

MODERN DEMOGRAPHIC TRENDS IN UKRAINE AS A GROUND FOR REALIZATION OF PREVENTION STRATEGIES

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ABSTRACT

Introduction: The data of the world statistics show that the process of demographic ageing becomes significant in modern conditions, and the number of elderly people annually increases by 3%. Owing to the global tendencies for ageing, the health care and social security systems are facing important challenges to ensure healthy lives and promote the well-being for this segment of population, provide affordable and quality medical care according to needs.

The aim: Establishing modern peculiarities and trends of medical and demographic situation in Ukraine in the context of ageing population in order to substantiate medical and preventive measures

Materials and methods: According to the data of the State Service of Statistics of Ukraine of the Ministry of Public Health for 1990-2017 the tendencies of medical and demographic characteristics of the population of Ukraine have been identified. The national medical and demographic indicators have been compared with the indicators of the countries of WHO European Region according to the data of the European Database "Health for everybody". Using the least squares method, a forecast of the Ukrainian population and its age structure for the period up to 2030 has been made.

Review: A tendency for Ukrainian population decline by 18,1% over the course of 1990-2017, which is caused by, along with other reasons, decrease in population birth rate by 25,4% and increase in mortality by 19,8%, has been identified. A steady tendency for a decline in the proportion of children's population up to the age 14 years inclusive for the twenty-seven-year period from 21,5% till 15,5%, and for an increase in the proportion of population aged more than 60 years from 18,3 till 22,9% has been detected. The share of people over 65 in the age structure of population has increased from 12,0% till 16,5%. The analysis of regional indicators confirms that there are unfavorable demographic tendencies in the southeastern, northeastern and central provinces, and more favorable tendencies in the provinces of the West Region of the country. The proportion of children's population up to the age 14 years inclusive was in Ukraine close to the indicator in the countries of European Union and less than the average in WHO European Region (17,8%), the proportion of people over 65 - close to European regional indicator (15,5%) and less than the indicator in the countries of European Union (19,0%).

A forecast of the population and its age structure up to 2030 has been made, according to which less than 40 million will live in Ukraine, and the proportion of persons over 65 years will reach 19,1%.

Conclusions: The tendencies for Ukrainian population decline and changes in its age structure towards ageing make it necessary to take measures to prevent negative medical and demographic trends and provide conditions for healthy ageing, to increase the affordability and quality of medical care, including for persons of senior age groups, and improve the work of health care facilities on prophylaxis of diseases.

KEY WORDS: age structure, death rate, birth rate, ageing, forecast

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INTRODUCTION

The goals in the area of sustainable development for the period up to 2030, adopted by the world community in 2015, envisage the formation of a prosperous, inclusive and sustainable world. One of the strategic goals is to ensure healthy lives and promote the well-being for people at all ages [1].

Ukraine, like other countries of the world, has, in accordance with the global goals, developed and approved the national system of sustainable development goals. Among the various components of achieving goal, i.e. ensuring healthy lives and promoting the well-being for people, the priority is given to reducing a premature mortality from non-infectious diseases by one third with the help of

prophylaxis and treatment as well as support for mental health and well-being [2].

Actuality of the solution of this problem in Ukraine and other countries is conditioned by considerable levels of prevalence of non-infectious diseases and their risk factors, and negative tendencies for their growth. Among the numerous causes of the unfavorable situation in Ukraine, along with social, economic, environmental, psychological and other determinants, the important role is played by the demographic factor [3-5].

The WHO report on a situation in the area of non-communicable diseases in the world for 2010 states that the epidemic of non-infectious diseases has a global character, and emphasizes its leading causes, namely spontaneous

urbanization, globalization of an unhealthy lifestyle and demographic ageing [6].

The data of the world statistics show that the process of demographic ageing becomes significant in modern conditions, and the number of elderly people annually increases by 3%. By 2017, the number of residents of the planet aged 60 years and older was 962 millions, or 13% of the world population. Europe is one of the oldest regions of the world, where 25% of all people aged 60 and older are concentrated [7,8].

According to the forecasts, the total number of elderly people on the planet will reach approximately 1,4 billion in 2030, 2,1 billion in 2050, and 3,1 billion in 2100. At the same time the number of residents of the planet aged 80 and older will have tripled from 137 million in 2017 to 425 million in 2050 and 909 million in 2100 [9].

Owing to the global tendencies for ageing, the health care and social security systems are facing important challenges to ensure healthy lives and promote the well-being for this segment of population, provide affordable and quality medical care according to needs.

It is known that ageing, along with the formation of a number of problems for the society in the form of the increased demand for emergency medical care, long-term nursing, the burden on the pension system, also opens up numerous opportunities, which may be used to reach the sustainable development goals. In fact, people of elderly age can make a considerable contribution to the life of the society as active members of their families, voluntary helpers and active participants of labor processes. The experts emphasize the responsibility of the societies, communities for the correlation of problems and opportunities related to ageing [10].

Considering it, the WHO has adopted and actively promotes the conception of healthy ageing. The International Community defined the theme of ageing as predominant for the celebration of the World Day of Health in 2012 that was held under the slogan «The health adds life to years». The conception of healthy ageing envisages the creation of conditions that are favorable for people of elderly age and aimed at preservation of health, extension of active life without diseases and disability, with opportunities to carry out the interesting activities and participate in the life of communities. This conception has found its reflection in a number of documents of the WHO, especially in the documents «Health-2020: Principles of Policy and Strategy», «Health-2020: Principles of European Policy in support of actions of the entire state and society in the interests of health and well-being», «Realizing the conceptual vision of the policy “Health-2020”: strategy management in the interests of health in XXI century. Realization of tasks planned», etc. [11-13]. The above-mentioned documents emphasize the priority to provide conditions for healthy ageing, investing in health on all stages of life of people, reducing a burden of the underlying diseases, strengthening the systems of public health orientated to needs of people, integration of various medical and non-medical services, strategy management, whole-of-government approach, approach with participation of the entire society, innovation, etc.

An important precondition for solving numerous tasks in the context of promoting healthy ageing and overwhelming non-infectious diseases is the monitoring of demographic processes, their estimation and a forecast for the next future and remote perspective. [10, 14-15].

Taking into account the above-mentioned facts, the research of modern demographic trends in Ukraine is an actual task for the formation of a policy aimed at achieving goals of human development and creation of favorable conditions for people of senior age groups.

THE AIM

Aim: establishing modern peculiarities and trends of medical and demographic situation in Ukraine in the context of ageing population in order to substantiate medical and preventive measures

MATERIALS AND METHODS

When carrying out the research, the bibliographic, epidemiologic, medical-statistical and analytical methods have been applied. The analysis of a medical and demographical situation in Ukraine was made in accordance with the data of the State Service of Statistics of Ukraine, the Central Medical Service of the Ministry of Public Health of Ukraine for 1990-2017. The tendencies of average expected lifespan (AEL), mortality and proportion of elderly people in the age structure of population, their peculiarities in the regional aspect and in comparison with the countries in WHO European Region have been researched. The Ukrainian population ageing rate was estimated. Using the least squares method, a forecast of the population and its age structure for the period up to 2030 has been made.

REVIEW AND DISCUSSION

The analysis of the data of the State Committee of Statistics /Derzhstat/ of Ukraine for 1990-2017 has allowed identifying a steady tendency for decrease in population of Ukraine by 9,3 million or 18,1% (Fig.1). The depopulation is caused by a number of factors, including increase in death rate, decrease in birth rate, migration processes and occupation of part of territory of the country.

Considering the above-mentioned facts, the changes in the number of population on some administrative territories and a contribution of socioeconomic characteristics to the process of population decline have been researched.

It was established, that the depopulation processes had different tempos on some administrative territories of Ukraine. The single administrative territory with population growth was the city of Kiev, where the number of population has increased by 10,2% over the course of 1990-2017.

The analysis of death rates of population of Ukraine shows the steady tendencies for increase in mortality from 12,1 per 1000 population in 1990 till 14,5 per 1000 population in 2017, i.e. by 19,8 %. At that the highest mortality

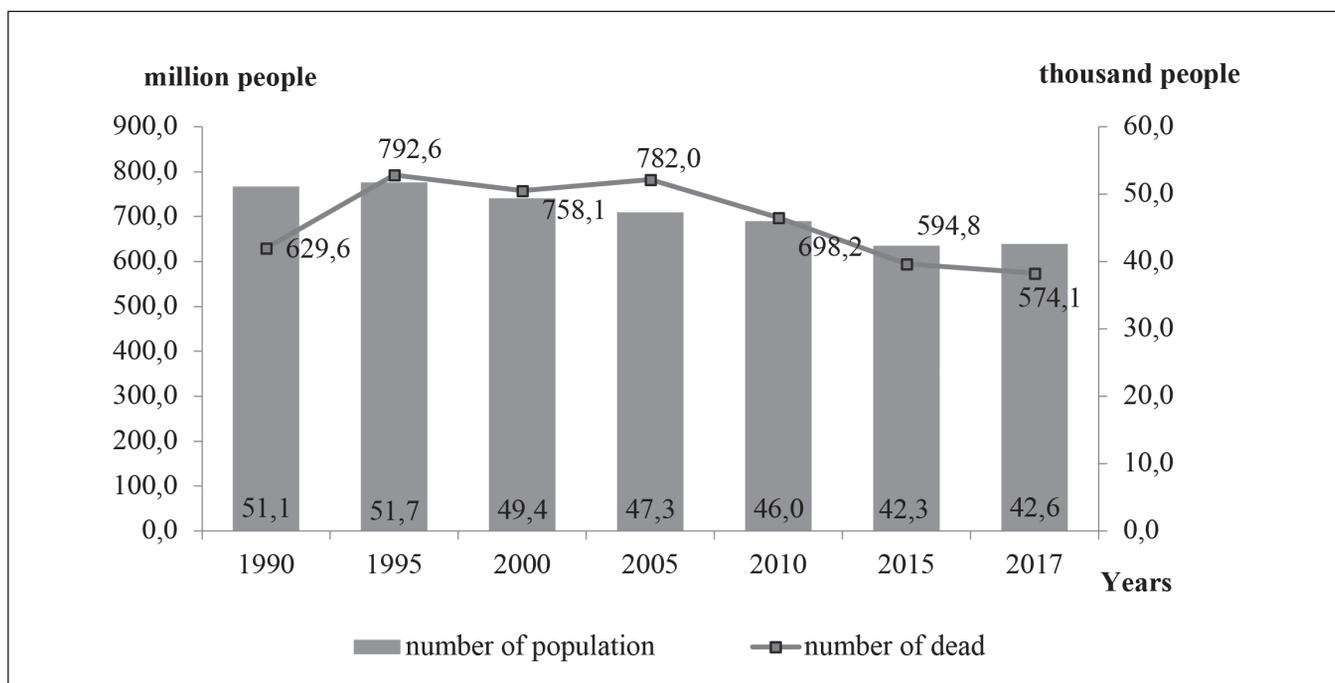


Fig.1. Number of population and cases of death of population of Ukraine in 1990-2017 (absolute data)

levels of population have been observed over the course of 2003-2008, when they exceeded 16,0 per 1000 population. Number of death cases fluctuated in certain years from 574,1 till 792,6 thousand. (Fig.1).

The comparative analysis of death rates in Ukraine and the countries in WHO European Region has shown that the National Death Index for 2015 was 39,0% above the average in WHO European Region and 36,3 % above the average in the countries of the European Union. The mortality levels, which are lower than those in Ukraine, have been reached in a number of economically developed countries, especially in Ireland (6,4 %), Norway (7,8 ‰), Switzerland (8,0 ‰), France (8,7‰) and others.

Within the country, the regional mortality statistics reflected the regional peculiarities of a population decline. Thus, the highest mortality indices in 2017 have been found in the provinces with the fastest depopulation in the period 1990-2017, where the death rate exceeded 16,0 per 1000 population. The highest mortality indices, which exceeded the initial level by one-third, were detected in the provinces with sufficiently high levels of mortality in 2017.

At the same time, in the majority of the provinces of the West Region, in spite of considerable rate of increase in mortality of population for the seventeen-year period (12,7%-29,0%), the mortality levels in 2017 were significantly lower than the average in Ukraine and made up 12,0-12,6 cases per 1000 population.

Taking into account the important role of human reproduction in the process of formation of the age structure of population, the levels and dynamics of the birth rate in Ukraine in the period 1990-2017 have been analyzed. It was established that the birth rate during the 27-year period had tendency for decrease from 12,6 per 1000 population in 1990 till 9,4 per 1000 population in 2017, i.e. by 25,4%.

In the context of absolute measurement the number of births has fallen from 657,2 thousand in 1990 till 364,0 thousand in 2017. (Fig. 2).

In the period 1990-2001 a clear trend for decline in birth rates of Ukraine have been observed. The lowest birth rate, that made up 7,7 per 1000 population and was lower than the birth rate of 1990 by 38,9%, was registered in 2001. Since 2002 the birth rate has been gradually increasing to maximal level -11,4 per 1000 population in 2012. The increase in number of births in this period made up 48,1%. Afterwards there was a tendency for decline in birth rate till 9,4 per 1000 population in 2017, i.e. decline in birth rate was 17,5%.

By comparison of birth rates in Ukraine and the countries in WHO European Region it was established that the National Index for 2015 was less than the average in the Region by 26,4% and by 8,0% - average in the countries of the European Region. The levels of the birth rate higher than the birth rate in Ukraine were in a number of economically developed countries, especially in Great Britain (12,0 ‰), Sweden (11,9 ‰), Norway (11,3 ‰).

The regional peculiarities of the birth rate of population of Ukraine that are expressed in its high levels in the provinces of the West Region and the provinces of the Northern Region have been established. The decline in the birth rates at an extremely fast pace (by 34,9% -38,0%) was observed both in the provinces with a high birth rate and in the provinces with a low birth rate.

The analysis of indices of natural growth of population of Ukraine in the period 1990-2017 confirms the increase in natural population decline. In 1990 the natural decline was -4,0 per 1000 population, in 2017 it reached -5,1 per 1000 population. A positive population growth was registered only in the city of Kiev (+1.6 per 1000 population).

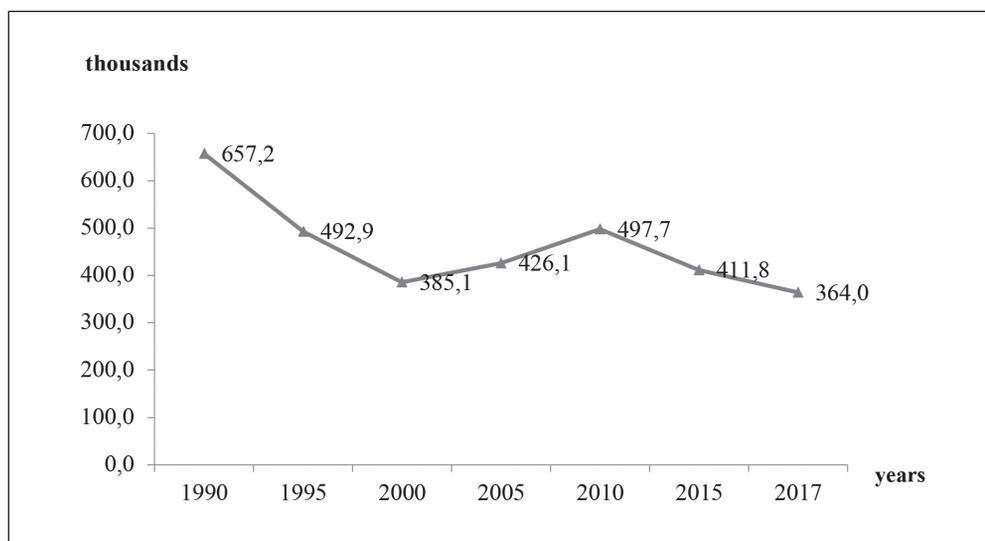


Fig. 2. Birth rate in Ukraine in 1990-2017 (absolute data).

Relatively low indices of natural population decline were detected in the provinces of the West Region of Ukraine.

Low indices of reproduction of population lead to changes in the age composition of population and increase in the proportion of population of senior age groups.

The analysis of the age structure of population over a period of 1990-2017 detected a steady increase in the proportion of population of senior age groups against the background of decrease in the proportion of children's population. In 1990 the percentage of children at the age 0-14 years in the total population of Ukraine made up 21,5%. It has fallen till 15,5% over the twenty-seven-year period.

In WHO European Region the proportion of children's population up to the age 14 years inclusive made up 17,8 % in 2015, in the countries of the European Union – 15,5%. According to the data of the European Database "Health for Everybody" this indicator in Ukraine made up 15,1% at this time. In a number of the European economically developed countries the analogous indicator was less than the Ukrainian one, especially in Germany (13,15), Italy (13,7%), Bulgaria (14,0%), Lithuania (14,6%), Poland (14,9%), which confirms the common-European tendency for decline in the proportion of children in the general structure of population.

A rapid ageing of the population of Ukraine is confirmed by increase in the proportion of persons over 60 years of age in the general age structure of population from 18,3% in 1990 till 22,9% in 2017 (Fig.3).

The share of persons over 65 years of age made up 16,5% in 2017, whereas in 1990 it was 12,0%. At that, in some provinces each resident was older than 65 years of age.

The analysis of the European Database «Health for Everybody» detected that the proportion of persons over 65 years of age in the age structure of population in Ukraine in 2015 was close to the European regional indicator (15,5%) and less than the indicator in the EU countries (19,0%). So, in Italy (22,4%), Germany (21,1%), Portugal (20,7%), and Finland (20,3%) every fifth respondent was older than 65 years of age. Poland had the indicator close to Ukraine (15,6%).

The process of population ageing and increase in proportion of persons of senior age groups in the age structure is related

to decrease in birth rate and increase in life expectancy of population. The analysis of average expected lifespan in Ukraine detected the tendency for decrease in average expected lifespan in Ukraine from 70,4 years in 1990 till 67,1 years in 1996, and in the years that followed – wavelike increase in life expectancy till 72 years in 2017. Difference in average expected lifespan of men and women made up 9,2 years in 1990 and 9,8 years in 2017. With comparison of average expected lifespan in Ukraine and EU countries it was established that the National Indicator for 2015 was 6,8% less than the average in the Region and 10,4% less than the average in the EU countries. Indicators of average expected lifespan higher than those in Ukraine were in a number of economically developed countries, especially in Spain (83,0 years), Italy (82,8 years), Norway (82,5 years), Island (82,4 years), Sweden (82,2 years), Austria (81,9 years), etc.

With the least squares method the forecast of population and the proportion of age groups in the structure of population till 2030 have been determined. It was established that, if the current tendencies for decrease in birth rate and mortality rate continue, the population will decline till 48,4 million of persons till 2030 (Fig.4).

According to the forecast data, the children's population aged up to 17 years inclusive will decrease from 7,6 million in 2017 till 3,7 million in 2030 (Fig.5). At that, the share of children's population makes up 9,6% in the general age structure of population.

At the same time, the population over the age of 65 is expected to increase from 6,9 in 2017 till 7,4 million in 2030 (Fig. 6).

According to the forecast data, the share of population over the age of 65 in the general age structure of population will make up 17,2% in 2020, and 19,1% in 2030.

Taking into account the current tendencies for decrease in birth rate and increase in mortality rate of population, the forecast data concerning decrease in children's population till 2030 and increase in contingents of senior age groups in the general structure of population, the issue of improving the socio-economic, environmental and other determinants of health, enhancing the quality of life and public health protection becomes very actual. For solving the current problems there must be a complex sector-wide approach with the participation of the entire society under the principle «Health in all policies», with

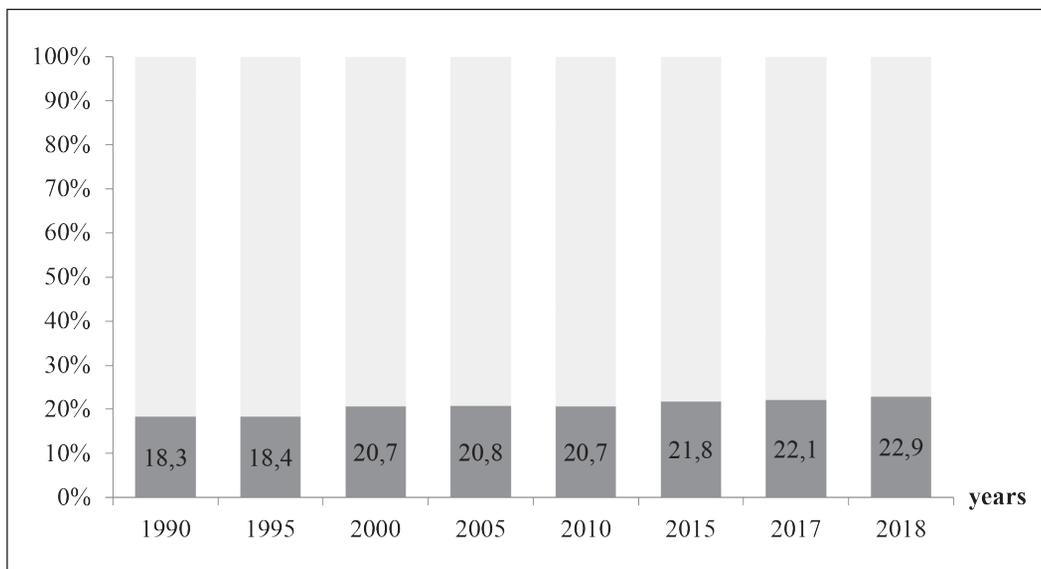


Fig. 3. Proportion of population over 60 years of age in the age structure of population of Ukraine (%).

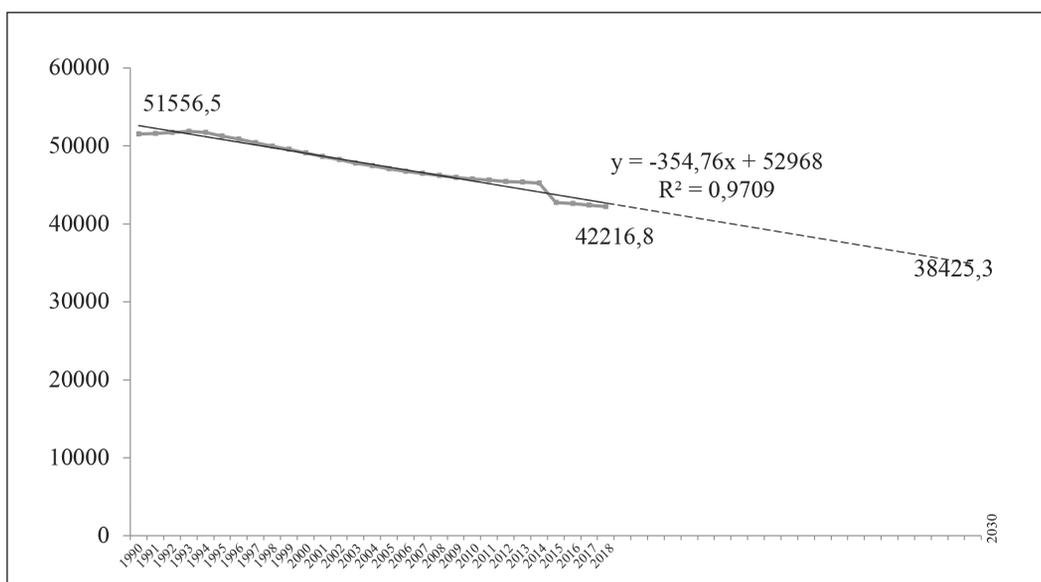


Fig. 4. Forecast of population of Ukraine till 2030 (absolute data)

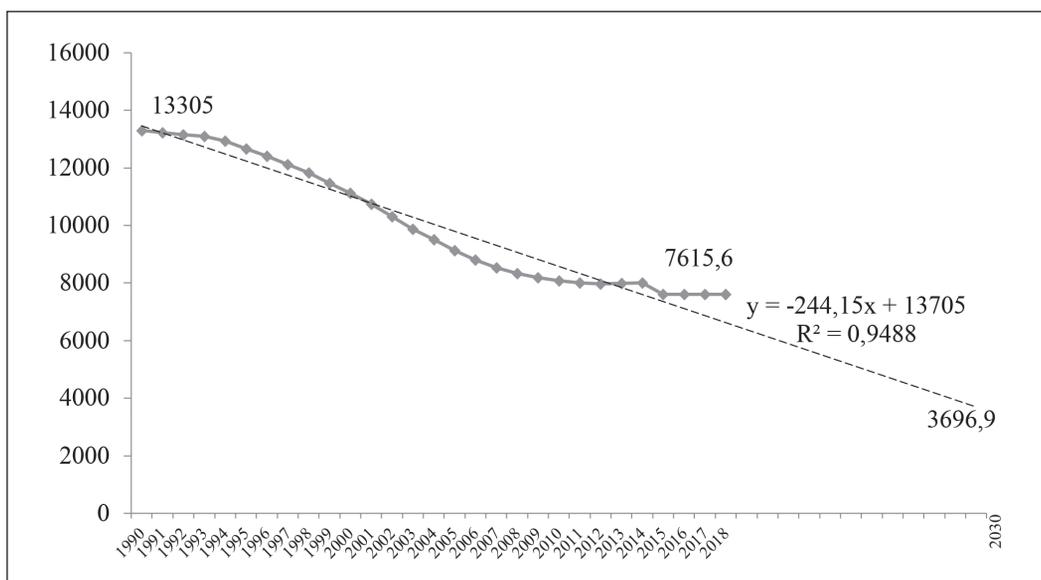


Fig. 5. Forecast of children's population of Ukraine aged up to 17 years inclusive till 2030 (absolute data).

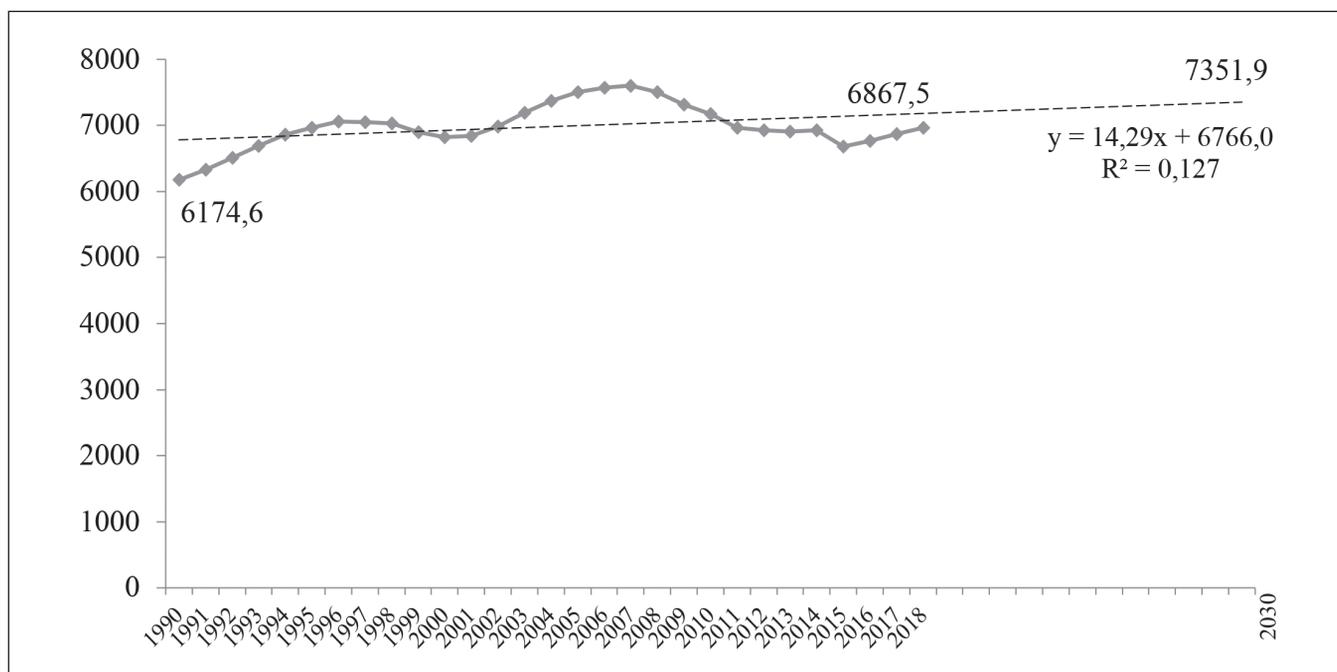


Fig 6. Forecast of population of Ukraine over the age of 65 till 2030 (absolute data).

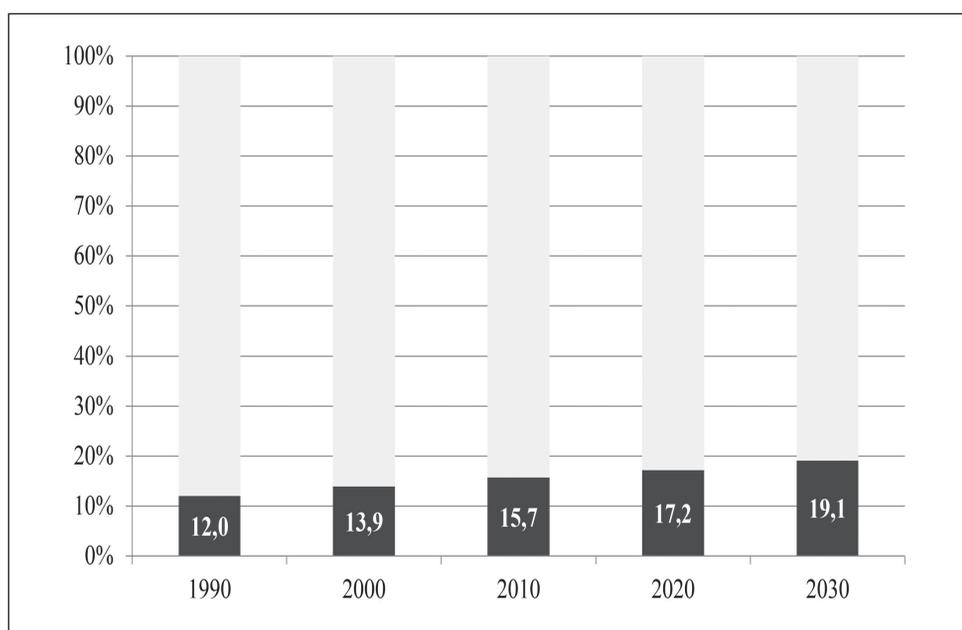


Fig 7. The proportion of population over the age of 65 in the general age structure of population of Ukraine in the period 1990-2030 (Factual and predicted data,%).

emphasis on prophylaxis of diseases, their timely detection and quality treatment, from birth and throughout life.

In the context of the identified tendencies, the issue of improvement of medical care and social security of population of elderly age requires a special consideration. It is necessary to change the paradigm of the medical and social assistance that would envisage not only increasing the accessibility and quality of medical assistance for people of senior age groups, development of geriatric and gerontological services, but place the emphasis on the prophylaxis, including a primary, secondary and tertiary prophylaxis. Health care and social security systems are faced with the task to ensure healthy lives and promote the well-being for this segment of population.

An important condition for solving problems is to conduct the prophylactic work with the patients of senior age groups and members of their families so that they could follow a healthy way of life, acquire the self care skills and receive the assistance from their inner circle. Prophylactic recommendations must embrace the issues of healthy nutrition, peculiarities of nutrition of patients with non-infectious diseases, physical activity of patients over the age of 60 with and without age-related pathology, adherence to recommendations and doctor's orders, solution of psychological problems, etc.

In this context, improving the training of medical workers, raising their qualification and acquiring all necessary competencies by them for the work with the patients of senior age groups, including the technologies of prophylactic consulting,

are important. The substantiation, development and adoption of technologies of prophylactic consulting of persons of senior age groups in the health care facilities will contribute to improving the quality of medical care of this segment of population, preventing many undesirable effects in the elderly, reducing their need for expensive treatment, preserving the potential and ability of elderly people to serve themselves independently, improving the quality of their lives.

CONCLUSIONS

The medical and demographical situation in Ukraine is characterized by a tendency for population decline that has reached 18,1% over the course of 1990-2017. The negative tendencies are caused by, along with socioeconomic, environmental and other reasons, decline in birth rate of population by 25,4%, and increase in mortality rate by 19,8%.

A steady tendency for decrease in the proportion of a children's population up to the age 14 years inclusive for the twenty-seven-year period from 21,5% to 15,5%, and increase in the proportion of people aged more than 60 years in the age structure of population from 18,3 to 22,9% has been detected. It was established that the proportion of persons aged more than 65 years in the age structure has increased from 12.0% till 16.5% over the course of 1990-2017.

The indicator of the proportion of a children's population up to age 14 years inclusive was in Ukraine close to the indicator in the countries of European Union B (15,5%) and less than the European middle indicator (17,8%), the proportion of persons older than 65 years – close to European regional indicator (15,5%) and less than indicator in the countries of European Union (19,0%).

The analysis of the regional data in Ukraine has shown unfavorable demographic tendencies in southeastern, northeastern and central provinces and more favorable tendencies in provinces of the West region of the country. On all administrative territories there is a population decline, with the exception of the city of Kiev, where the population growth amounts to 10,2%.

A forecast of the number and age structure of population up to 2030 has been made, according to which 38,4 million will live in Ukraine, and the proportion of persons older than 65 years will reach 19,1%.

The tendencies for Ukrainian population decline and changes in its age structure towards ageing make it necessary to take measures to prevent negative medical and demographic trends and provide conditions for healthy aging, increase the affordability and quality of medical care, including for persons of senior age groups, improve the work of health care facilities on prophylaxis of diseases.

REFERENCES

1. Transforming our world: the 2030 Agenda for Sustainable Development. UN [Internet] 2015. [cited 2019 May 19] 35 p. Available from: <https://sustainabledevelopment.un.org/post2015/transformingourworld>.
2. Sustainable Development Goals: Ukraine. 2017 National Baseline Report. Kyiv: Ministry of Economic Development and Trade of Ukraine; 2017, 166 p.
3. Global status report on noncommunicable diseases 2014 «Attaining the nine global noncommunicable diseases targets; a shared responsibility». Geneva: WHO; 2014, 302 p.
4. Palamar BI., Gruzieva TS. Criteria of economic effectiveness of preventive measures of chronic non-infectious diseases. *Wiad Lek.* 2018, tom LXXI, nr 4:897-906.
5. Gruzieva T.S. Neinfektsiini zakhvoriuvannia: mashtaby i tendentsii poshyrenosti, stratehii borotby [Non-communicable diseases: the extent and trends of prevalence, control strategies]. In: Gruzieva T.S., Dyachuk D.D., Zyukov A.L. et al. Annual report on the health status of the population, the sanitary and epidemic situation and the results of the health care system of Ukraine. Kyiv: Ministry of Health of Ukraine; 2016, p. 408–417. (In Ukrainian).
6. Global status report on noncommunicable diseases, 2010. Geneva: WHO; 2011, 176 p.
7. World Population Ageing 2017. Highlights. New York: United Nations; 2017, 40 p.
8. World Population Prospects. The 2015 Revision. Key Findings and Advance Tables. New York: United Nations; 2015, 59 p.
9. World population projected to reach 9.7 billion by 2050. UN [Internet] 2015. [cited 2019 May 21]. Available from: <https://www.un.org/en/development/desa/news/population/2015-report.html>.
10. World report on ageing and health. Geneva: WHO; 2015, 260 p.
11. Good health adds life to years: Global brief for World Health Day 2012. A global summary for World Health Day 2012. Geneva: WHO; 2012, 28 p.
12. Health 2020. A European policy framework and strategy for the 21st century. Copenhagen: WHO EURO; 2011, 190 p.
13. The European health report 2015. Targets and beyond – Reaching new frontiers in evidence. Copenhagen: WHO EURO; 2015, 150 p.
14. Creating age-friendly environments in Europe A tool for local policy-makers and planners century. Copenhagen: WHO EURO; 2016, 68 p.
15. Global strategy and action plan on ageing and health. Geneva: WHO; 2017, 46 p.

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According to the order of the Authorship.

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