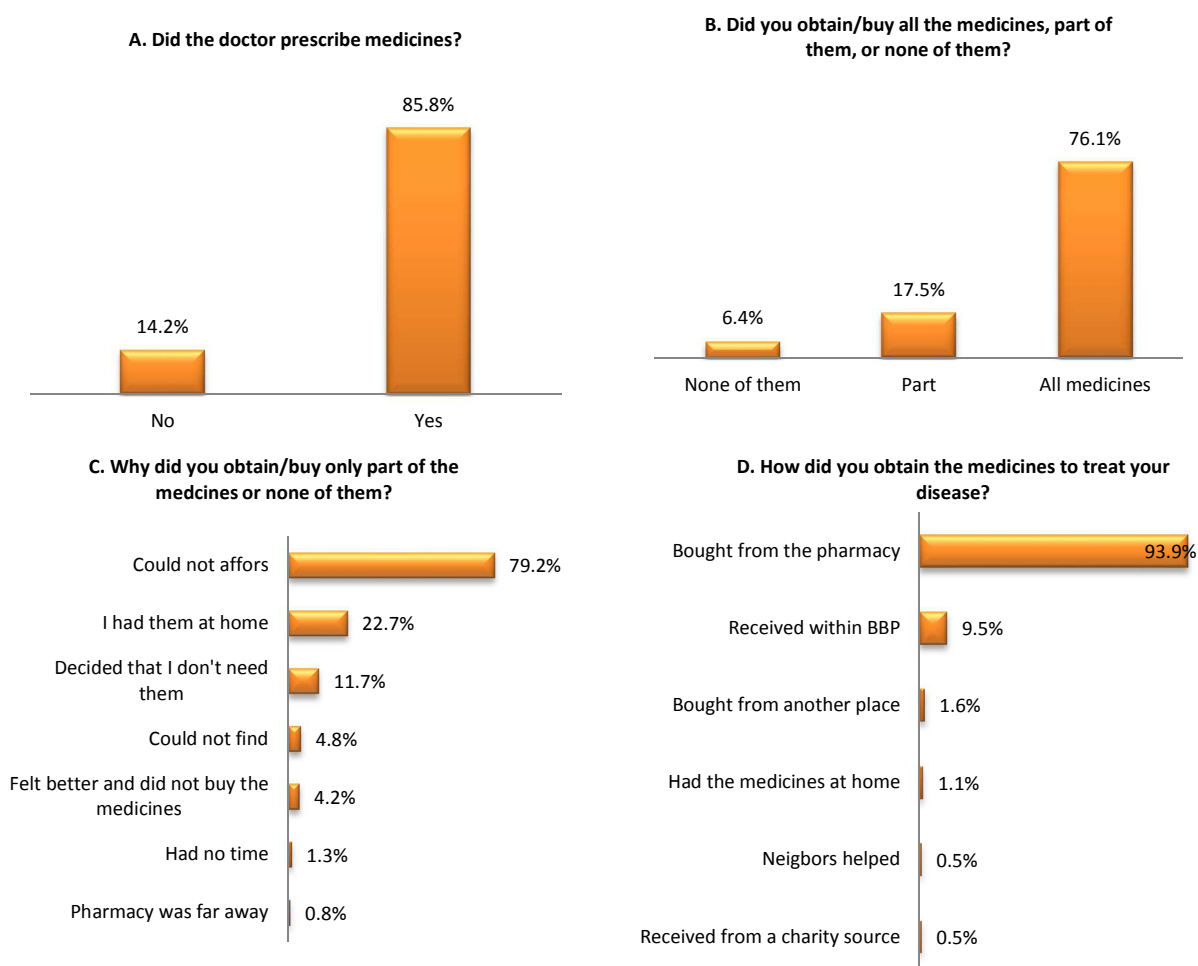
Access to medicines while on ambulatory treatment

- Medicines were prescribed to 85.8% of respondents who had visited a PHC setting in connection with a disease (Figure 95, A).
- 76.1% reported to obtain/buy all the medicines prescribed, 17.5% could buy only half of the medicines and 6.4% did not buy them at all (Figure 95, B).
- Most common reason for partial purchase of the medicines or not buying them at all was patients' insolvency (79.2%) or having the medicine at home (Figure 95, C). The third most

common reason reported by survey participants was the patient's decision not to take the prescribed medicines (11.7%).

- 93.9% of patients bought medicines from pharmacies and 9.5% received them under the basic benefit package (Figure 95, D).

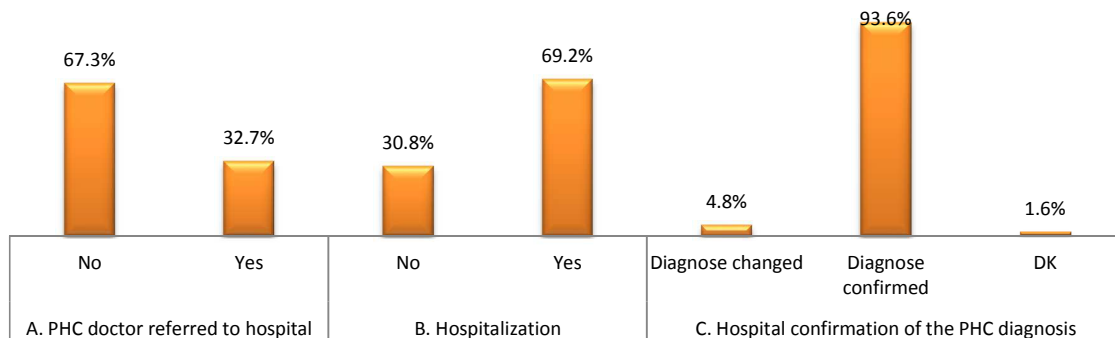
Figure 95. Ways of obtaining medicines prescribed by a PHC doctor during the visit, 2016



PHC referrals to hospital

According to the survey findings 32.7% of patients who had visited a PHC setting were referred to hospital (Figure 96, A). 69.2% of referred patients (or 22.6% of all patients who had visited a PHC setting) were hospitalized. Diagnosis of the PHC doctor was confirmed by the hospital providers in 93.6% of cases, not confirmed in 4.8% cases and 1.6% of respondents could not answer the question.

Figure 96. A. Referrals to hospital: B. Hospitalization following PHC referral: C. Confirmation of the PHC diagnosis by the hospital



Inpatient care

The following questions helped assessing inpatient care.

- Utilization of hospital services,
- Hospitalization patterns,
- BBP, co-payment and general hospital services,
- Hospital services

Utilization of hospital services

According to the survey 8.5% of respondents were hospitalized during the past 12 months, including maternal cases (Figure 97).

During the 12 months preceding the survey 77.5% of respondents were hospitalized once, 16.2% - twice and 6.3% thrice (Figure 98).

Distribution of the number of hospital bed-days (including all hospitalization cases) is presented in Figure 99.

The average number of hospital days⁸ was 9.0 and the median 7.0 (Figure 100).

45.7% of hospitalized cases received inpatient therapy, 29.8% was hospitalized for a surgical intervention and 15.4% were deliveries at maternity units (Figure 101).

⁸The 5% average was presented in order to maximally neutralize the distribution asymmetry.

Figure 97. Hospitalization rate during the past 12 months (maternity cases included), 2016

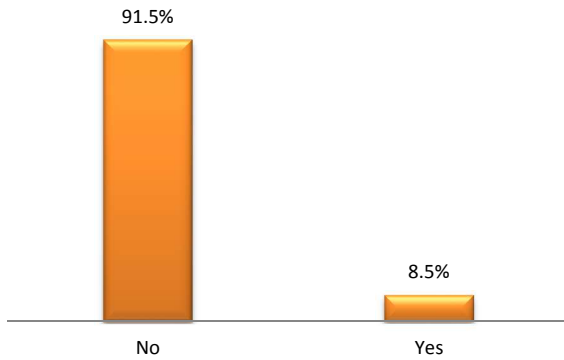


Figure 98. Hospitalization frequency, 2016

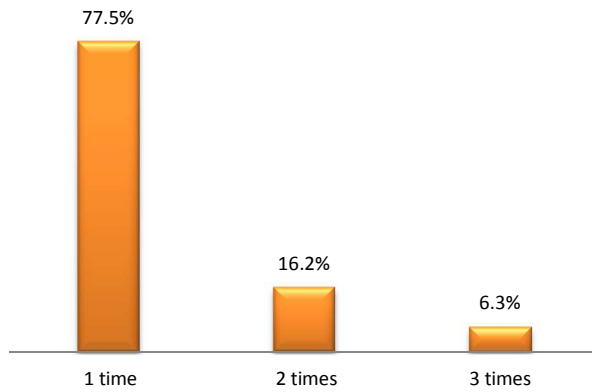


Figure 99. Total number of hospital bed-days, 2016

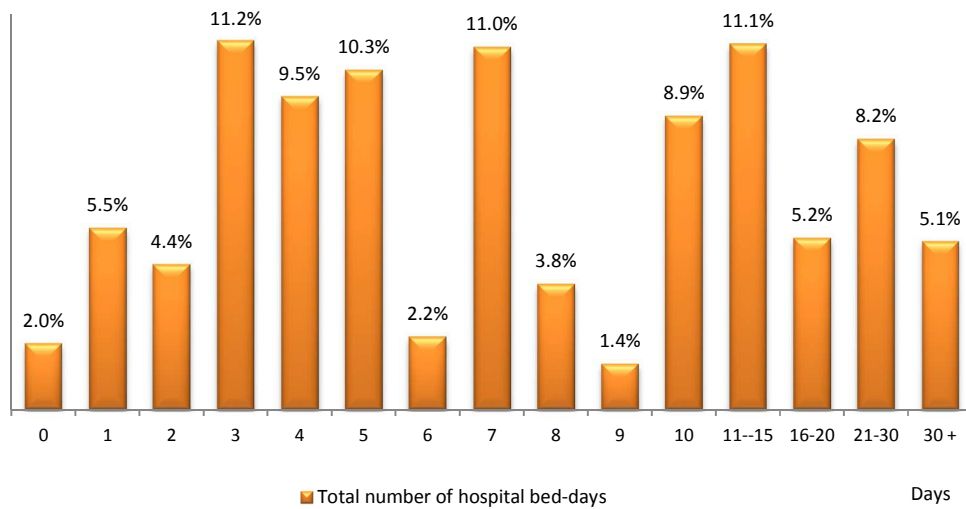


Figure 100. Average number of hospital bed-days (average length of stay and the median), 2016

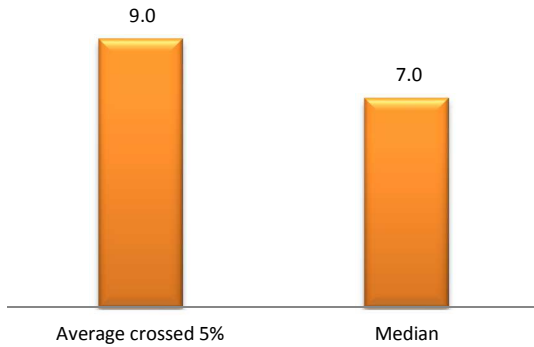
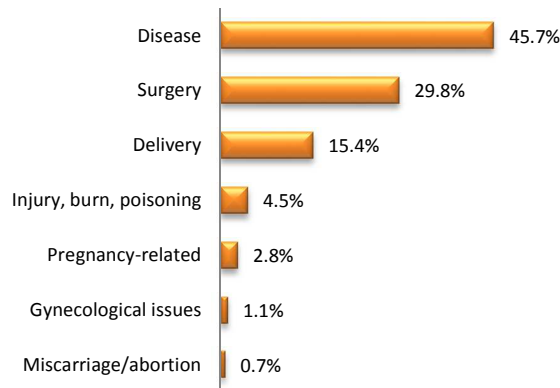


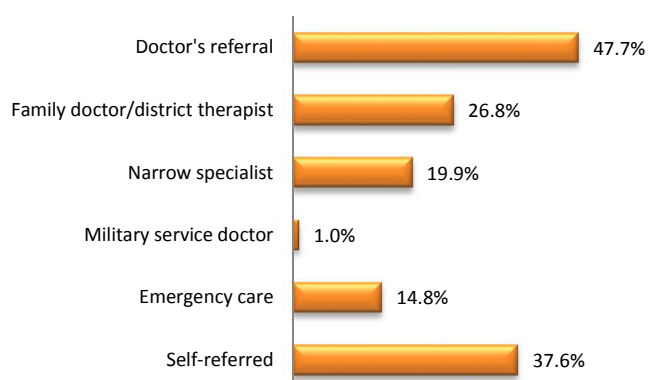
Figure 101. Reason for hospitalization, 2016



Hospitalization patterns

According to 2016 data, 47.7% of patients were hospitalized following referral of a PHC provider (Figure 102), of which 26.8% were referred by a district therapist/family doctor and 19.9% the PHC narrow specialist.

37.6% of patients were self-referred to hospital and 14.8% were hospitalized by emergency care service.

Figure 102. Hospitalization patterns

Payment for hospital care

Hospital payments by patients are presented in Figures 103 through 112.

Of all hospitalized patients

- 56.5% was treated within BBP or on co-payment basis (Figure 103),
- 32.6% was treated in paid wards (Figure 104),
- 22.1% paid additional money to the attending physician (Figure 105).
- 7.5% paid to another physician (Figure 106).
- 28.0% reported to buy all the medicines required for the treatment, 10.9% mostly bought the medicines themselves, 8.5% informed that the hospital has provided most of the medicines. All medicines were provided by the hospital to 52.6% of patients (Figure 107).
- 20.8% reported to have signed a document evidencing that the hospital has provided medicines for the patient's treatment (Figure 108).
- Nurses were paid for medical interventions (injections, I/V infusion, enema, blood test or other manipulations) by 13.1% (Figure 109).
- The ward was cleaned (Figure 111)
 - ✓ Every day - 90.3%
 - ✓ Once every 2-3 days - 7%
 - ✓ Less than every 3rd day - 1%
 - ✓ Never cleaned - 1.8%
- Technical staff was paid for cleaning the ward, disposing the waste and placing a bedpan by 10.4% (Figure 112).

Figure 103. Treatment within BBP or on co-payment basis

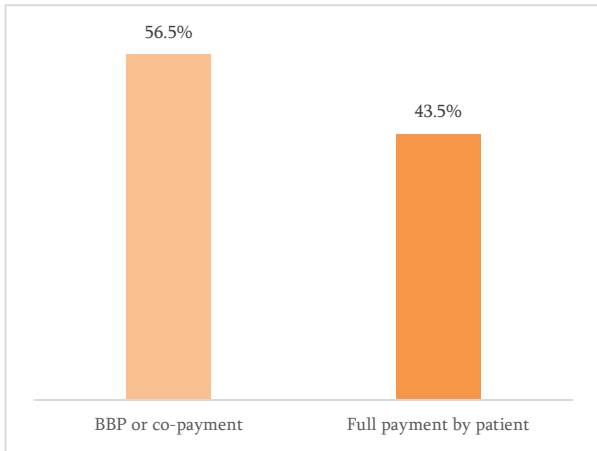


Figure 104. Use of paid and general wards

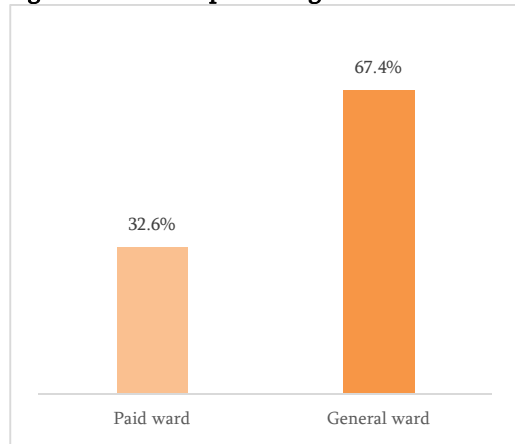


Figure 105. Extra payment to attending physician

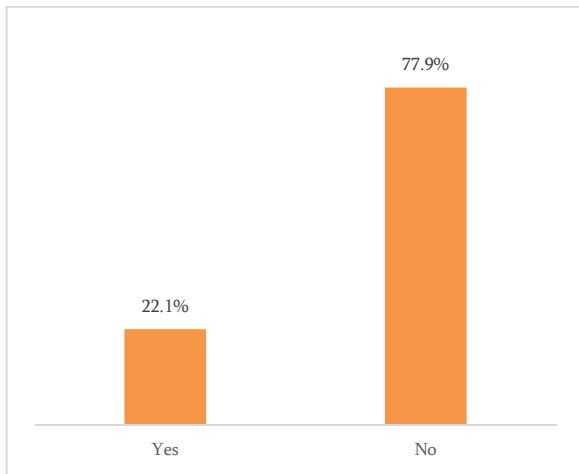


Figure 106. Extra payment to other narrow specialist

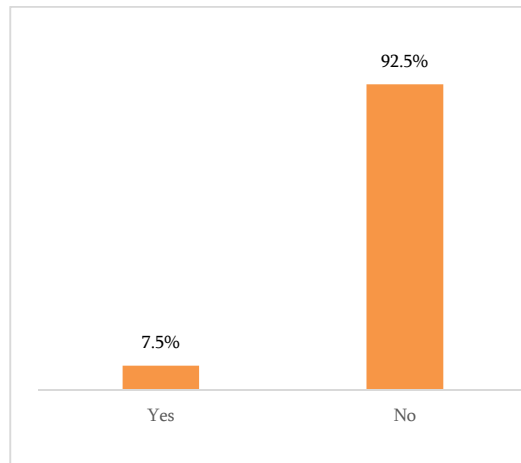


Figure 107. Obtaining medicines for treatment

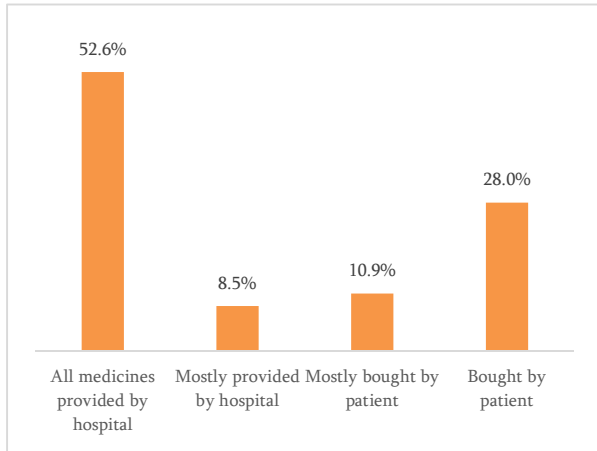


Figure 108. Patient signed a document evidencing

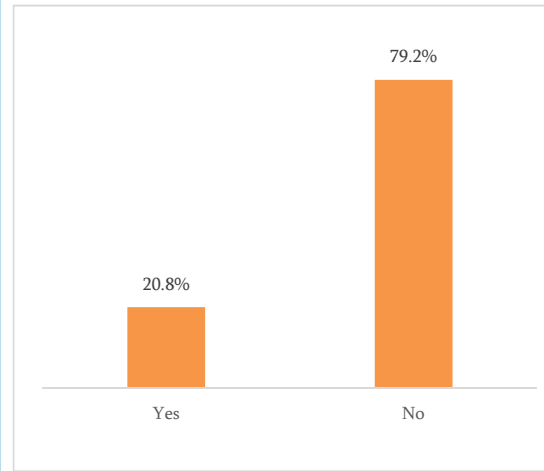


Figure 109. Payments for medical interventions

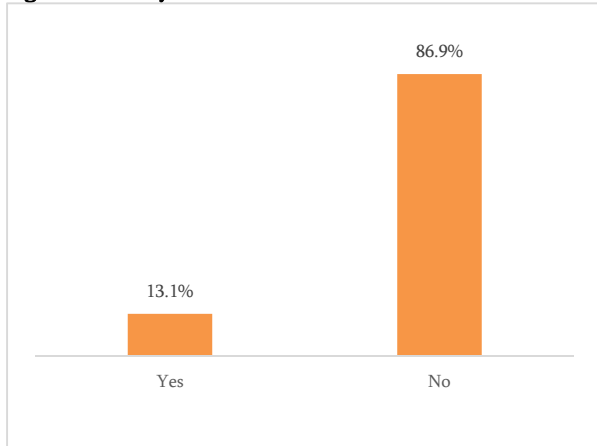


Figure 110. Purchase of supplies for injections

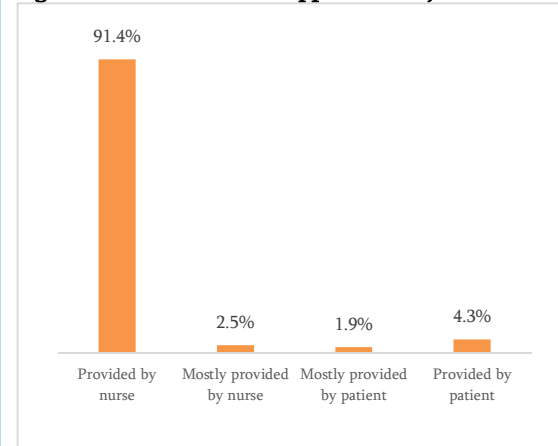


Figure 111. Frequency of ward cleaning

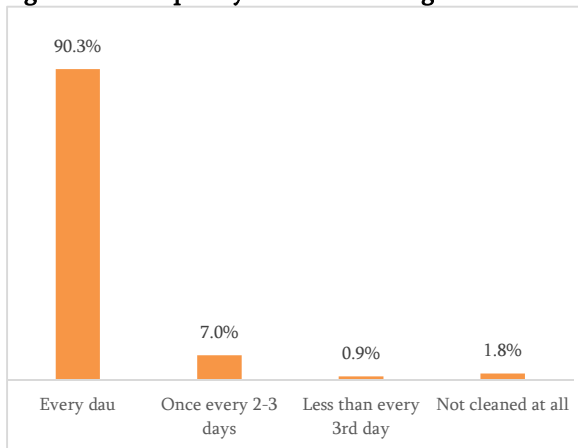


Figure 112. payment for ward cleaning



Preventive screenings by PHC settings

This section dwells on the following question - Are healthcare services accessible to everyone who needs them, especially the most vulnerable?

RA Government Decree 375-N of 27 March 2014 approved the procedure for organization and financing of state-guaranteed free medical assistance and services to beneficiaries of the social package health section; the package of state-guaranteed free medical assistance and services; issue of the Certificate of state-guaranteed free medical assistance and services, as well as development and management of the electronic database to ensure access to health package.

According to Government Decree N1483-N of 25 December 2014 amendments and addenda were introduced to the Government Decree N691-N of 27 December 2012 and N375-N of 27 March 2014, which resulted in the following changes to the above package, enforced from 1st January 2015. The package of annual mandatory preventive medical examination of the social package beneficiaries was approved.

The procedure of mandatory preventive screenings by social package beneficiaries and the form of Certificate issued to the beneficiary after the screening were approved by the Order N05-N of the Minister of Health of 10 February 2015.

The annual preventive screening component of the social package is a mandatory condition for all beneficiaries if they want to utilize the medical services envisaged by Annex 2 of the Government Decree N1691-N of 27 December 2012. In fact, 2015 was a transition period during which the beneficiaries could utilize the services without the said precondition. Undergoing mandatory screenings in 2015 activates social package services for the year 2016.

Since 2016 mandatory medical examination activates the social package services for a given and the following years. In fact, the mandatory screening is a precondition for the social package beneficiary to receive free medical services envisaged by Governed Decree N375-N of 27 March 2014.

The package of annual mandatory screenings of the social package beneficiary includes the following outpatient services:

- 1) Counseling of a general practitioner equal to the scope of preventive visit approved by the Ministry of Health, including
 - a. measuring arterial blood pressure for early detection of hypertension,
 - b. female breast examination for early detection of breast cancer

- c. vision and eye fundus examination in 40 and older women with glaucoma in family history for early detection of glaucoma.
- d. early detection of weight disorders, prevention of NCDs, calculation of body mass index.
- 2) gynecological counseling for all age groups of women,
- 3) urological counseling (if absent – surgeon’s counseling) for all age groups of men,
- 4) following medical indications, counseling of other narrow specialists, as referred by general practitioner
- 5) complete blood count (CBC),
- 6) urinalysis,
- 7) blood glucose test,
- 8) blood cholesterol test,
- 9) electrocardiogram (ECG),
- 10) ultrasound examination of abdominal organs, small pelvis organs and thyroid glands, for women- also breast ultrasound examination,
- 11) fluorography,
- 12) A prostate-specific antigen (PSA) test (for 45 and older men) following medical indications and referral of the specialist.
- 13) Pap test (for 30-60 years old women) following medical indications and referral of the specialist.

The 2016 sample survey studied the scope of preventive screenings and two main aspects of access to healthcare services:

- **The following was reviewed as regards preventive screenings**

General preventive screenings, in particular

- fluorography,
- ultrasound examination of prostate for males and breast ultrasound and mammography for females,
- Pap smear cytological screening.
- **Access to healthcare service, including**
 - Availability of HCFs,
 - Access to medical services,

- Utilization of outpatient services,
- Access to medicines,
- Referral to hospital,
- Access to hospital care,
- Geographic physical access to HCF

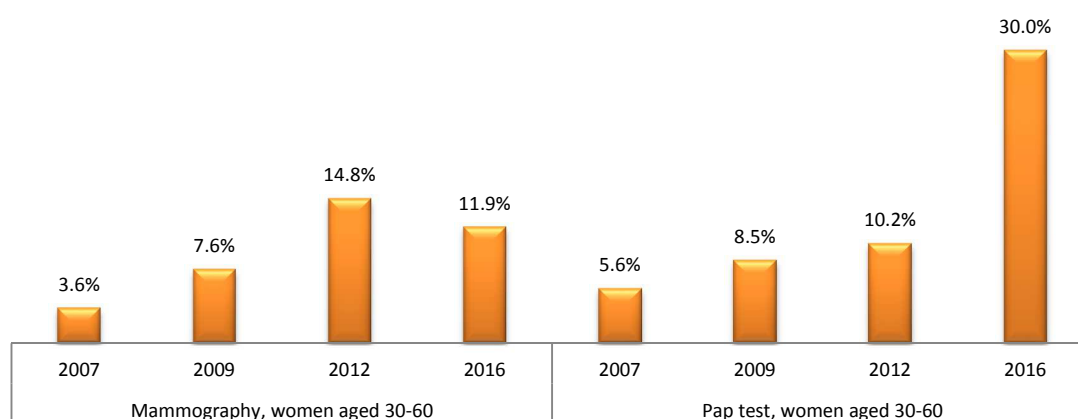
Overview of preventive screenings

HSPA 2007, 2009, 2012 and 2016 surveys studied coverage of women aged 30-60 in cervical cytology (Pap test) and mammography screenings during the past 3 years (Figure 113).

As 2016 data witness, during the past 3 years

- The weight of 30-60 age group women who have had mammography in 2016 (11.9%) has decreased compared with the rate of 2012 (14.8%) by 3 units. This is due to the fact that the screening is not included in the BBP and the cost is AMD 10000-15000. Figure 113 suggests a 4 times increase of the proportion of women who had mammographic screening between 2007 and 2016.
- The share of 30-60 years old women who had breast ultrasound comprised 23%. The rate is significantly higher in socially vulnerable groups.
- A threefold increase was seen in the proportion of 30-60 aged women who had Pap test between 2012 and 2016 (from 10.2% to 30%).

Figure 113. Proportion (%) of 30-60 aged women who had mammography screening and Pap test in the 3 years preceding the survey, 2007, 2009, 2012 and 2016

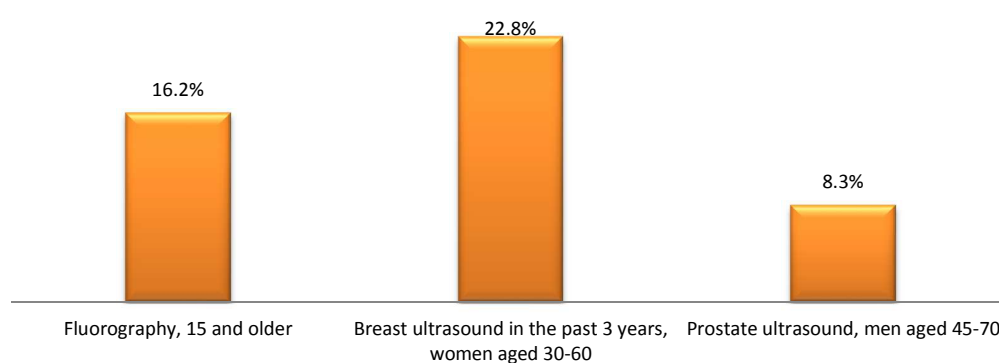


In addition, the percent of population who had ultrasound screenings was estimated based on 2016 survey data (Figure 114).

According to the data

- Undergoing lung fluorography in the past 1 year was reported by 16.2% of 15 and older population.
- 22.8% of 30-60 years old women had breast ultrasound examination in the past 3 years.
- 8.3% of 45-70 years old men had prostate ultrasound examination in the past one year.

Figure 114. Ultrasound examinations, 2016



Preventive screenings in women

Breast ultrasound examination

The share of women who had breast ultrasound examination is presented in Figures 115 and 116. Figure 115 shows the proportion of women aged 30-60 who had breast ultrasound examination in the past 3 years. According to the Figure:

- The proportion of women from Yerevan who had breast ultrasound is significantly higher than that of rural women, which may be due to the presence of necessary equipment, devices and specialists in the capital city.
- Age-wise, rates are much higher in 30-34 and 35-39 age groups, which is explained by the fact that the latter are at higher risk of developing breast cancer, hence they have more frequent screenings.

- Survey findings suggest that the higher the **educational** level of the women, the better is the breast ultrasound coverage. Strangely, the rate in women with incomplete higher education (i.e. under 25 years of age) is rather high.

Figure 116 presents the following.

- Having breast ultrasound examination during the past 12 months was reported by 9.8% of 15 and older females.
- The breakdown of women who had breast ultrasound examination according to their **residence** is as follows: Yerevan 11.0%, other cities - 11.2% and villages - 7.7%.
- The lead **age** group was 20-34 (13.7%), followed by 35-49 (9.6%) and 50-64 (10.3%). This means that the proportion declines as the women age.
- Survey findings suggest that the higher the **educational** level of the women, the better is the breast ultrasound coverage. The rate in women with incomplete secondary education is as little as 3.8% and 17.2% in those with higher education.
- **In wealth** quintiles I-III having breast ultrasound exam was reported by 7.7 to 7.9% of women and in quintile V - by 15.0%.

The survey inquired about the project and/or circumstances under which the respondent had undergone breast ultrasound examination during the past year (Figure 117).

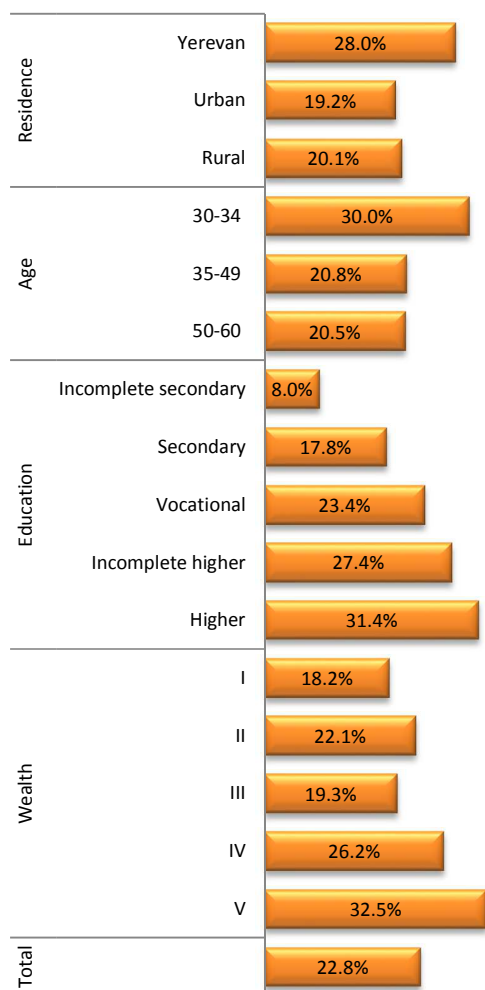
- Free of charge breast ultrasound examination at the PHC setting was reported by 23.9% of women.
- 27.0% were examined within the framework of social package services.
- Screening during a visit to HCF in connection with an illness was indicated by 30.0% of women.

Effectiveness of ultrasound examinations was as follows:

- A disease was diagnosed in 32.5% of cases of breast ultrasound performed during the past 12 months (Table 26).
- A disease was diagnosed in 38.6% of ultrasound screenings performed from one to three years ago.

Thus, as the survey shows, ultrasound examinations confirmed suspected disease in every 4th woman.

Figure 115. Breast ultrasound examination in women aged 30-60 in the past 3 years, 2016



■ Women aged 30-60 who had breast ultrasound in the past 3 years , during the past 12 month

Figure 115. Breast ultrasound in women aged 15 and above, 2016

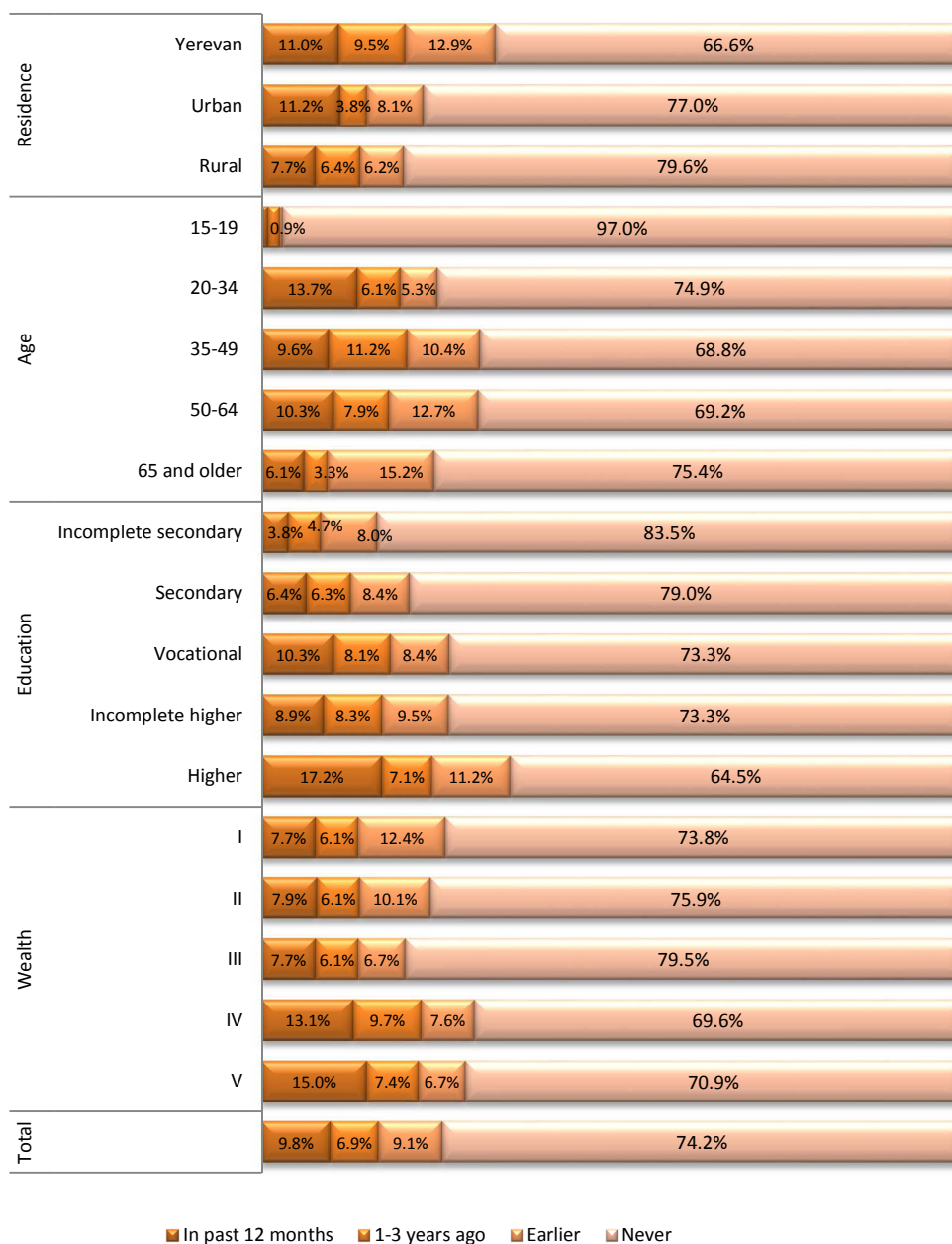


Figure 117. The scope of breast ultrasound examination (N=145)

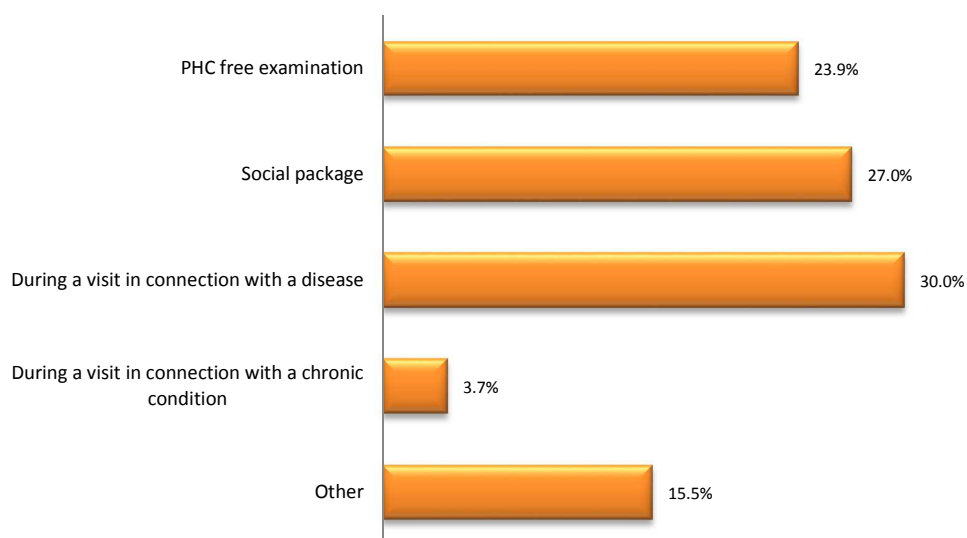


Table 26. Results of ultrasound examinations

Breast ultrasound timeline	Examination result		
	No response	Healthy	Disease diagnosed
In past 12 months	1.9	65.6	32.5
1-3 years ago	0.0	61.4	38.6
Earlier	0.0	100.0	0.0
Total	1.7	67.1	31.3

Mammography

Mammography is more effective in early detection of breast cancer, than ultrasound examination. World Health Organization recommends mammography at least every 3 years in women between the ages of 30 and 60.

Figure 118 presents the proportion of women who had mammography in 2016. According to the data

- During the past 12 months mammographic examination was performed in 4.4% of women aged 15-49 and 8.8% reported to have it during the past 3 years.

- In the 20-34 age group 3% had mammography in the past one year and 5.7% in the past 3 years. The rates in the 35-49 age group comprised 4.6% and 11.4% correspondingly, and in the 50-64 age group - 7.6% and 14.4% correspondingly.
- Thus, 11.9% of women aged 30-60 had mammography in the past 3 years (Figure 113).
- Among women who had mammography the rate of those with higher education is significantly high, since they are better educated and more aware of the risks. During the past 12 months only 1% and during the last 3 years as little as 3.9% of women with incomplete secondary education had mammography, whereas in the group with higher education the rates were 8.6% and 12.5% correspondingly.
- According to wealth groups the rate is essentially higher in females of quintiles IV and V (4.7-6.3% were examined in the past 12 months and 9.3-11.1% in the past three years).
- The share of women who had mammography in the past 12 months is slightly higher in marz urban areas (5.9%), than in Yerevan (3.8%) and rural settlements (4.0%). However the relative number of women who had mammography in the past 3 years is higher in Yerevan (10.9%) than in other cities (6.9%) and villages (7.7%).

Since mammography is a paid service the survey studied also financial sources (Table 27).

Figure 118. Women aged 15 and older who had mammography, 2016



Table 27. Payment sources for mammography

Mammography history	Payment source					Total
	Paid from own pocket	Insurance	Social package	Other source	Free exam	
In the past 12 months	41.6%	8.2%	38.8%	4.7%	6.8%	100.0%
1-3 years ago	75.4%	0.0%	0.0%	0.0%	24.6%	100.0%
Earlier	80.4%	13.8%	0.0%	0.0%	5.8%	100.0%
Total	48.6%	8.3%	31.4%	3.8%	7.9%	100.0%

As the Table shows

- The proportion of women who paid from their own pocket for mammographic screening declines based on the term: 80.4% of women who had mammography more than 3 years ago, 75.4% -1 to 3 years ago and 41.6% - 12 months ago.
- The decline in the group of women who had mammography 1-3 years ago is due to increase of the number of free screenings (24.6%), and in the group of those who were examined in the past 12 months – payments within the framework of the social package provided by the employer (38.8%) and the insurance payments (8.2%).

The survey revealed that:

- Breast newgrowth was detected in 21.8% of women who had mammography in the past 12 months and 25.4% of those who had the screening 1-3 years ago.

Table 28. Findings of mammographic examinations

Mammography history	Findings of mammography		
	Negative result	Disease not diagnosed	Disease diagnosed
In the past 12 months	0.0	78.2	21.8
1-3 years ago	0.0	74.6	25.4
Earlier	0.0	100.0	0.0
Total	0.0	80.6	19.4

Pap test

Cervical cancer is the second most common cancer among women and most often affects those in the middle age. Nearly half of them are diagnosed with cancer in the age of 35-55. Cervical cancer is rare in young women under 20, and about 20% of cases are detected in women over 65.

Since cervical precancer and early cancer stages do not cause any clinical signs or symptoms, the diagnosis is based on morphological (Pap smear and biopsy) and endoscopic (coloscopy) methods.

Since 2015 women aged 30-59 can undergo free Pap smear at outpatient health clinics of the country.

This policy aims at early detection of precancer, thus preventing development of cancer.

To prevent cervical cancer women aged 30-60 are encouraged to have Pap smear test at least every 3 years.

Figure 119 presents the 2016 HSPA data on coverage of 30-60 years old women in Pap test.

- 13.2% of 15 and older women had Pap test in the past 12 months and 21.4% in the past 3 years.
- 30% of 30-60 old women had Pap test in 2016, which is the threefold of the 2012 rate (10.2%).
- Age-wise, the relative number of women who had Pap test in the past 12 months is significantly higher in the 20-34 (18.8%) and 35-49 (16.1%) age groups.
- Breakdown of age groups who had Pap test in the past 3 years is as follows: 27.4% of 20-34 age group, 31.0% of 35-49 age group and 21.4% of 50-64 age group.
- The share of women who had Pap smear increases along with their education. The coverage of women with incomplete secondary education who had Pap test in the past 12 months is 1.5% versus those who had it in the past 3 years (2.6%). The rate in women with higher education is 21.9% and 33.3% correspondingly.
- The relative number of women who had the test depends on their residence as well. In the past years Pap test was undergone by 23.4% of Yerevan female population, 24% of those living in other cities and 18.1% of rural population.
- In fact the proportion of urban area women who had the test in the past 12 months (17.7%) exceeds the rate in Yerevan (11.6%). The latter is close to the rate in villages (12%).
- According to wealth groups, the share of women who had the test in the past 12 months is higher in quintile V (17.8%). In other quintiles the rate varies within the range of 10.3-13.1%.

The survey studied financial sources used to pay for the test (Figure 120).

Data suggest that

- 36.8% of women had free Pap test at an ambulatory setting, 21.3% within the social package services, 28.3% had the test when visiting the clinic in connection with a disease, and 8.3% during antenatal visits.

A cervical neoplasm was detected in 20.9% of women who had Pap test in the past 12 months and 14.6% of those who had the test 1-3 years ago.

Figure 119. Women aged 15 and older who had Pap test

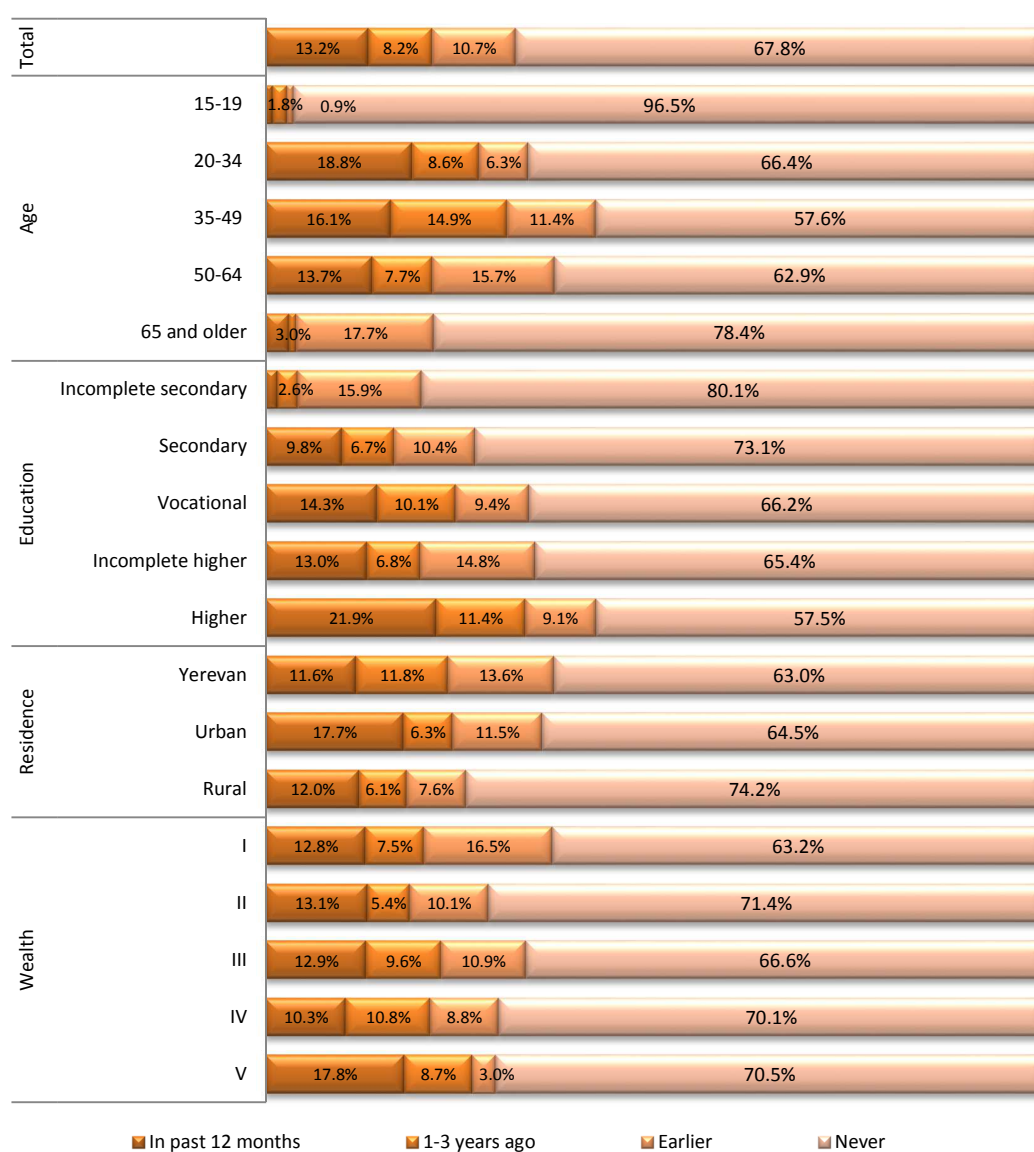


Figure 120. Financial sources used to pay for Pap test, 2016

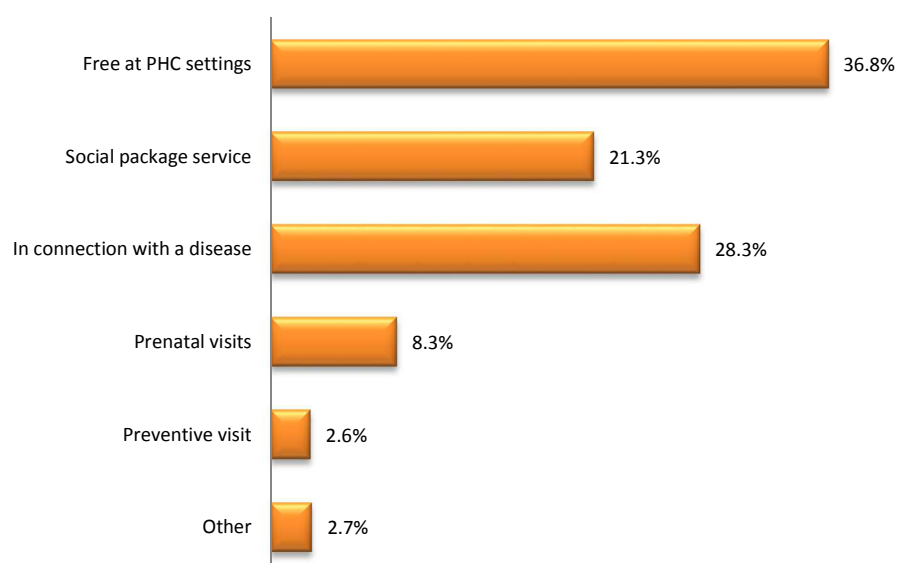


Table 29. Pap test results

Pap test history	Test result		
	Negative result	Disease not diagnosed	Disease diagnosed
In the past 12 months	4.7%	74.4%	20.9%
1-3 years ago	0.0%	85.4%	14.6%
Earlier	0.0%	87.9%	12.1%
Total	4.2%	75.5%	20.3%

Preventive screenings

Fluorography examinations

Data on lung fluorography examinations are presented in Figure 121.

- 16.2% of respondents reported to have fluorography examination in the past 12 months.
- Age-wise proportion of respondents who had fluorography does not vary much. The rate is somewhat higher in the 50-64 age group (18.3% had fluorography in the past 12 months).

- The share of population who had fluorography increases with their educational level. Undergoing fluorography examination in the past 12 months was reported by 11.6% of residents with incomplete secondary education and 20.6% of those with higher education.
- In urban areas 18.9%, in Yerevan 15.6% and in rural areas 15.0% of respondents reported having fluorography in the past 12 months.
- Gender-wise, males who had fluorography in the past 12 months outnumber females (18.1% versus 14.5%).
- As for wealth groups, fluorography in the past one year was reported by 22% of quintile V and 13.4% of quintile I.

During the past 12 months fluorography examinations were performed at the following settings.

- 29.8% at outpatient healthcare facilities within the framework of free screenings,
- 22.3% within social package services,
- 31.9% during a visit in connection with a disease,
- 6.1% within the framework of medical checkup for new conscripts.

A disease was detected in 11.5% of those who had fluorography examination in the past 12 months and 18.4% of those who had examination 1-3 years ago.

Figure 121. Individuals aged 15 and above who had fluorography examination, 2016

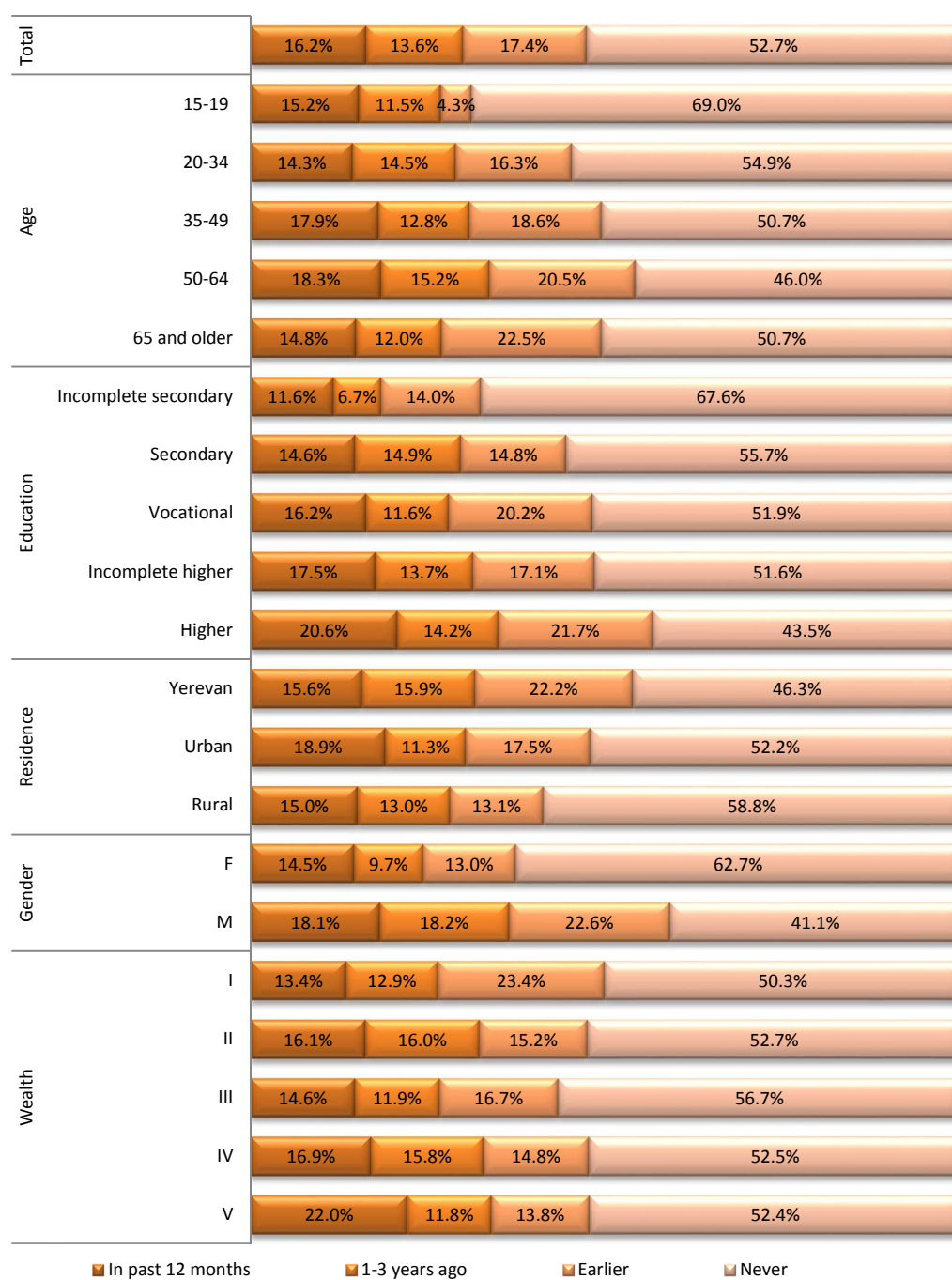


Figure 122. Financial sources of fluorography examination in the past 12 months, 2016

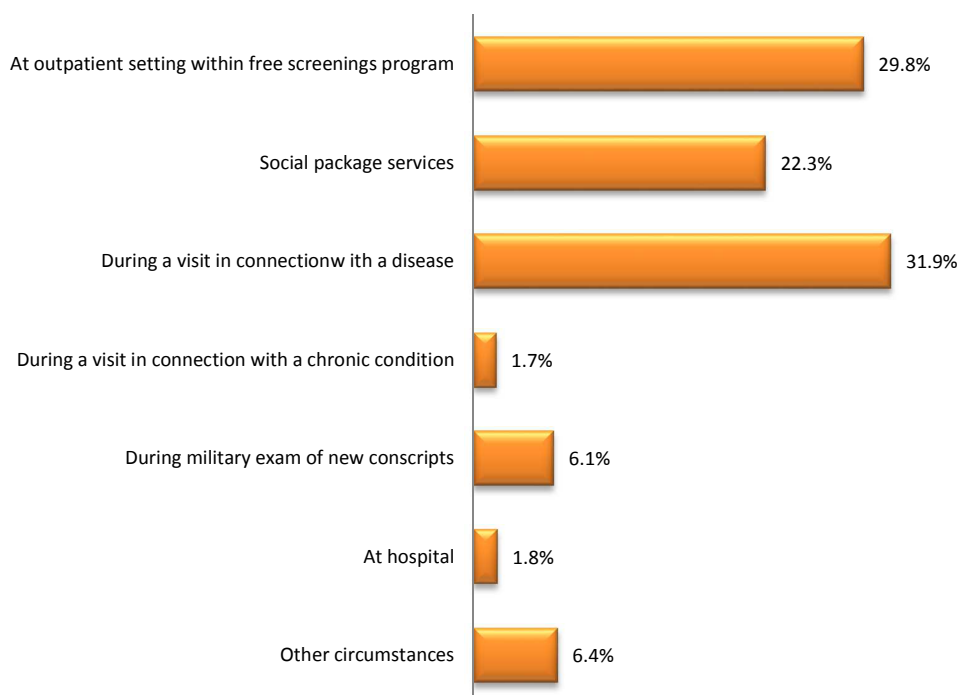


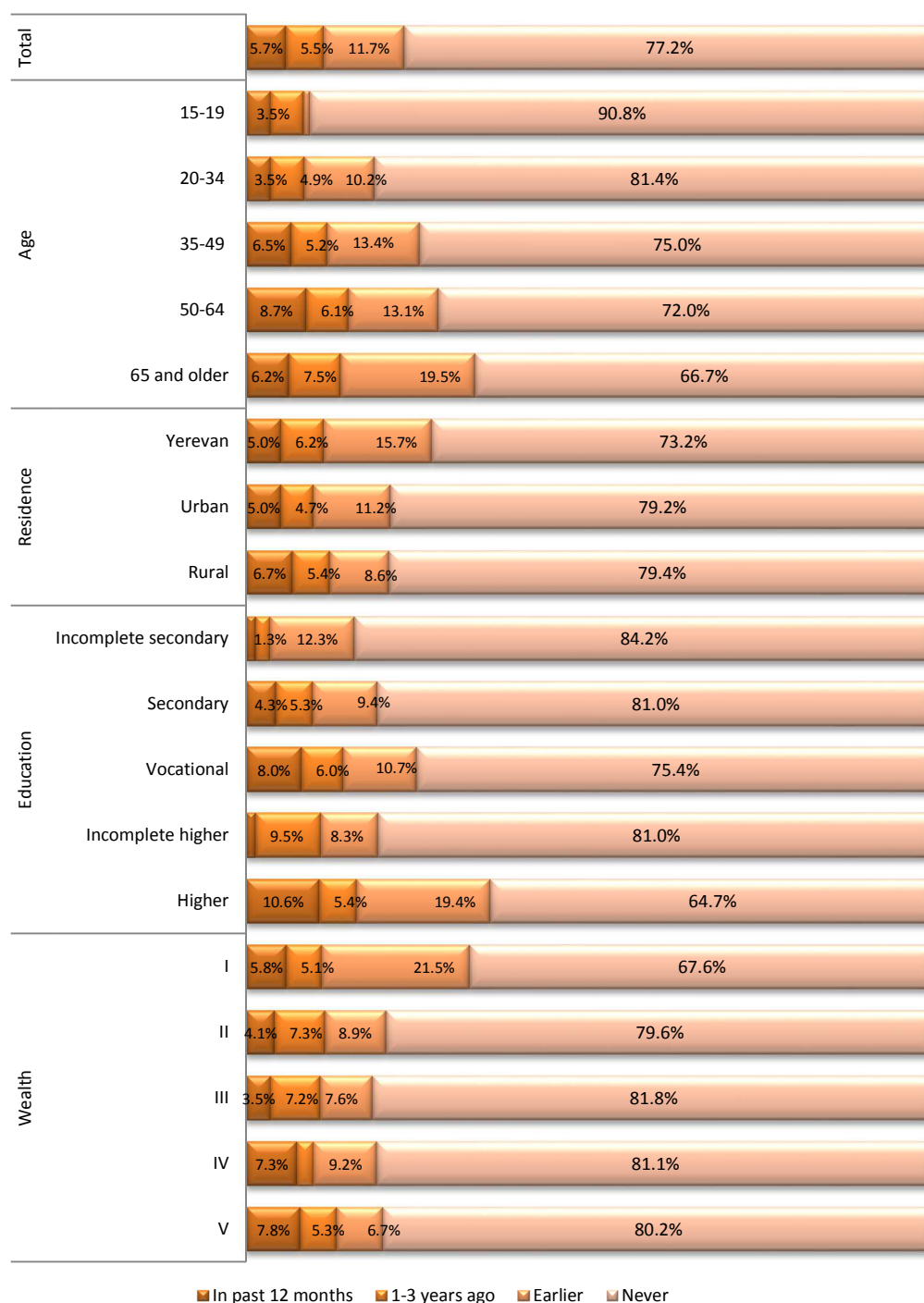
Table 30. Results of fluorography examinations, 2016

History	Test result		
	Negative result	Negative result	Negative result
In the past 12 months	2.9	85.6	11.5
1-3 years ago	2.7	78.9	18.4
Earlier	0.0	89.2	10.8
Total	2.9	85.6	11.5

Prostate ultrasound

Prostate ultrasound in the past 12 months was reported by 5.7% of males aged 15 and above (Figure 123).

Figure 123. Males aged 15 and above who had prostate ultrasound, 2016



According to the data the highest rate of males who had prostate ultrasound in the past 12 months was detected in the 50-64 age group (8.7%).

- The proportion of respondents does not vary much across settlements. However it is slightly higher in villages (6.7%).
- The rate is higher in those with vocational (8.0%) and higher (10.6%) education.
- Wealth-wise, the biggest proportions are in quintiles IV and V (7.3% and 7.8%).

In fact, 44.1% of prostate ultrasound screenings in the past 12 months was performed within the framework of social package services and 41.8% during a visit paid in connection with a disease. At that, 39.5% of these screenings resulted in confirmation of a disease.

Figure 124. Financial sources of prostate ultrasound, 2016

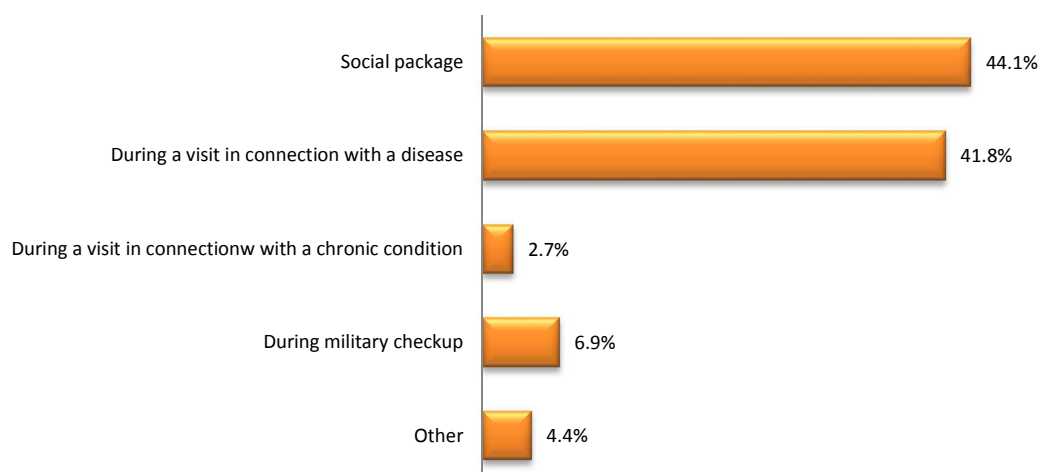


Table 31. Results of prostate ultrasound, 2016

History	Result of the screening		
	Negative result	Disease not diagnosed	Disease diagnosed
In past 12 months	3.5%	57.0%	39.5%
1-3 years ago	0.0%	67.7%	32.3%
Earlier	0.0%	77.2%	22.8%
Total	2.7%	60.9%	36.4%

6. QUALITY OF HEALTH CARE SERVICES

Quality and safety of healthcare services

To assess the quality of healthcare services the chapter looks at the following indicators:

- Detection rates and treatment effectiveness for malignant neoplasms including
 - Breast cancer and
 - Cervical cancer
- Hospital fatality rates

Detecting and treating malignant neoplasms

According to evidence-based medicine 40% of cancers are preventable and treatable. Among them are breast cancer and cervical cancer (BC, CC), which develop in nearly 5-10 years. The probability of cancer treatment increases if detected in early stages. Due to comprehensive BC and CC monitoring programs the number of new cases and the mortality rate due to these two cancers dropped 60-80% in a number of developing countries during the last decade.

Both types of cancer are the lead killers among cancer diseases in women, occupying the first and second places correspondingly. They are most prevalent in women of 35-55 age groups. BC and CC are quite rare in women under 20 and some 30.2% of cases are detected among 65 and older women.

Global rates pinpoint the following BC and CC epidemiology. The annual number of BC incidences is 1 250 000, of which nearly 550 000 with fatal end, and 464 000 incidences of CC with 234 000 fatal ends. Some 8-10% of these diseases are attributed to developed countries (WHO, 2010).

According to 2015 data issued by the National Oncology Centre (NOC) and NHIAC, 30,0% of BC cases were detected at stages III and IV (274 cases), and 60.2% of CC was detected at stages III and IV (153 cases). In addition, 1091 new cases of BC and 257 cases of CC in women beyond the age of 25 were detected.

According to 2012 HSPA mass survey data, 10,2% of Armenian women age 30–60 had cervical tests during 2012, which is well below international cytological screening levels. Successful treatment of cancer strongly depends on the stage at which the disease is detected. Data on detection of cancers per stages of the disease between 2003 and 2015 is presented in Figure 125.

As data witness:

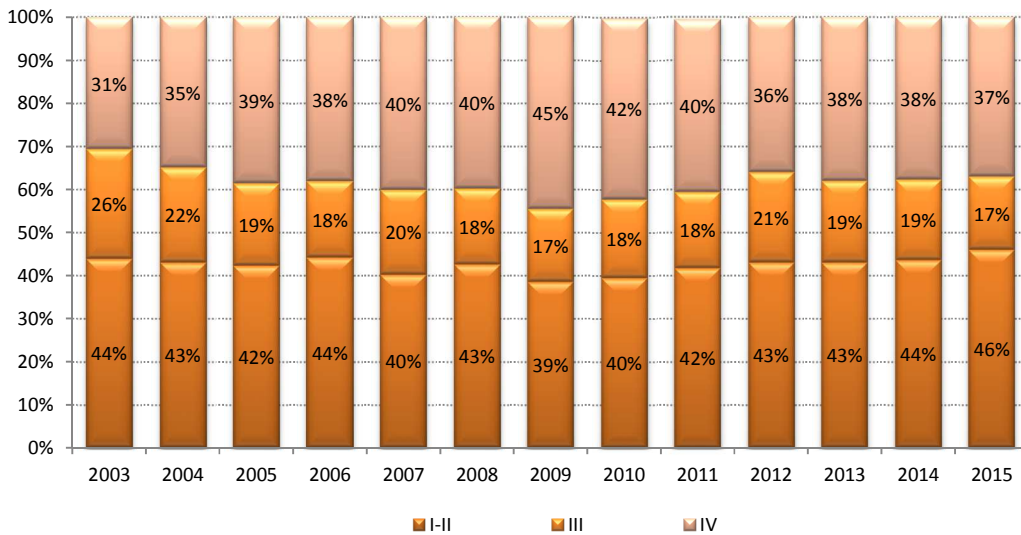
- **There is no progress in early detection of cancer.**

Thus, in 2015 the proportion of cancer detected at stages I-II is 46% and at stages III and IV is 54%.

Hence:

- Early detection of cancers continues to be a serious challenge for 10 years already and requires fundamental interventions in order to improve the situation.

Figure 125. Detection of malignant neoplasms according to disease stage, all cancers, 2003-2015

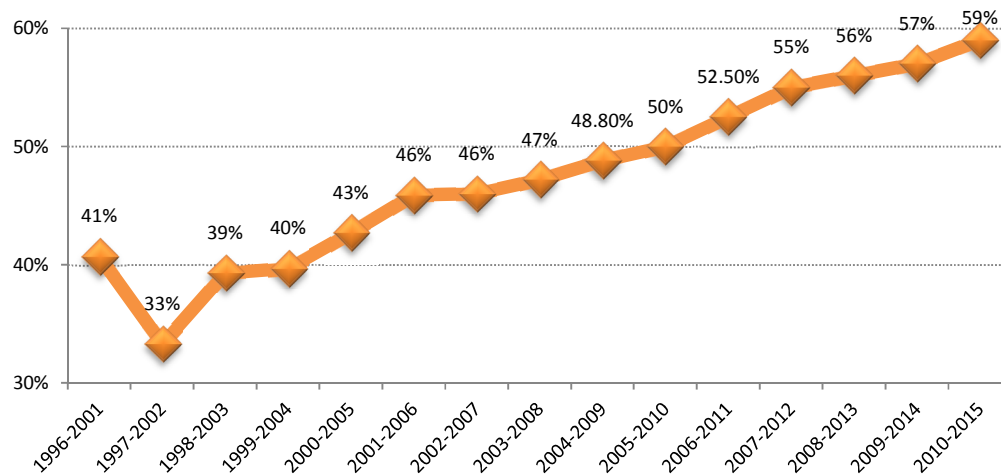


Source: National Oncology Center, 2015

Detection of breast cancer

Breast cancer is one of the types of malignant neoplasm. Statistics of BC is run by the National Oncology Institute. The integral indicator of treatment of malignant neoplasms is the probability of five-year survival after diagnosis of breast cancer. The indicator applies to females (Figure 126).

The Figure shows slow but steady increase of the rate since 2002. The question whether or not this increase can be considered satisfactory is to be answered by relevant specialists.

Figure 126. Five-year survival rate following diagnosis of breast cancer.

Source: National Oncology Center, 2015

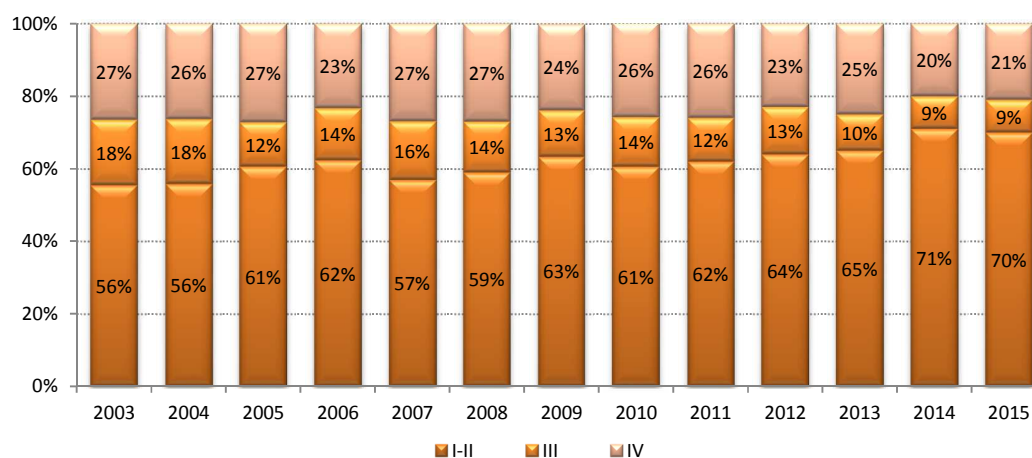
A change in survival rates for cancer can result from transition in the stage at which the disease is detected as well as from changes in the quality of treatment. Figure 127 helps to attribute differences in survival rates specifically to one of these factors. The data above show detection rates for various stages of this cancer type between 2003 and 2015.

As data demonstrate, the stage I and II detection rates for breast cancer went up between 2010 and 2015, hence it could be assumed that

- **The increase of the probability of five-year survival after diagnosis of breast cancer to some extent depends also on the increase of the probability of early detection.**

On the other hand, data speak of an unexplainable periodicity - cancer detection in stages I-II has 3-4 years increase followed by a decline of early detection. In particular, an increase of the detection rate of BC stages I-II was recorded during 2004 - 2006, 2007 - 2009 and 2010-2014 and a decline during 2006-2007, 2009-2010 and 2014-2015.

No explanation is available for this periodicity.

Figure 127. Detection of breast cancer according to stage of disease, 2003-2015

Source: National Oncology Center, 2015

As Figure 127 suggests:

- **There are no grounds to assume a declining probability of late breast cancer detection at stage IV.**

All in all 21 % of breast cancer cases were detected in 2015, versus 27%in 2007, which means an improvement of the detection rate.

Hence it can be concluded that:

- **The increase of the survival rate in women with diagnosed breast cancer should be attributed merely to improvement of the treatment quality.**

Any progress in combating cancer is highly appreciated. Armenia has remarkable potential for improved treatment of breast cancer in women, particularly early detection of the disease. Any new technology is much more expensive when it is just introduced as opposed to the old technologies. Consequently it is believed that improvement in the quality of cancer treatment is coupled with the increase of the costs. Hence, progress in early detection of neoplasms can essentially improve the treatment effectiveness and make it essentially cheaper.

This means that:

- **Financial resources allocated to early detection of cancer can help reducing per patient treatment costs and spending the amount on treatment of a bigger number of patients. Eventually this approach can end up in better results than implementation of new technologies.**

Challenges related to malignancies

According to 1985-2015 statistics the incidence of malignancies in RA population has increased almost 1.8 times (Table 32).

Table 32. Population incidence of malignancies

Year	Number of patients with primary confirmed diagnosis of malignancy enrolled with an oncology clinic		Number of patients under long-term follow-up by oncology clinic at the end of the year	
	AN	RN	AN	RN
1985	4710	140.6	17584	522.0
1987	5119	148.8	20045	578.7
1988	5227	151.0	21228	613.4
1989	5270	150.9	22067	632.0
1990	5162	145.1	20929	588.2
1991	4905	135.7	21787	602.6
1992	4462	121.1	21584	585.6
1993	4586	122.9	21670	580.7
1994	4515	120.5	21709	578.4
1995	4705	125.2	21290	565.3
1996	4757	126.1	20721	548.1
1997	4709	124.4	20602	543.4
1998	5145	135.6	21605	568.8
1999	5415	142.5	22589	593.9
2000	5413	142.3	21972	577.8
2001	5666	149.1	23451	617.1
2002	5737	178.6	24384	759.6
2003	5951	185.3	25580	796.3
2004	6174	192.1	26522	824.7
2005	6396	198.8	26512	823.6
2006	7163	222.4	27963	867.6
2007	7294	226.1	28439	880.4
2008	7336	226.8	28692	886.1
2009	7657	236.1	30117	926.8
2010	7593	233.2	31550	967.0
2011	7858	240.4	32580	995.0
2012	7877	260.5	34400	1136.5
2013	7911	261.8	36660	1215.1
2014	8365	277.6	38918	1292.7
2015	8372	278.6	40862	1362.7

r.n per 100000 population

- Malignancy incidence increases drastically in 35 and older age group and reaches its peak in the 65 and older age group (Table 33).

Table 33. Gender-age breakdown of RA population morbidity of malignancies

Age	2014						2015					
	Number of patients with primary confirmed diagnosis of malignancy, who are enrolled with an oncology clinic						Number of patients with primary confirmed diagnosis of malignancy, who are enrolled with an oncology clinic					
	Total		Males		Females		Total		Males		Females	
	AN	RN	AN	RN	AN	RN	AN	RN	AN	RN	AN	RN
0-14	37	6.4	28	9.1	9	3.3	57	9.7	32	10.2	25	9.1
15-17	16	14.4	9	15.3	7	13.3	15	14.2	10	17.8	5	10.1
18-24	56	16.1	33	19.2	23	13.1	48	14.8	22	13.7	26	16.0
25-34	176	33.6	74	29.2	102	37.8	163	30.8	60	23.5	103	37.6
35-44	402	107.5	123	69.7	279	141.1	369	96.8	106	59.0	263	130.7
45-54	1197	294.0	468	250.4	729	331.1	1166	300.5	472	266.7	694	328.9
55-59	1103	543.6	543	589.6	560	505.4	1131	535.8	603	630.8	528	457.1
60-64	1192	812.5	663	1024.7	529	645.1	1154	746.9	632	929.4	522	603.5
65 and older	4186	1300.4	2277	1783.1	1909	983.0	4269	1310.3	2354	1824.8	1915	973.1
Total	8365	277.6	4218	292.7	4147	263.7	8372	278.6	4291	299.2	4081	259.9

RN per 100000 population

- The prevalence of breast, cervical, uterine and ovary cancers is very high in female population (Table 34).
- Males are mostly affected by tracheal, bronchial, pulmonary, bladder, and prostate cancer (Table 34).
- Moreover, during the recent years stomach and colorectal cancer incidence has increased notably in both males and females which could be attributed to sedentary lifestyle and unhealthy eating patterns (Table 34).

Table 34. Malignancy incidence according to gender and age groups, 2015 (absolute numbers)

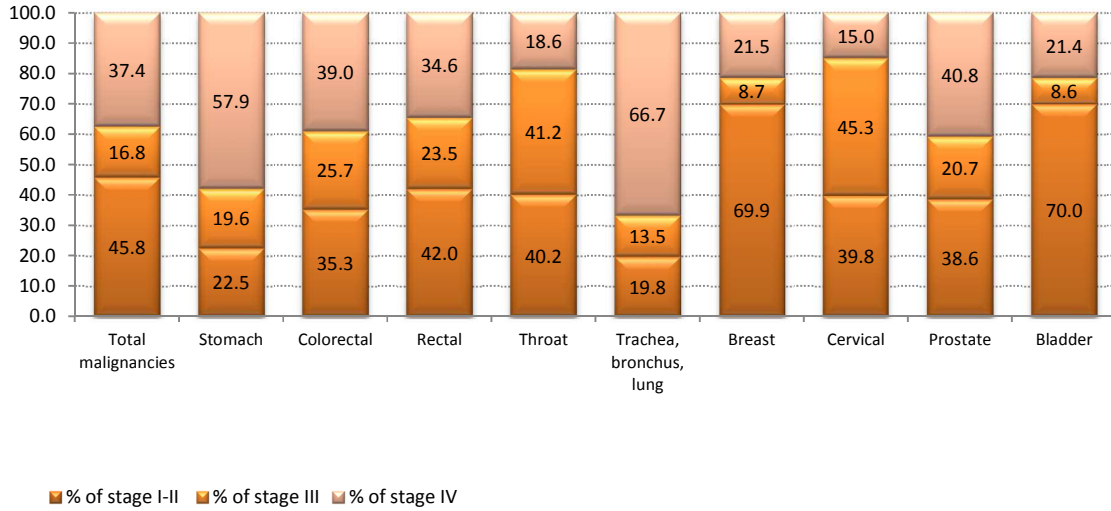
Description	ICD10	0-14	15-17	18-24	25-34	35-44	45-54	55-59	60-64	65 >	Total
Females											
Breast	C50		2	37	107	254	172	158	363	1093	
Cervical	C53			7	43	92	39	30	46	257	
Uterine	C54				8	29	60	48	115	260	
Ovary	C56		2	5	14	49	26	29	76	201	
Trachea, bronchus, lung	C33- C34			3	5	21	19	26	135	209	
Stomach	C16		1	1	4	32	23	29	153	243	
Colorectal	C18			1	2	24	28	35	180	270	
Males											
Trachea, bronchus, lung	C33- C34			2	13	116	173	214	626	1144	
Throat	C32				3	18	22	27	55	125	
Stomach	C16			1	7	49	49	53	221	380	
Colorectal	C18			2	4	25	35	38	160	264	
Liver and intrahepatic bile duct	C22				4	30	32	19	120	205	
Prostate	C61					9	26	36	263	334	
Bladder	C67		2	3	6	34	55	49	245	394	

Table 35. Malignancy prevalence (morbidity), 2015

	ICD 10	AN
Females		
Breast	C50	10032
Cervical	C53	3030
Uterine	C54	1740
Ovary	C56	1145
Trachea, bronchus, lung	C33- C34	269
Stomach	C16	574
Colorectal	C18	1307
Malignant lymphoma	C81-90, C96	907
Males		
Trachea, bronchus, lung	C33- C34	1564
Throat	C32	1129
Stomach	C16	1403
Colorectal	C18	1090
Prostate	C61	1160
Bladder	C67	2131
Malignant lymphoma	C81-90, C96	1154

- More than 63,4% of lung and stomach cancer cases are detected at stage IV, and only 15-17% at stage III. This means that nearly 80% of cases are diagnosed at late stage, which explains the treatment effectiveness and survival rates.

Figure 128. Detection of malignancies according to nosologies and stages, 2015

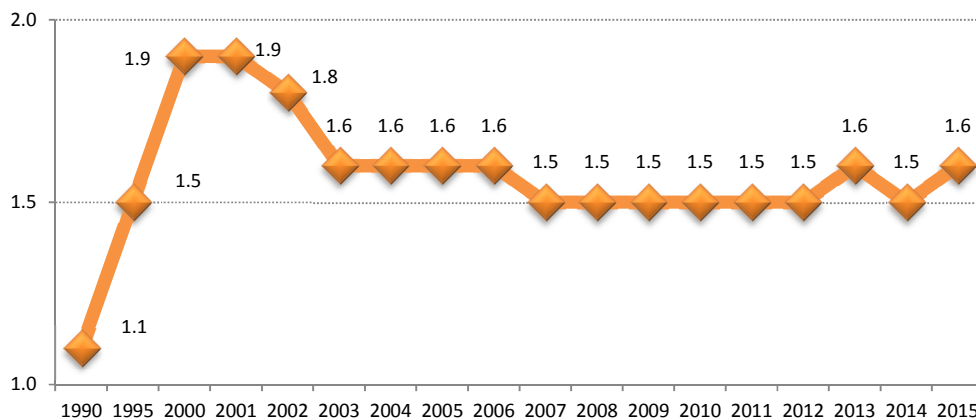


Hospital fatality

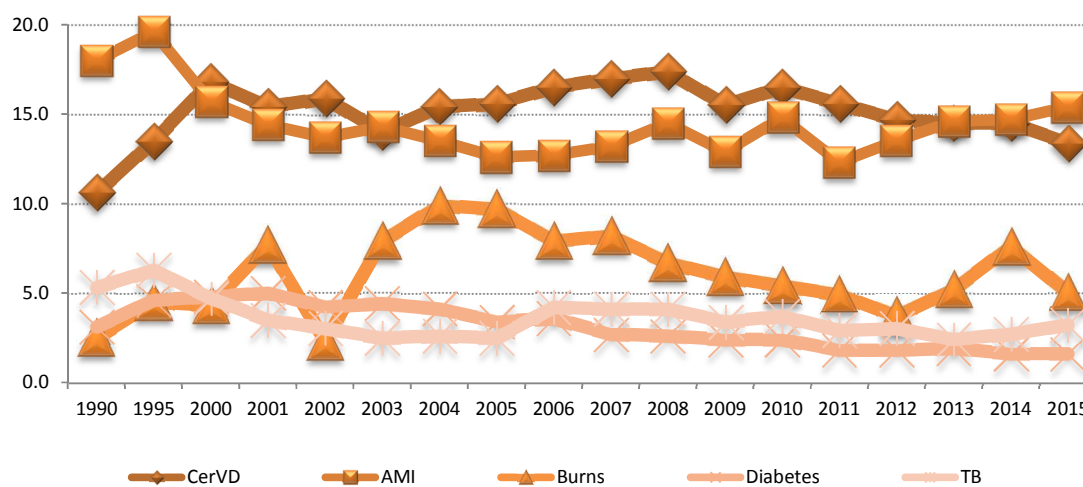
Total rate of hospital fatality and rates for each disease describe the quality of hospital care organization and delivery.

Total rate of in-hospital fatality for the period covering 1990-2015 is presented in Figure 129. The data show a steady decline of hospital fatality between 2001 and 2015, which speaks of improved hospital care organization and quality.

Figure 129. Hospital fatality rate per 100 admissions, all cases, 1990, 1995 and 2000-2015



Source: NHIAC, 2015

Figure 130. Hospital fatality rate per 100 admissions, selected conditions, 1990, 1995 and 2000-2015

CerVD – cerebrovascular diseases, AMI – acute myocardial infarction

Source: NHIAC, 2015

Analysis of hospital fatality per selected diseases (Figure 130) leads to the following conclusions.

- A decline tendency of hospital fatality due to CerVD is recorded between 2008 and 2015.
- An increase tendency of hospital fatality due to burns is recorded between 2012 and 2015.
- A decline tendency of hospital fatality due to TB is recorded between 2006 and 2015.
- No decline tendency of hospital fatality due to diabetes is recorded.

Quality of maternity and child healthcare services

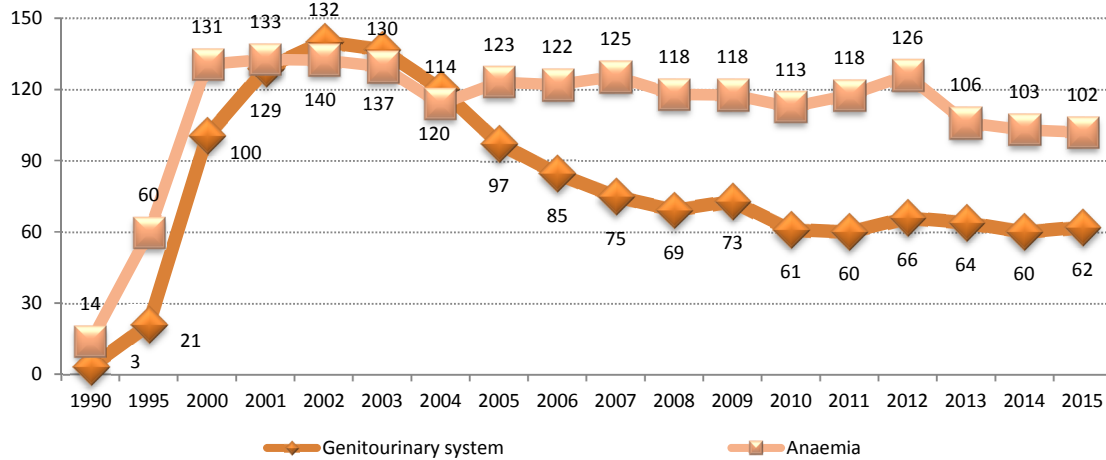
Two groups of indicators are monitored to assess the quality of health care services delivered to women and children, namely

1. Indicators of natal and postnatal complications, including rates of caesarean sections;
2. Indicators of postnatal care, breastfeeding and immunization.

Natal and post-natal complications

Between 2010 and 2015 the prevalence of essential natal and postnatal complications related to genitourinary system and anemia are almost steady (Figure 131).

Figure 131. Rates of selected natal and postnatal complications per 1000 deliveries, 1990, 1995 and 2000-2015



Source: NHIAC, 2015

These data pinpoint important specifics. Despite the decline of these rates between 2002 and 2010, they stay very high compared with the level of 1990.

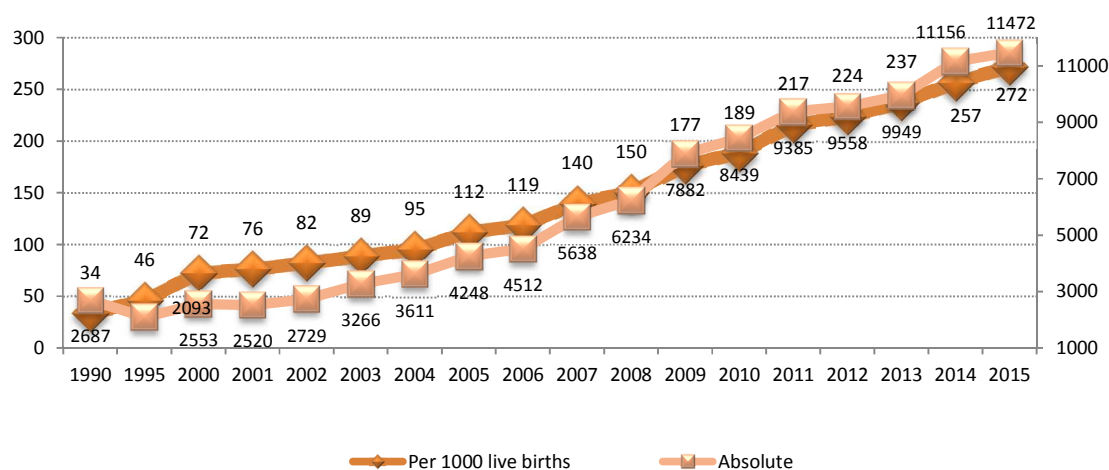
In particular, the rate of anemia in 1990 covered 14‰ of the number of births, whereas of genitourinary system complications shared as little as 3‰.

The National Maternal and Child Health Care Strategy for 2003–2015 set a target of reducing complications from anemia by 50% by 2015, but the target is not expressed explicitly and no baseline is designated.

Caesarean sections

The rate of caesarean sections in Armenia increases firmly. It reached 272 per 1000 births in 2015. The total number of sections was 11 472 (Figure 132).

Figure 132. Caesarean sections, rate per 1000 live births and absolute number, 1990, 1995 and 2000-2015



Source: NHIAC, 2015

It is well-known that postnatal complications are more common in caesarean sections. In addition, after caesarean section women are advised by physicians to plan the next birth in 2 - 3 years. Hence

- **Reduction of the number of caesarian sections in Armenia is a strong leverage contributing to the increase of the number of births.**

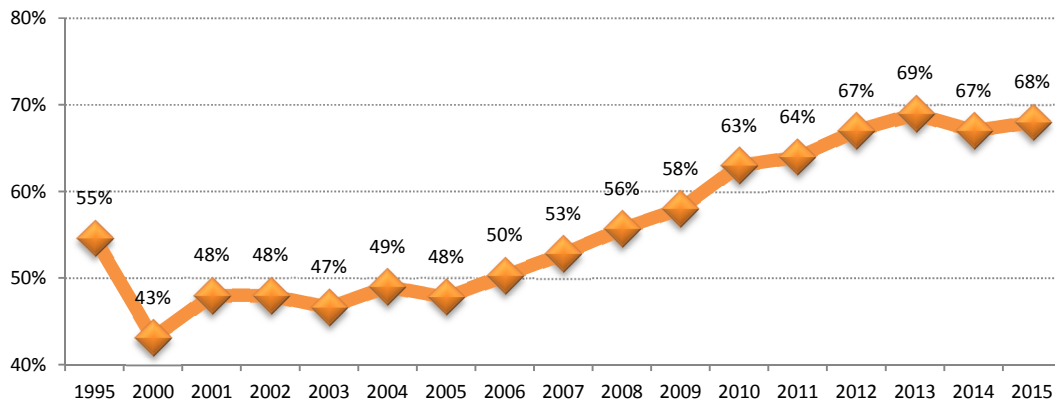
Maternal and child health care

The core indicators for the quality of maternal and child health care services address:

- Early coverage of prenatal care
- Breastfeeding rate
- Child immunization

Early coverage of prenatal care: This rate showed steady growth between 2005 and 2013, but is still below the target of 90% defined in the National of Maternal and Child Health Strategy for 2003–2015. The rate of early coverage of prenatal care is lower compared with that recorded back in 1995 – 55% (Figure 133).

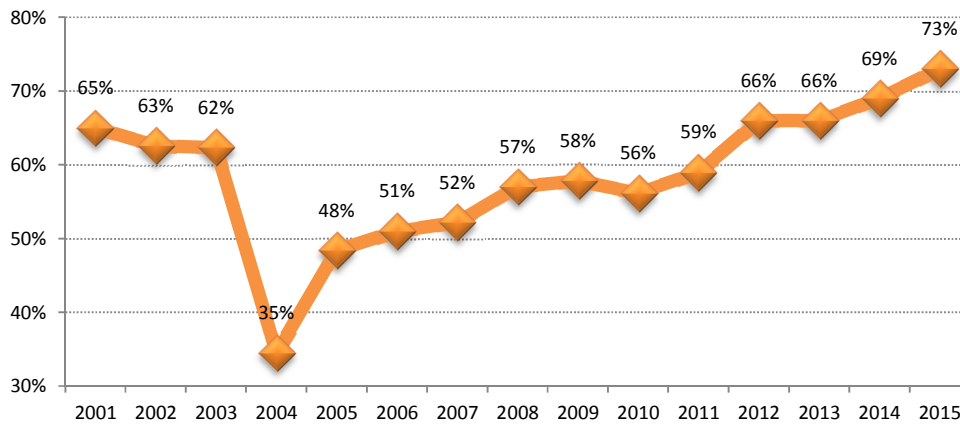
Figure 133. Proportion of expectant mothers receiving early prenatal care (prior to 12 weeks), 1995, and 2000-2015



Source: NHIAC, 2015

Breastfeeding coverage: The National of Maternal and Child Health Strategy for 2003–2015 envisages “ensuring by 2009 that 65% of infants under 4 months and 40% of infants under 6 months are exclusively breastfed and maintain the continuity throughout the second year of the child’s life.” Between 2010 and 2015 the rate increased significantly - from 59% to 73% (Figure 134).

Figure 134. Percent of Armenian infants 0–6 months old who are breastfed, 2001-2015



Source: NHIAC, 2015

7. RESPONSIVENESS OF HEALTH SYSTEM

Any health system should, in addition to population strengthening and improvement, strive to reach two other vital and socially desirable goals. First is 'responsiveness' or 'friendliness' (which means that health system should promptly meet people's expectations). Second is 'fairness', meaning that the health system should respond equally to everybody. Strengthening of responsiveness includes two components (a) showing respectful attitude to the patient and (b) consumer orientation.

Of two health systems better responsiveness is demonstrated by the one that

1. Provides more information to the patients;
2. Has medical staff providing explanations to the patients on their condition/disease in a clear and comprehensible manner;
3. Dedicates sufficient time to the patient encouraging to ask questions to the doctor;
4. Involves the patient in decisions on his/her treatment;
5. Has conversations with health care providers without other people overhearing;
6. Ensures privacy of the patient during medical examinations;
7. Ensures information about the patient is kept confidential;
8. Gives the patient a possibility to choose health care provider (place or person);
9. Has enough space and a clean facility;
10. Has short travel times and convenient access to health care facilities;
11. Has short waiting times for consultations and interventions;
12. Has respectful and polite staff.

Different societies practice different definitions for health system responsiveness, depending on cultural specifics.

Responsiveness of health care system is covered by 8 domains inquiring for the above-listed aspects of care. The domains include two groups: one containing domains showing **attitude towards an individual** and the other includes domains **orienting users of health system**.

The first group of domains includes

1. **Dignity:** showing respectful attitude to the patient. Did health care providers show respect for patients, and were physical examinations conducted in a private setting?
2. **Communication:** the nature of communication with the patient. Did health care providers explain to the patient his or her situation, diagnostic tests and treatments? Did the doctor give the patient an opportunity to ask questions and discuss matters of concern related to the disease?
3. **Autonomy:** Did health care providers adequately explain the treatment options? Were patient opinions considered in deciding-making on the course of treatment?

4. **Confidentiality:** Did the patient feel assured that his or her medical history was kept confidential?

The second group includes the following domains:

5. **Adequate quality of basic amenities:** Does the health facility have basic conditions and facilities?
6. **Prompt attention.** Does the facility react promptly to the patient's requests?
7. **Possibility of choice:** Is the person or patient given a possibility to choose the health facility and/or provider.
8. **Social support:** Can the patient receive social support during the treatment?

To assess the health system responsiveness domains WHO has developed questionnaires for each domain.

These measures of responsiveness pertain only to users of health care services, meaning those who access services. Therefore for the general assessment of the health system responsiveness the following indicators were used:

- Access to healthcare services,
- Confidence in health care system,
- General satisfaction with health care services.

Below domains were assessed during HSPA survey conducted in 2016.

1. Dignity/respect
2. Communication
3. Confidentiality
4. Autonomy
5. Adequate quality of basic amenities

Figure 135. Health system responsiveness domains on inpatient and outpatients levels, 2012, 2016

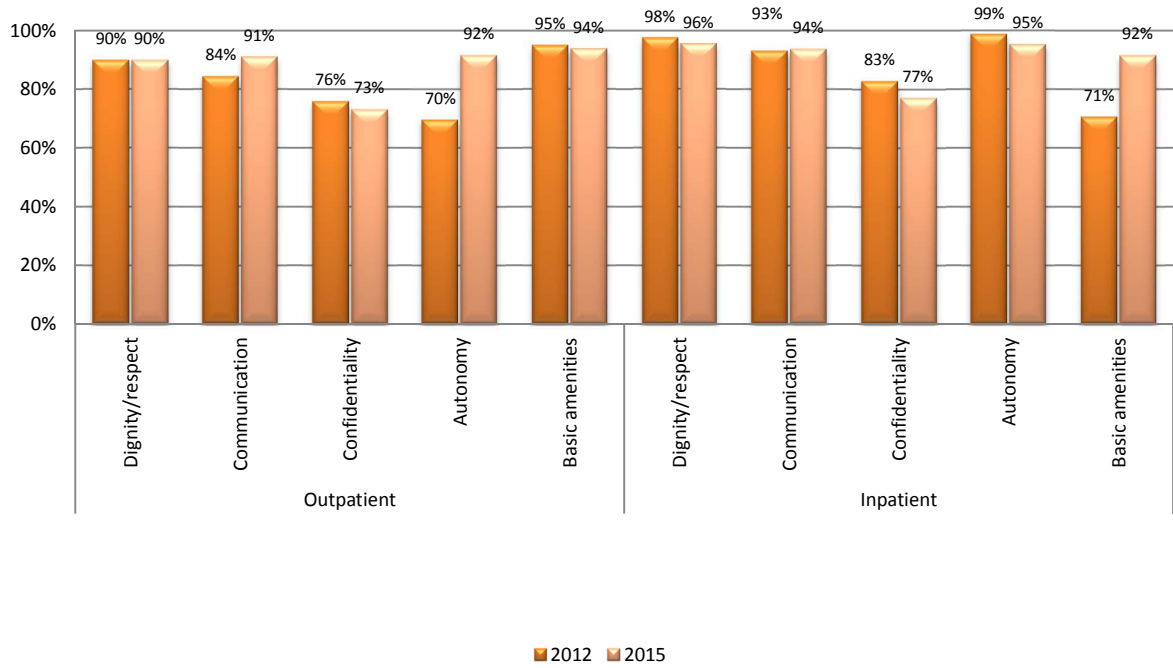


Figure 136. Health facility responsiveness domains on PHC and hospital levels according to residence, 2012, 2016

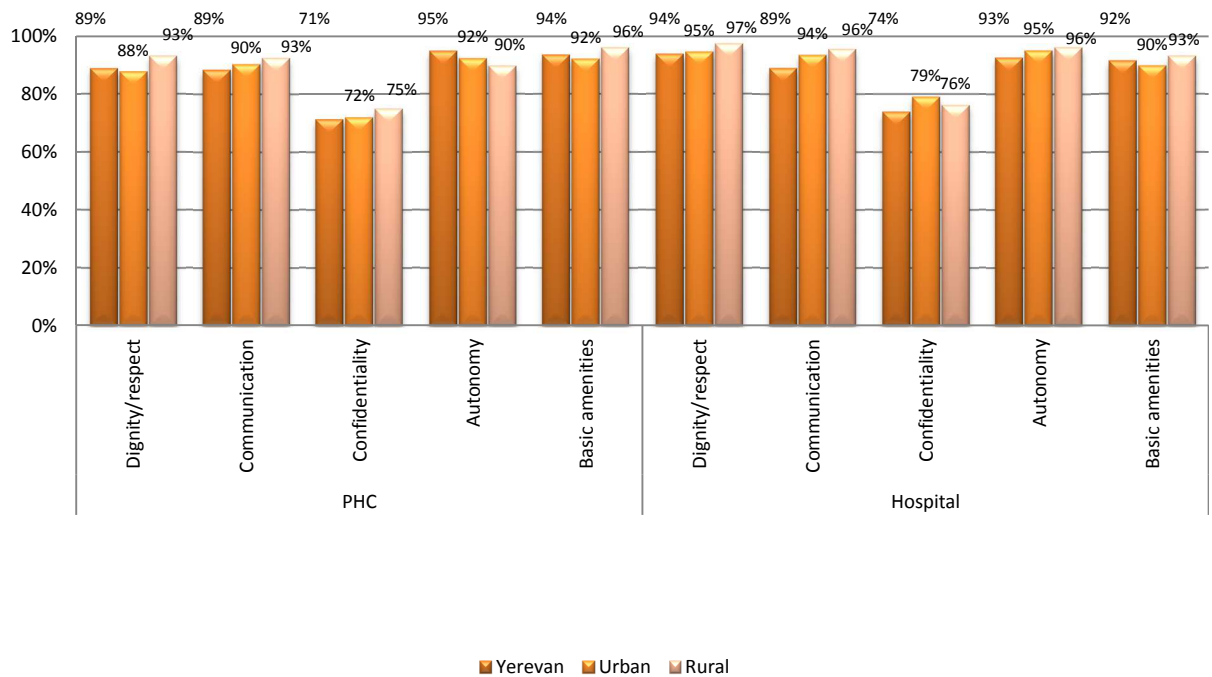


Figure 137. Health facility responsiveness domains at Yerevan PHC and hospital sites, 2012, 2016

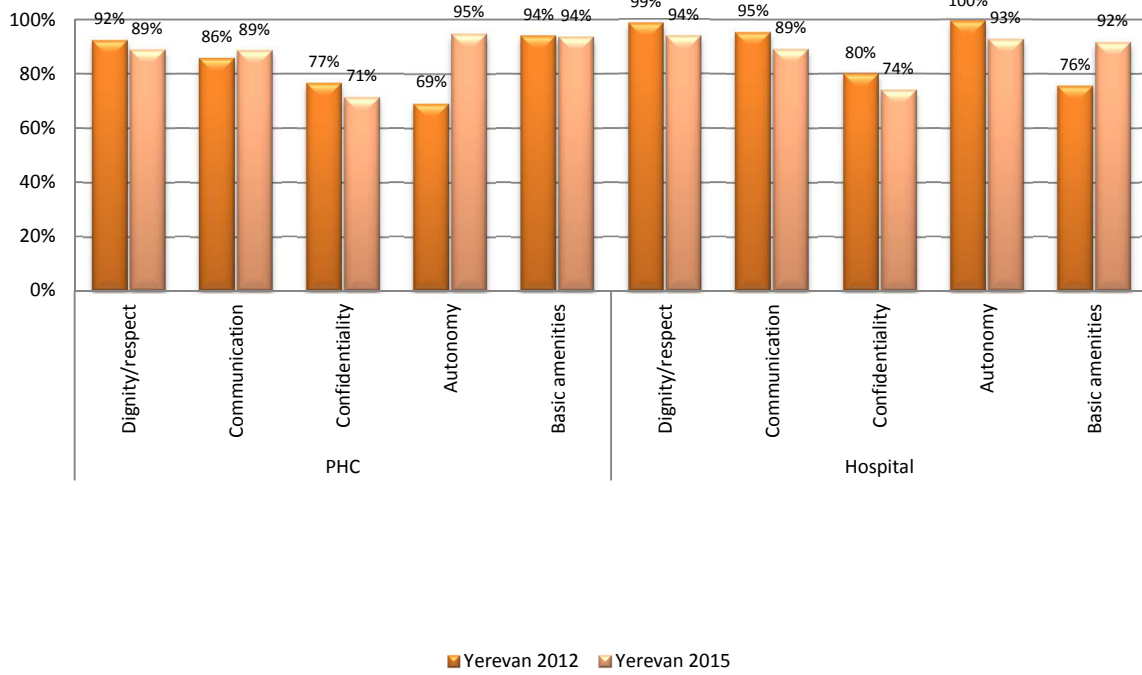


Figure 138. Health facility responsiveness domains at PHC and hospital sites of marz cities, 2012, 2016

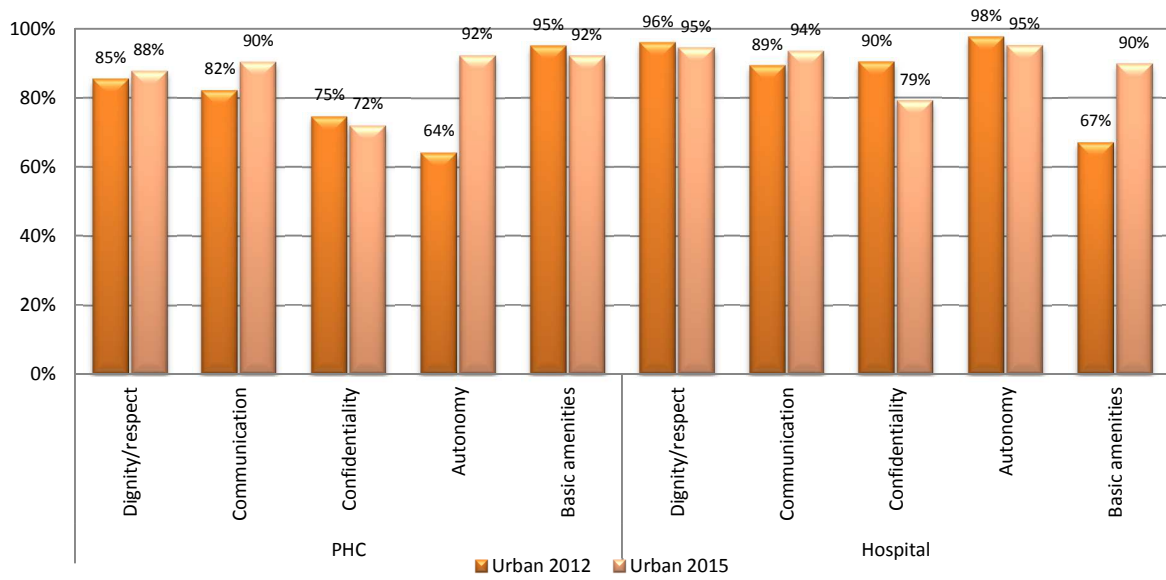
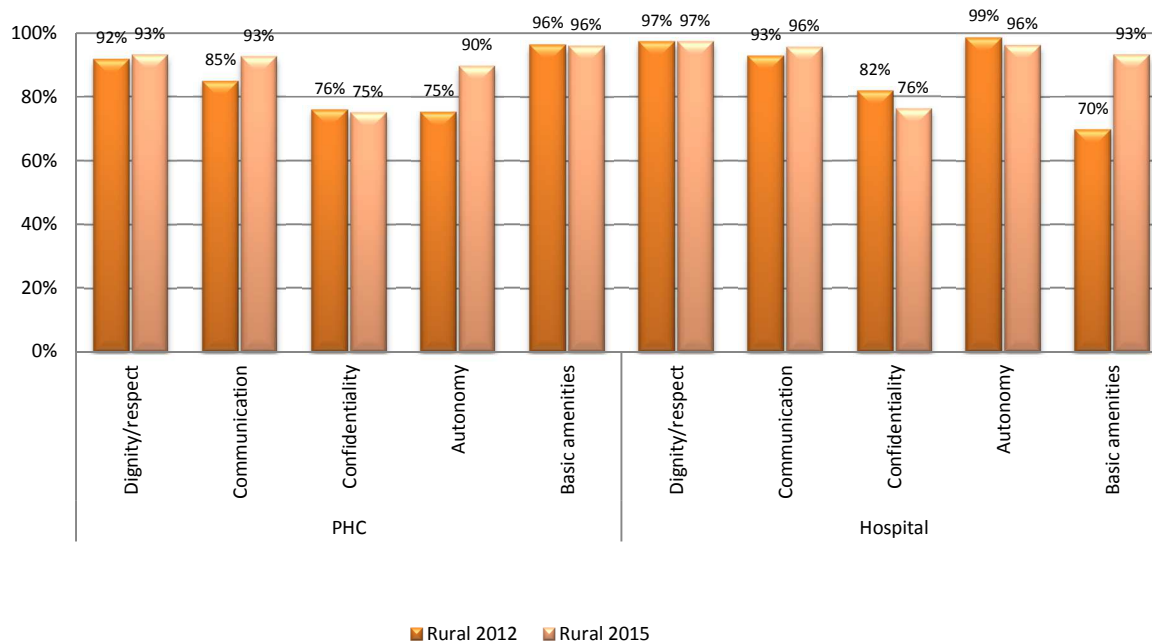


Figure 139. Health facility responsiveness domains at PHC and hospital sites of marz villages, 2012, 2016

8. HEALTH SYSTEM HUMAN RESOURCES

Health system professional workforce is the cornerstone of healthcare service delivery, quality of medical services and management of health system.

Assessment of health system human resources serves several goals, including evaluation of health planning and monitoring efforts, as well as health policy, programs and interventions. Existence of reliable information is critical for development and management of health system human resources.

The *Resource Management/Creation* function of the health care system deals with proper training of health personnel, their continuing education, professional development, availability of specialists, as well as their adequate breakdown and sufficient number to meet workforce needs of health care facilities.

Recently the World Health Organization Regional Office for Europe has adopted a number of decrees (EUR/RC57/R1, EUR/RC59/R4) to address problems of health system human resources. They suggest member states ways to improve management of information on health workforce, to draft and approve strategies on development of human resources.

The Health System Human Resources Development Strategy and Action Plan were approved by the RA Government session decision No 5 of 6 February 2014. This document describes actions targeted at development of human resources strategy.

Health system development and delivery of quality medical services to the population require professional education and continuing development of healthcare specialists.

International practices demonstrate that continuing professional development contribute to improvement of the quality of medical services, reduction of morbidity and mortality rates and improvement of other health indicators.

Given the above and the fact that continuing professional development a key precondition for delivery of quality health services, not harming the patient and duly addressing health problems, Armenia also introduced the aforementioned system, which was facilitated by a number of amendments and additions to the acting legal framework. In particular, the following laws and regulations were adopted: Law HO 113-N 'On Amendments and Addenda to the RA Law on Population Medical Assistance', 'On Amendments and Addenda to the RA Code on Administrative Offences' and 'On Amendments and Addenda to the RA Law on State Duty'. A chapter was added in the Law HO 113-N 'On Amendments and Addenda to the RA Law on Population Medical Assistance' (Chapter 3.2), which defines principles of organization of the continuing professional development (CPD), the order of collecting CPD credits, organizations implementing various types of CPD, key requirements to accreditation, health providers were clear separated in accordance with their educational attainment and activities.

The section reflects on key challenges of health system workforce (doctors and nurses), training of doctors and nurses, continuing professional education and upgrading, workforce availability, their concentration and demand. The Chapter of Health System Human Resources encompasses trends reflected in the HSPA 2009 and beyond.

Education of health system human resources

Professional education of healthcare human resources in Armenia is provided by Yerevan State Medical University (YSMU) and five private higher education medical institutions. Vocational education of secondary medical workforce is performed by 20 secondary medical vocational institutions (12 public and 8 private).

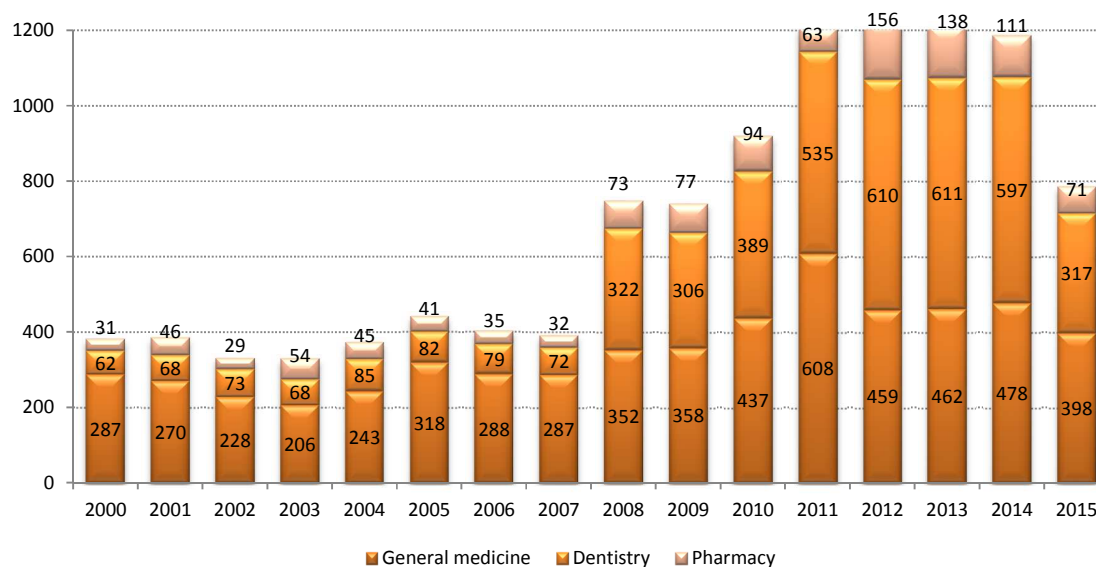
Table 36. The number of higher and secondary medical educational institutions in Armenia, 2010-2015

		2010	2011	2012	2013	2014	2015
Higher educational institutions	Public	1	1	1	1	1	1
	Private	6	6	6	6	5	5
	Total	7	7	7	7	6	6
Secondary educational institutions	Public	12	11	11	11	11	12
	Private	10	10	11	12	13	8
	Total	22	21	22	23	24	20

Source: NSS, 2015

The number of graduates from public and private higher medical institutions is presented in Figure 140, Tables 37 and 38. The data suggest an increase of graduates of dental specialties during the recent years. On the other hand, since 2010 the number of active dentists decreases in parallel, which may be due to migration to other CIS countries, particularly Russia where the demand of dentists is bigger, coupled with better payment and wider professional upgrading opportunities.

Figure 140. Number of graduates of higher public and private medical educational institutions according to specialties (data on private institutions are presented for 2008-2015 only)



Source: NSS, 2015

Table 37. Number of graduates of public higher medical educational institutions according to specialties, 2010-2015

Specialty	Total						Of them females					
	2010	2011	2012	2013	2014	2015	2010	2011	2012	2013	2014	2015
General medicine	284	344	295	294	305	277	153	197	124	165	246	188
General medicine in armed forces	33	33	39	31	23	10	-	-	-	-	-	-
Dentistry	132	-	250	265	219	115	55	-	74	87	115	83
Pharmacy	58	-	99	96	63	41	39	-	28	37	52	33
Public health						10						3
Total	507	377	683	686	610	453	247	197	226	289	413	307

Table 38. Number of graduates of private higher medical educational institutions according to specialties, 2010-2015

Specialty	Total						Of them females					
	2010	2011	2012	2013	2014	2015	2010	2011	2012	2013	2014	2015
General medicine	120	231	125	137	150	101	53	142	100	35	93	54
Dentistry	257	535	360	346	378	202	160	279	185	68	145	99
Pharmacy	36	63	57	42	48	30	34	34	24	15	40	25
Healthcare	90	-	-	-	-	-	73	-	-	-	-	-
Total	503	829	542	525	576	333	320	455	309	118	278	178

Source: NSS, 2015

In mid-1990s the healthcare system possessed a rather significant manpower potential (39 doctors per 10,000 population), who until 2002 were mainly educated by the YSMU - the only higher educational institution performing accredited diploma medical education. In 1990-1999 the annual number of graduates of all specialties varied from 600 to 700 and that of the secondary medical personnel from 1200 to 2500.

From 2004 education of medical specialists stepped up involving accredited public and private medical educational institutions. Particularly, during 2006-2014 YSMU produced 5090 graduates, in 2015 a total of 786 people graduated from all public and private medical higher educational institutions.

In 2012 private higher educational institutions accounted for 683 graduates, while in 2015 their number reached 453, which means that in the past 3 years the number of graduates of all specialties has increased nearly 1.5 times. At that, the number of graduates of private higher educational institutions has decreased 1.6 times.

In 2015 YSMU provided 57.6% of graduates from higher educational institutions. According to specialties, 25.4% of graduates were from dentistry and 61.1% from general medicine department. Significant proportion (60,7%) of graduates of private higher educational institutions were dentists.

Table 39. Number of graduates of secondary public vocational institutions according to specialties, 2010-2015

Specialty	Total						Of them females					
	2010	2011	2012	2013	2014	2015	2010	2011	2012	2013	2014	2015
Nursing	1480	1282	890	895	796	1079	1469	1211	882	888	782	1058
Midwifery	831	698	553	433	417	490	819	696	553	432	390	489
Pharmacy	579	483	480	478	503	548	506	436	434	413	428	494
Dental prosthesis	370	328	309	402	418	380	115	3	27	5	35	18
Therapeutic cosmetology	83	21	42	57	96	92	83	21	42	56	94	92
Organization of nursing	36	150	185	104	204	179	34	146	184	91	195	171
Therapeutic massage	34	14	14	16	28	19	14	8	5	5	10	5
Total						18						18
Nursing	3413	2976	2473	2385	2462	2805	3040	2521	2127	1890	1934	2345

Source: NSS, 2015

Table 40. Number of graduates of secondary private vocational institutions according to specialties, 2010-2015

Specialty	Total						Of them females					
	2010	2011	2012	2013	2014	2015	2010	2011	2012	2013	2014	2015
Nursing	59	86	50	91	59	80	58	86	50	88	59	79
Midwifery	74	70	35	70	68	30	74	64	35	70	68	30
Pharmacy	25	60	75	152	148	74	14	53	64	130	130	70
Dental prosthesis	22	37	57	162	83	88	-	1	2	10	6	1
Therapeutic cosmetology	-	21	27	34	47	61	-	21	27	34	47	61
Organization of nursing	-	-	-	-	-	-	-	-	-	-	-	-
Therapeutic massage	-	-	-	-	-	-	-	-	-	-	-	-
Total	180	274	244	509	405	333	146	225	178	332	310	241

Source: NSS, 2015

Comparison with international data and analysis show that in 2014 Armenia stood no competition with neighboring and European Region countries as regards training of doctors (Figure 141). The number of dentistry graduates in Armenia exceeds 10 times that of other countries (Figure 142).

Figure 141. Number of graduate doctors of higher educational institutions per 100 000 population, selected countries and country groups, 2014

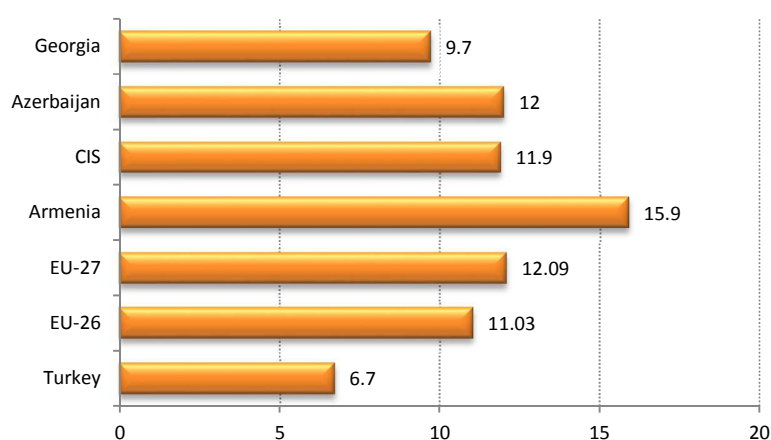
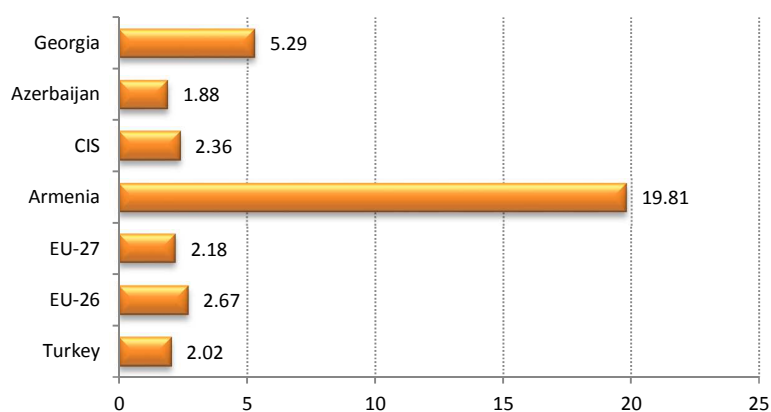


Figure 142. Number of graduate dentists per 100 000 population, selected countries and country groups, 2014



Source: 'HFA-DB, WHO, 2015

Breakdown of active health workforce

Gender breakdown of health workforce

Health care system of Armenia like those of European Region countries (where women share 60-70% of health workforce) is genderized. The number of male and female doctors has increased between 2014 and 2015: males by 80 and females by 135 (Figure 143).

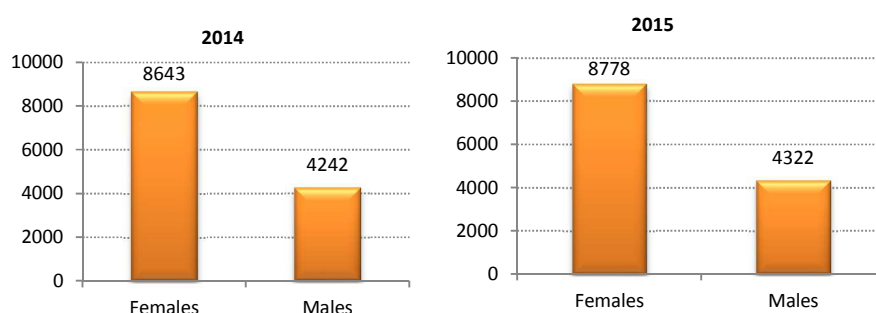
- **Women comprise 67% of health workforce in Armenia.**

Gender and profile breakdown of health workforce suggests that women make the overwhelming majority (95%) of therapeutic and 10-38% of surgical profiles (Table 41). In the surgical profile proportion of female proctologists is 8,1%, female surgeons 11,7% and of female anesthesiologists –

resuscitation specialists 38,9%. Gender-wise breakdown is even among dentists of general care and surgical profiles. Besides, the number of dentists (therapeutic and surgical profile) dropped by 41 between 2013 and 2015.

- **Women share 95-97% of paramedical staff.**

Figure 143. Gender breakdown of workforce, 2014 versus 2015



Source: NHIAC, 2015

Table 41. Gender and specialty breakdown of workforce, 2013-2015

Specialty	2013			2014			2015		
	Total	Females	%	Total	Females	%	Total	Females	%
General practitioners (FD, DT, pediatricians), of which	2414	2216	91.8	2365	2163	91.5	2365	2161	91.4
- Family doctors	703	616	87.6	682	602	88.3	680	609	89.6
- District therapists	959	884	92.2	960	872	90.8	966	862	89.2
- Pediatricians	752	716	95.2	723	689	95.3	719	690	96.0
Obstetricians - gynecologists	947	749	79.1	934	754	80.7	914	750	82.1
Surgeons	590	61	10.3	573	69	12.0	512	60	11.7
Anesthesiologist – resuscitator	496	187	37.7	508	208	40.9	440*	171	38.9
Proctologists	31	4	13.0	31	5	16.1	37	3	8.1
Dentists	1319	706	53.5	1292	690	53.4	1278	522	40.8
- Pharmacists	228	80	35.1	232	180	77.6	225	176	78.2
Nurses									
Nurses of all specialties, of which	13768	13711	99.6	13712	13650	99.5	13249	13151	99.3
-midwives	1300	1300	100.0	1307	1307	100.0	1245	1238	99.4
-feldshers	105	52	49.5	95	55	57.9	96	42	43.8
-dental prothesist	188	8	4.3	176	10	5.7	136	6	4.4
Pharmacists	124	118	95.2	133	130	97.7	116	111	95.7
- sanitary doctors and assistants to epidemiologists	476	455	95.6	362	352	97.2	337	326	96.7

*Except for intensive therapists

Source: NHIAC, 2015

Dynamics of the number of doctors and nurses and the doctor-nurse ratio

To ensure accurate analysis of acting health workforce, and their geographic and professional breakdown, the patterns and trends of 2001-2015 NHIAC data were perused.

According to 2015 data the absolute number of workforce (doctors and nurses) employed at public, private, academic, research, higher and secondary vocational educational institutions was 30,749 and the absolute number of doctors including all specialties (dentists inclusive) was 13,117 (44 per 10 000 population), which compared with 2011 is less by 373 – i.e. 13 490, (41 per 10 000 population), and for nurses by 852 – i.e. 17,632 in 2015 (58.8 per 10 000 population).

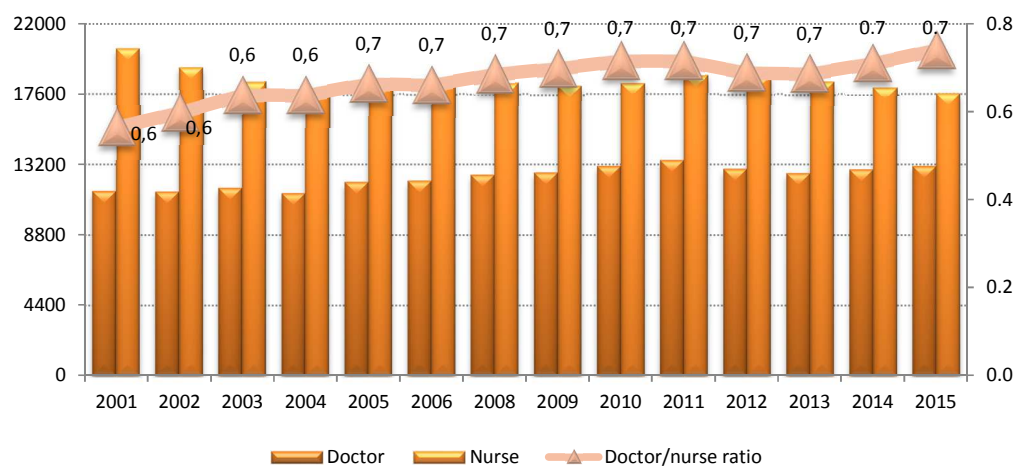
Table 42. Active health workforce, 2005-2015 (private dental clinics included)

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Doctors of all specialties (including dentists)	12307	12388	12251	12964	13177	13591	13490	12922	12664	12896	13117
Nurses	18364	18574	18595	18594	18516	18649	18484	18784	18426	18053	17632
Total	30671	30962	30846	18594	31693	32240	31974	31706	31090	30949	30749
Number of hospitals	145	140	135	130	127	130	130	129	129	130	132
Number of hospital beds (thousand)	14.4	14.3	13.1	12.4	12.1	12.1	12.2	12.2	12.3	12.5	12.5
PHC settings	458	460	467	474	487	504	506	513	514	509	504
Pharmacists	143	157	163	176	204	214	199	176	228	232	225
Pharmacologists	113	118	121	124	125	129	137	130	124	133	116

Source: NHIAC, 2015

The number of nurses ranged between 18,181 and 18,820 from 2009 to 2011. At that, from 2012 onward their number declined (Figure 144). Starting from 2011 a decline of the number of doctors of all specialties and from 2015 – an increase by 221 was recorded.

According to the Armenia Health System Optimization Concept, an increase of doctor/nurse ratio was expected. The latter showed stable level (0,74) between 2010 and 2015.

Figure 144. Number of active doctors and nurses, doctor-nurse ratio, 2001-2015

Source: NHIAC, 2015

Breakdown of doctors and nurses across marzes

As mentioned earlier, as of 2015 the number of doctors of all specialties (dentists included) was 13,117 (44 per 10 000 population), and of nurses 17 632 (58.8 per 10 000 population).

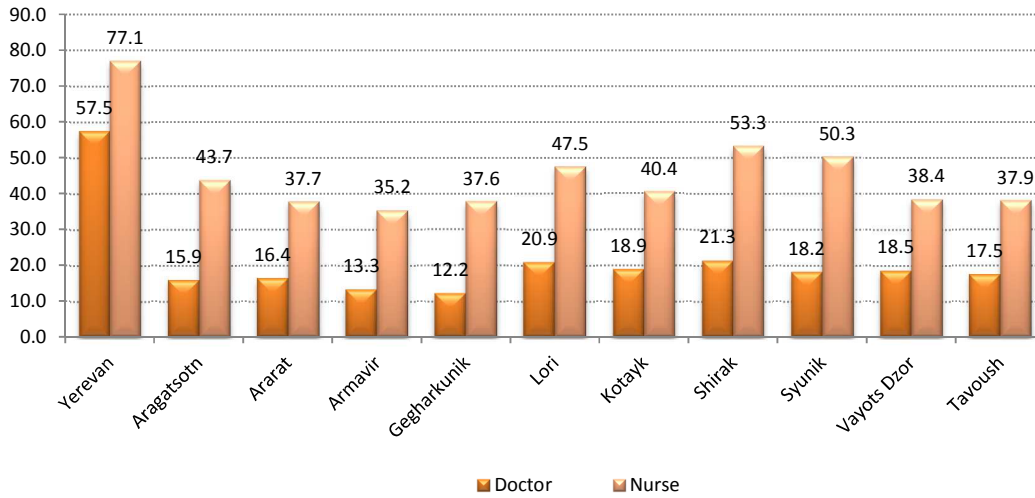
According to 2015 HSPA, the number of PHC doctors was 5208 (17.37per 10 000 population) and of nurses 7777 (26 per 10 000). The number of hospital doctors was 4275 (14.26 per 10 000 population) and of nurses 8616 (28.73 per 10 000). This implies that concentration of active doctors is 31.62 and of nurses 56.7.

In fact, the concentration of healthcare professionals was assessed on the basis of the number of active doctors and nurses.

The overall concentration of active physicians for Armenia differs greatly across the capital city and peripheries. In 2015 the number was 57,5 per 10000 population in Yerevan (Figure 145) and only 21,3 in marzes (Shirak marz). The lowest rates are seen in Gegharkunik (12,2 per 10 000 population) and Armavir (13,3).

Breakdown of active nurses, both outpatient and inpatient, is also uneven. Here again the situation is better in Yerevan (77.1 per 10 000 population) and much worse in marzes (Figure 145).

Figure 145. Concentration of inpatient and outpatient healthcare workforce per 10 000 marz population, 2015

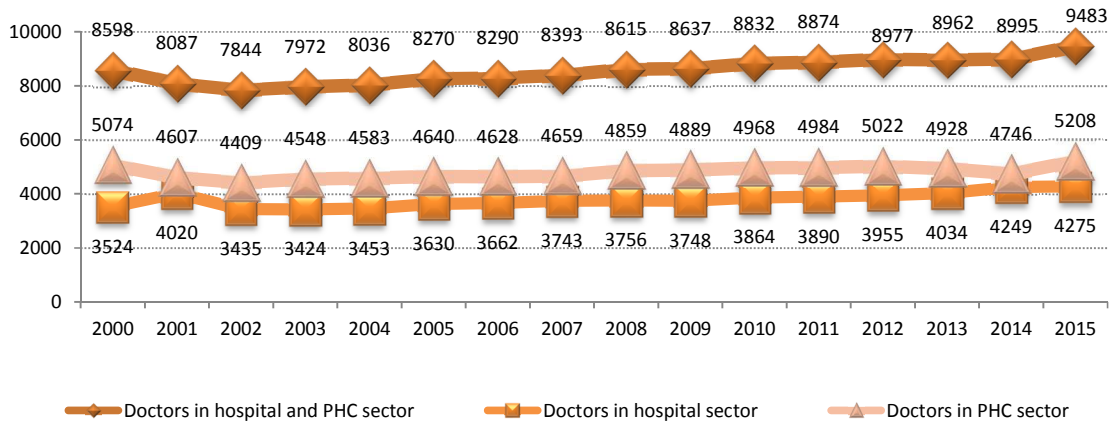


Source: NHIAC, 2015

Workforce breakdown between outpatient and inpatient levels

According to the Armenia Health System Optimization Concept breakdown of workforce across inpatient and outpatients settings declined during 2000-2001 by 511 doctors and 685 nurses, where 90% of doctors were from PHC (from 5,074 in 2000 to 4,607 in 2001, i.e. by 467 doctors).

Figure 146. Numbers of PHC and hospital doctors, 2000-2015



Source: NHIAC, 2015

From 2002 onward the PHC and hospital doctors' reduction tendency was replaced with that of an annual increase, except for 2014. In 2015 their number reached 5208 (Figure 146).

Concentration of doctors per main specialties and professional profiles

Concentration of PHC and hospital health workforce per population as well as main specialties and profiles during the recent years is presented in Table 43.

Between 2011 and 2015 the concentration of pediatricians and general practitioners decreased by 201, family doctors by 81 and pharmacists by 26. The supply of dentists declined during this period by 510.

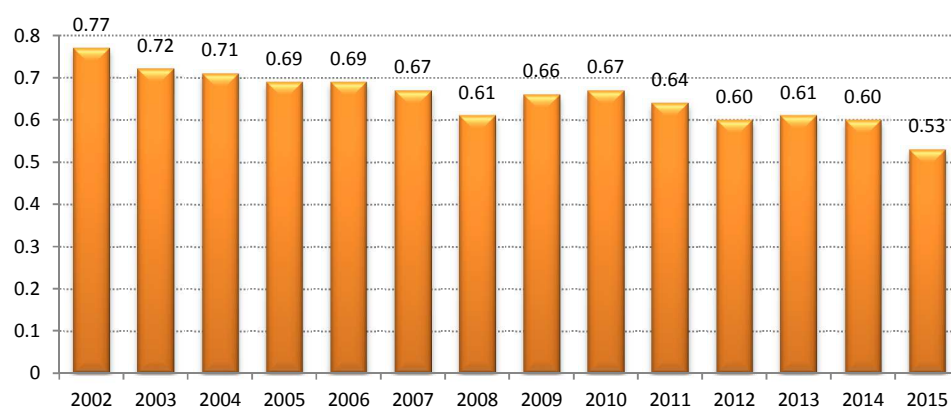
Table 43. Concentration of doctors and nurses of main specialties, 2011 - 2015

Specialties/profiles	Absolute figures		10 000 population		Absolute figures		10 000 population	
	Absolute figures	10 000 population	Absolute figures	10 000 population	Absolute figures	10 000 population	Absolute figures	10 000 population
General practitioners (FD, DT, pediatricians)	2566	7.9	2414	8.0	2365	7.8	2365	7.9
- family doctors	761	2.34	703	2.33	682	2.26	680	2.3
- district therapists	1026	0.32	959	4.12	960	4.13	966	4.2
- pediatricians	779	2.4	752	10.89	723	10.47	719	10.4
Dentists	1788	5.5	1319	4.37	1292	5.56	1278	4.3
Pharmacists	199	0.6	228	0.8	232	1.0	225	0.8
Nurses								
- Nurses of all specialties, of which	11388	35.0	13768	45.6	13712	59.0	13249	44.2
- midwives	1335	2	1300	16.2	1307	16.5	1245	16.0
- feldshers	128	0.6	105	0.3	95	0.4	96	0.3
-pharmacists	137	0.4	124	0.4	133	0.6	116	0.4

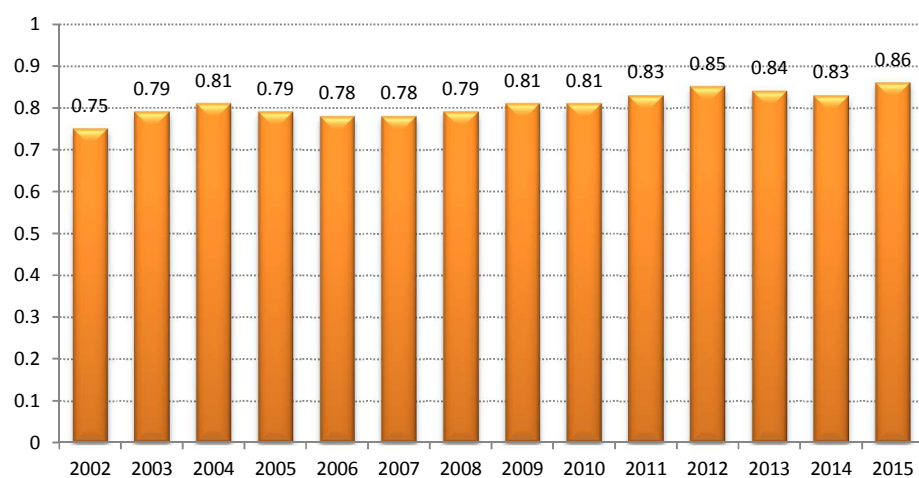
Source: NHIAC, 2015

The ratio of active PHC general practitioners to narrow specialists decreased between 2002 and 2015 from 0.77 to 0.53 (Figure 147).

Figure 147. Ratio of PHC general practitioners (district therapists, pediatricians and family physicians) to narrow specialists, 2002-2015



Source: NHIAC, 2015

Figure 148. Ration of active nurses to active physicians in primary health care settings, 2002-2015

Source: NHIAC, 2015

Table 44. Number of PHC doctors per specialties and profiles, 2004-2015 (changes of 2015 versus 2004)

Specialty	2004	2005	2007	2008	2009	2010	2011	2012	2013	2014	2015	2015/2004
Doctors	4583	4640	4650	4859	4889	4868	4984	5022	4928	4746	5208	1.13
Narrow specialists	2679	2746	2777	3023	2953	2916	3058	3123	3070	2952	3405	1.27
General practitioners: DT, FD	1904	1894	1873	1836	1936	1952	1926	1899	1858	1794	1803	0.95
District therapist	938	917	872	821	768	754	723	730	700	684	681	0.73
District pediatrician	824	813	700	651	589	550	518	511	505	473	473	0.57
Family doctor	115	127	282	354	573	648	685	658	653	637	649	5.64
Nurse	5667	5889	5988	6122	6006	6023	5984	5908	5811	5687	6075	1.07
Obstetrician	531	535	547	552	543	536	525	533	517	496	502	0.95

Source: NHIAC, 2015

The number of primary care providers increased 1.13 times between 2004 and 2015 (Table 44). The number of graduates from dental and pharmacy departments increases annually. During the last decade the number of graduates of dental department increased 3.9 times and of pharmacy department 1.7 times (Table 45).

Table 45. Number of graduates of dental and pharmacy departments of public and private higher educational institutions, 2000-2015

Year	Dental department	Pharmacy department
2000	62	31
2001	68	46
2002	73	29
2003	68	54
2004	85	45
2005	82	41
2006	79	35
2007	72	32
2008 ⁹	322	73
2009	306	77
2010	389	94
2011	535	63
2012	610	156
2013	611	138
2014	597	111
2015	317	71

Source: NSS, 2015

The number of active dentists increased 2,6 times (from 834 to 2180) between 2000 and 2015 (Table 46), followed by 1.4 times decrease from 2011 to 2015. The number of pharmacists increased from 80 to 225 or 2,8 times (Table 47).

Table 46. Number of dentists according to profiles, 2000-2015

Year	Dentists Therapists and surgeons Total	Dentists Therapists	Dentists Surgeons
2000	834	659	175
2001	614	498	116
2002	594	474	120
2003	780	610	170
2004	884	682	202
2005	1171	969	202
2006	1254	1066	188
2007	1177	954	223
2008	1755	1508	247
2009	1987	1711	276
2010	2180	1843	337
2011	2097	1788	309
2012	1782	1460	322
2013	1606	1319	287
2014	1629	1292	337
2015	1606	1278	328

Source: NHIAC, 2015

⁹Data on graduates of YSMU dental and pharmacy departments are presented for the period 2000-2007 and from 2008 data of 6 private higher educational institutions were included as well.

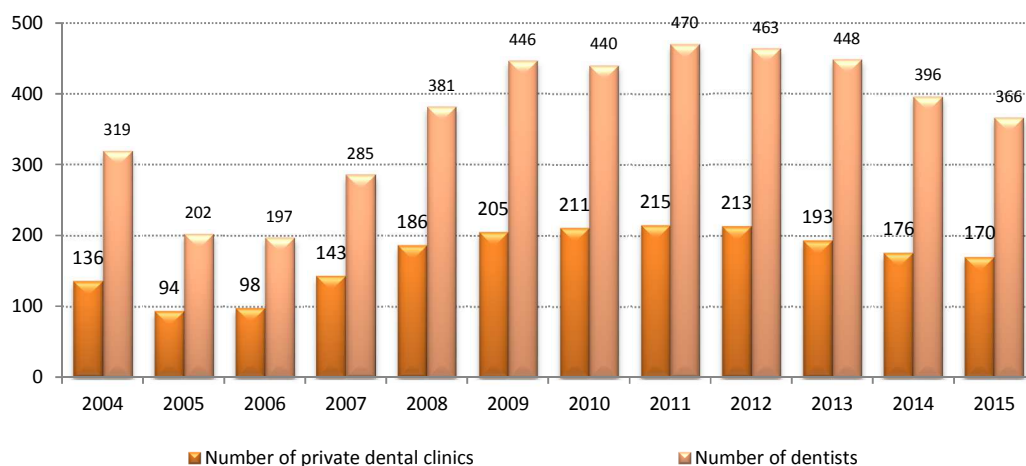
Table 47. Number of inpatient and outpatient pharmacists, 2000-2015

Year	PHC and hospital pharmacists ¹⁰
2000	80
2001	121
2002	142
2003	125
2004	133
2005	143
2006	157
2007	163
2008	176
2009	204
2010	214
2011	199
2012	176
2013	228
2014	232
2015	225

Source: NHLAC, 2015

The number of dentists is linked to the number of dental polyclinics (Figure 149). The latter increased between 2004 and 2012 followed by a decline tendency (Figure 150).

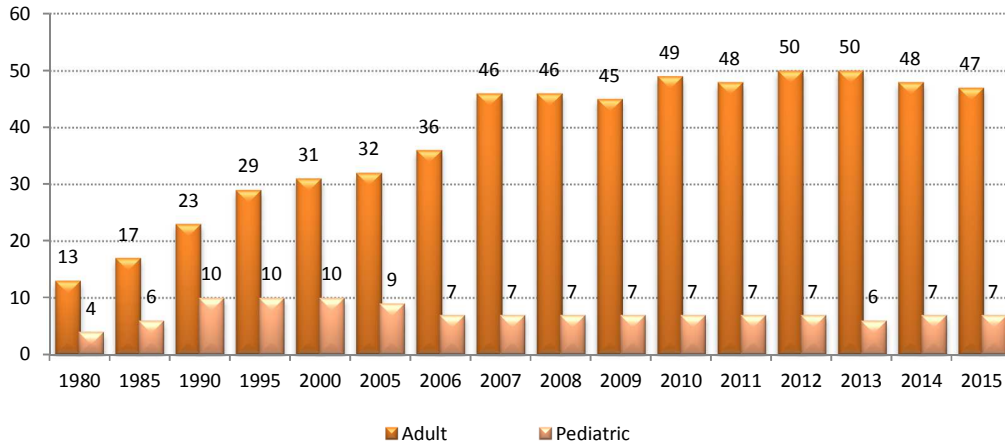
Figure 149. Number of private dental clinics and dentists, 2004-2015



Source: NHLAC, 2015

¹⁰There are no data on pharmacists employed in pharmacies.

Figure 150. Number of adult and pediatric independent dental polyclinics, 1980-2015



Source: NHIAC, 2015

General practitioners of PHC

Health system job vacancies for doctors

Along with education and training of physicians in Armenia, the country nonetheless faces job vacancies for health practitioners. The dynamics of vacancies for doctors between 2003 and 2016 can be divided into three phases (Figure 151).

- The number of vacancies for doctors of different specialties has increased 1,4 times between 2003 and 2006 (361 versus 512).
- The absolute number of vacancies decreased 1.3 times between 2007 and 2012.
- And again, between 2012 and 2016 a 1,5 times increase was recorded.

Figure 151. Job vacancies for doctors, 2003-2016

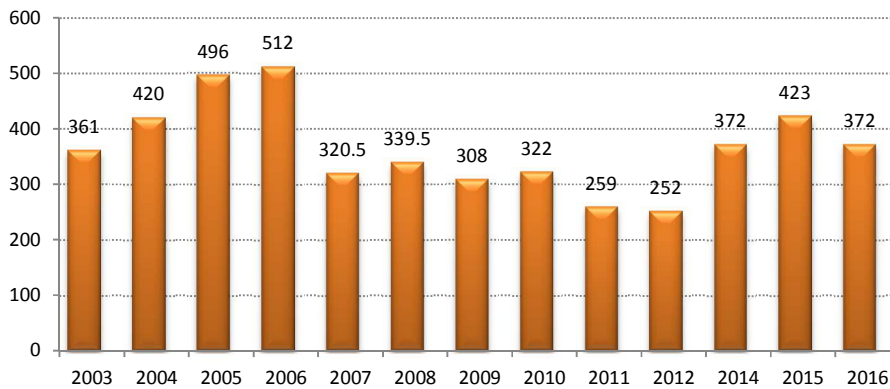
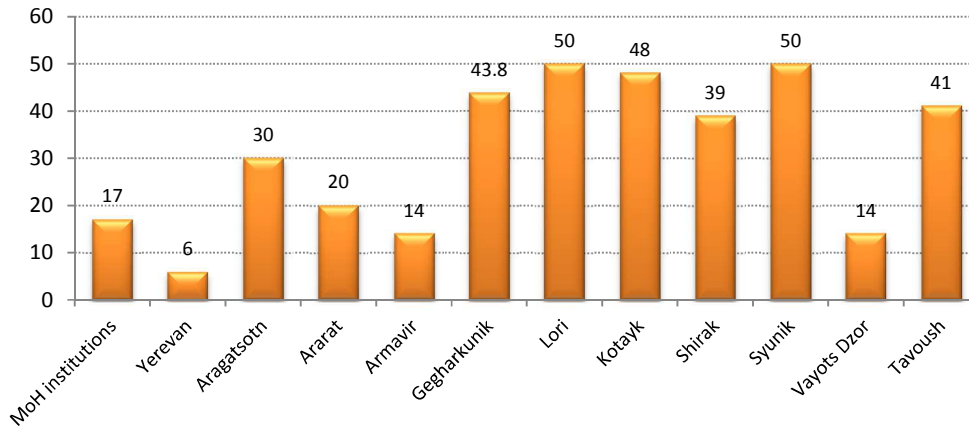


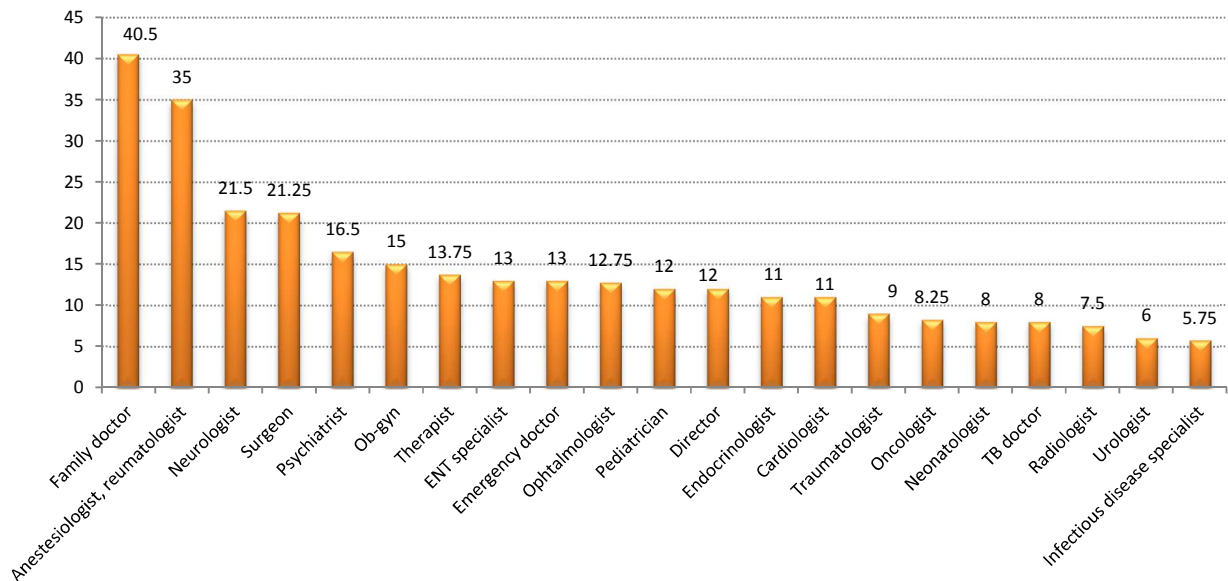
Figure 152. Vacancies for doctors across marzes, as of July 2016



Source: MoH, 2016

Especially significant are the vacancies for doctors of different specialties in remote marzes: Lori (50), Syunik (50), Gegharkunik (43.8), Shirak (39), Kotayk (48) (Figure 152). In fact, the biggest demand is for family physicians, anesthesiologists, neurologists, psychiatrists and surgeons (Figure 153).

Figure 153. Vacancies for doctors per specialties, as of July 2016



Source: MoH, 2016

The workforce drain to Russia and European Region is significant. In fact, Armenia is a donor for other countries in terms of workforce development.

One of the mechanisms to meet workforce demand in marzes is mandatory secondment of graduates to regions within the framework of state order. International practices suggest that over 70 countries globally use the principle of mandatory job assignment.

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