



## HEALTHY LIFE EXPECTANCY – AN INTEGRATED INDICATOR OF POPULATION HEALTH

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**Summar:** The main issues of the public health are examined based on the implementation of the healthy life expectancy indicator (HALE) of the population. HALE measures how many years on average are expected to be spent by a person, at a certain age, in good health, taking into consideration the specific mortality rates, morbidity and disability risk for the given year. HALE is an indicator of the state of health, which reflects the impact of mortality and morbidity.

The Republic of Moldova is characterized by low health indicators. The life expectancy at birth is about ten years lower than the average in EU countries, and HALE has a similar value to the one in Ukraine, three years lower than in Romania and 10 years lower than in Italy and France. There are significant differences based on gender. For the men in the age group 15-19 years the life expectancy was estimated at 54.1 years, and HALE was estimated at 47 years, the proportion of time spent in a very good, good and fair state of health accounted for 87%, while women having higher life expectancy – 62 years, spend more years in bad/very bad health, the proportion of time spent in good state of health accounted for only 82%. People from villages live less and have lower HALE than those from cities. Life expectancy in the 15-19 years age group was 67.7 years in cities, and HALE – 51.3 years (84.5%). In rural areas these indicators were respectively: 56.6 and 47.6 years (84.2%).

HALE indicator is proposed to be used for monitoring general trends in population health and for identification of inequalities/differences on health within some subpopulations.

Currently, one of the main goals of the state health policies is to increase accessibility to high quality medical services for socially vulnerable groups; to reduce disparities in morbidity and mortality between different socio-demographic groups; to increase the functionality of the medical insurance policy; to reduce the personal expenses (out-of-pocket) in the total health expenditure; to fight cardiovascular diseases through increasing awareness of health and promoting health education, which represent an important factor for increasing life expectancy at birth and HALE; to increase the investments for the health improvement through a multisectorial approach, including the allocation of additional resources for education, working conditions, housing and health sector.

## INTRODUCTION

Currently, there is scientific evidence that the correlation between the health of the population and the economic growth has a bilateral character. Economic growth improves the health of the population and a healthy population, at its turn, contributes to the economic growth.

Improvement of the population health leads to:

- decrease of the production losses due to illness of workers (for example, by reducing the number of days for sickness certificates and the expenses related to it);
- reduction of the premature mortality and maintaining the human potential;
- prevention of the early retirement due to chronic diseases or disability;
- release of resources that should be spent on treating the diseases, thus, these can be invested in other activities for human capital formation.

The good health of the population is a compensatory mechanism for sustaining growth in terms of workforce reduction as a result of ageing. The good health enables the extension of elderly's work capacity, increase the labour supply and the labour productivity. Health is an inherent property of human resources, and together with other qualitative characteristics of labour force (education and qualification) has a significant impact on the socio-economical development.

The Republic of Moldova is characterized by low indicators of health. Life expectancy at birth is about ten years lower than the average in EU countries. Premature mortality, compared to European standard, is 34% for men and 22% for women [4], causing significant losses in the population: annually about 0.5% of the male population and 0.3% of the female population.

Continuous monitoring of health and implementation of relevant methods in this area represent an analytical and informational base for the development and implementation of scientifically substantiated policies in this area. For this purpose, in international practice it was introduced the healthy life expectancy indicator

(Health-adjusted life expectancy/Healthy Life Expectancy – HALE), which is now widely used and promoted by WHO as a tool for monitoring the population health, its importance is recognized in the Lisbon Strategy.

## WHAT DOES THE HEALTHY LIFE EXPECTANCY INDICATOR SHOW?

In the latest decades European countries have made significant progress in terms of public health. This process was influenced by continuous decrease of mortality and increase of life expectancy at birth. After 1990, the life expectancy at birth in the European Union (EU) increased by an average of about five years and reached 79.2 years [3].

Until recently the increase of life expectancy at birth was considered a relatively accurate indicator of signalling the improving health of the population, and this was a reasonable assumption on the grounds that infectious diseases were the leading cause of mortality. Currently, after life expectancy at birth has exceeded 70 years, the chronic diseases prevail in the morbidity structure, and the risk of becoming ill is no longer linked to the risk of death, the life expectancy indicator is no longer sufficient for monitoring population health.

Healthy life expectancy indicator (HALE), computed by Sullivan's method [5], characterize the functional status of the population and if the increase in life expectancy is accompanied by an increase of good health or, contrariwise, of poor health. Thus, HALE divides the life expectancy in different states of health during the lifetime. This indicator adds a qualitative dimension to the quantitative concept of average number of years lived. HALE measures how many years on the average are expected to be spent in good health by a person at a certain age, given the specific mortality rates, morbidity and disability risk for the corresponding year. HALE is an indicator of health that reflects the impact of mortality and morbidity.

## NATIONAL EMPIRICAL DATABASE FOR CALCULATING HALE

HALE is calculated based on mortality tables and data from sociological surveys that include questions on subjective health assessments. Currently the Republic of Moldova has statistical and empirical data required for the development and implementation of HALE indicator in the monitoring process of population health. Household Budget Survey (NBS) is a domestic complex research which contains information on health self-assessment and population morbidity by age and sex and area of residence. This research represents a major resource in this area and offers comparable data since 2006.

The question from the survey (NBS): "How would you assess your health in general?" includes five possible answers: 1 – very good, 2 – good, 3 – fair, 4 – bad and 5 – very bad. Information about the population health using this question is collected regularly by the international and major national researches, such as the World Values Survey and European Values Survey, NHANES (National Health and Nutrition Examination Survey) in the USA and SHARE in Europe. The question is also recommended for use as a standard tool in questionnaires related to health in Europe [2]. Therewith, according to WHO and Eurostat recommendations for calculation of the indicators characterizing the functional capabilities of the population, national surveys

should include three main questions: self-perceived health, existence of chronic disease and functional limitations in the daily life. Currently HBS lacks the last question, which brings some limitations for the research of the subject.

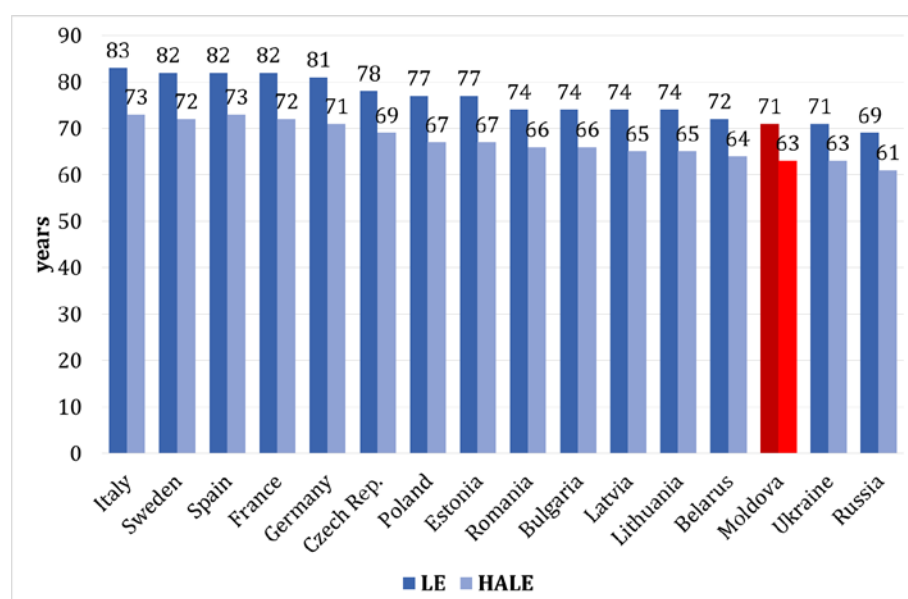
## REPUBLIC OF MOLDOVA IN THE EUROPEAN CONTEXT BY HALE

According to the recent estimations of WHO, in the Republic of Moldova HALE accounts for 63 years, with similar value as Ukraine, three years lower than in Romania and 10 years lower than in Italy and France (*Fig. 1*).

There is a strong correlation between life expectancy at birth and HALE. Countries that register high values of life expectancy at birth have higher HALE, which proves that with an increase in life expectancy at birth there is a compression of morbidity at older ages.

## HOW CAN THE HALE INDICATOR BE IMPLEMENTED IN PRACTICE?

HALE is an indicator that can be easily used by policy makers to monitor general trends in the population health and identify inequalities/differences on health within subpopulations. HALE allows to track functional changes of the elderly population aiming to provide and promote active ageing.



**Fig. 1. Life expectancy at birth (LE) and healthy life expectancy (HALE) in some European countries, 2012**

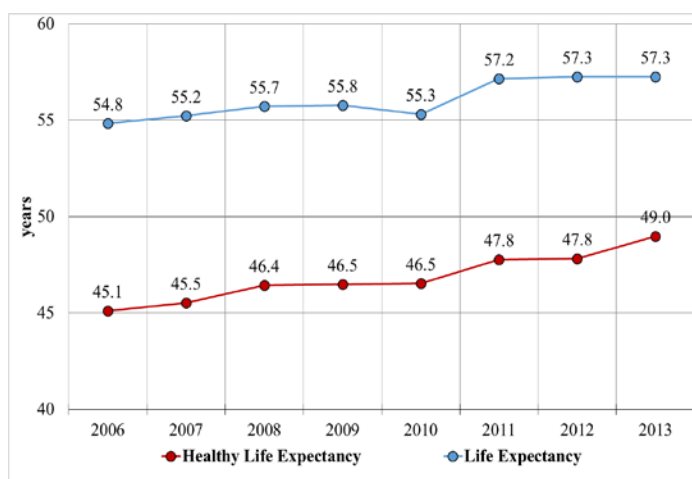
**Source:** WHO, <http://apps.who.int/gho/data/view.main.680?lang=en>.

HALE provides an overview regarding living and working conditions, the availability and high quality of health services, the correlation between environment and health, which are an integral part of development. Thus, HALE indicator is closely related to other demographic variables, particularly life expectancy at birth, other indicators of population health and economic indicators.

## HALE REGISTERS AN UPWARD TREND

The study is based on mortality tables combined with HBS questions related to subjective health assessments for the years 2006-2013. Life expectancy and HALE indicators were calculated starting with the age group 15-19 years. Thus, HALE reflects the current state of health of the population, adjusted by mortality rates and age structure. This method allows to estimate at a certain age the number of remaining years that an individual will spend in good health.

The results of the research show that life expectancy for the total population is increasing slowly but constantly, while HALE (includes very good, good and fair health) has strongly increased. Thus, during the mentioned period, for the age group 15-19 years, life expectancy has increased from 54.8 years to 57.3 years, by 2.5 years, while HALE - from 45.1 years to 49 years, by 3.9 years (Fig. 1).

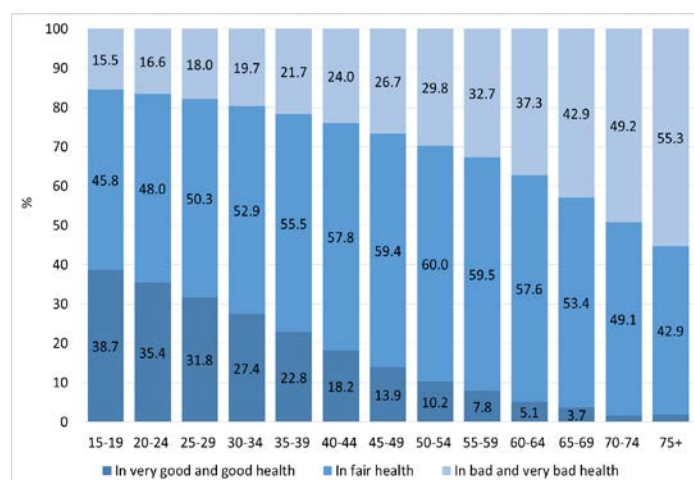


**Fig. 2. Dynamics of life expectancy and healthy life expectancy indicators, total population, 2006-2013**

Source: calculated by authors based on NBS data.

These changes indicate that compression of morbidity occurs [3], and consists of compressing the diseases in a shorter period of time, the morbidity being concentrated at the older ages. The reduction of mortality and increasing life expectancy is accompanied by improvements in health. This trend has been registered in several countries [4,11,15].

The share of time spent in good, very good and fair health is decreasing with age. There is a high proportion of time spent in bad and very bad health starting with the age group 50-54 years (about 30%), which represents a barrier to extension of the active life and active ageing (Fig. 3).



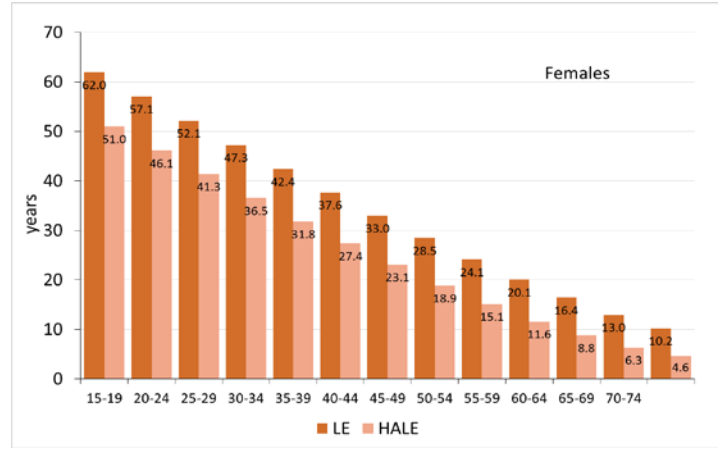
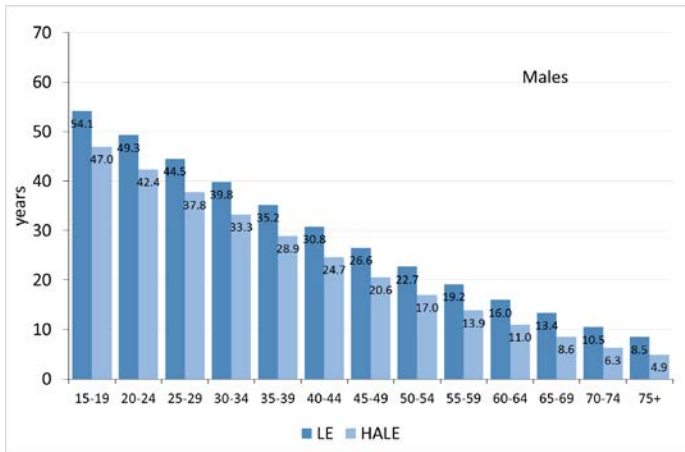
**Fig. 3. The proportion of time spent in different states of health, by age groups, 2013**

Source: calculated by authors based on NBS data.

## GENDER REPRESENTS IS A DETERMINANT FACTOR OF HALE

The results of the research show that there are significant differences between HALE indicators based on gender. For males in the age group 15-19 years life expectancy was estimated at 54.1 years, while HALE at 47 years, the proportion of time spent in very good/good and fair health accounts for 87%. While women, having greater life expectancy - 62 years, spend more years in a bad/very bad health, the proportion of time spent in very good/good and fair health accounts only for 82%.





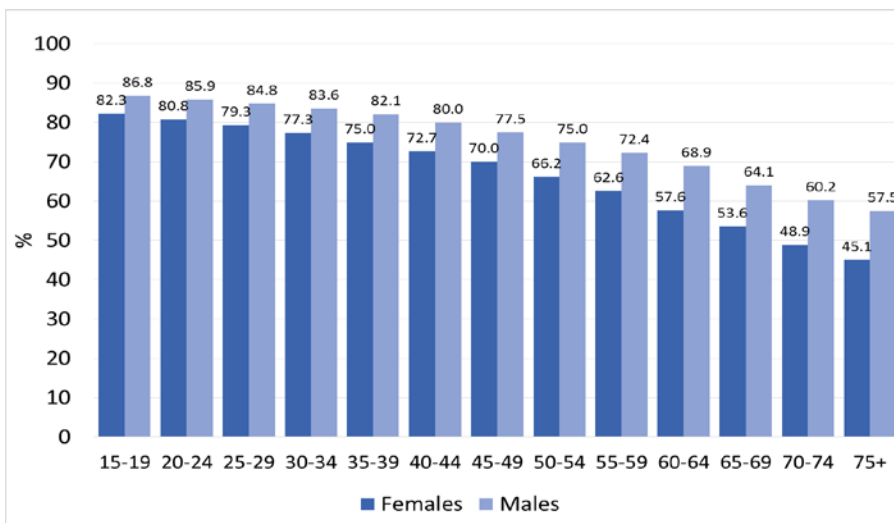
**Fig.4-5. Life expectancy and healthy life expectancy at different ages, 2013**

*Source:* calculated by authors based on NBS data.

Currently, the adult population (at the working age) is characterized by high morbidity and mortality rates, and, as a result, by low life expectancy and HALE. Obviously, with ageing, the proportion of time spent in good health is decreasing. Compared to other countries, this indicator is very low. For example in the age group 45-49 years the time spent in good health by women is estimated at 70%, and respectively 30% will be spent in bad and very bad health. Although,

for men this indicator is more favourable (77.5%), but the premature mortality diminishes the value of this difference.

Thus, women are living longer, but spend less time in good health than men. Although women have worse health status, they live longer, mainly because they are more attentive to different symptoms of the diseases, are going more often to the doctors for prophylactic purposes, also are less involved in high risk works.



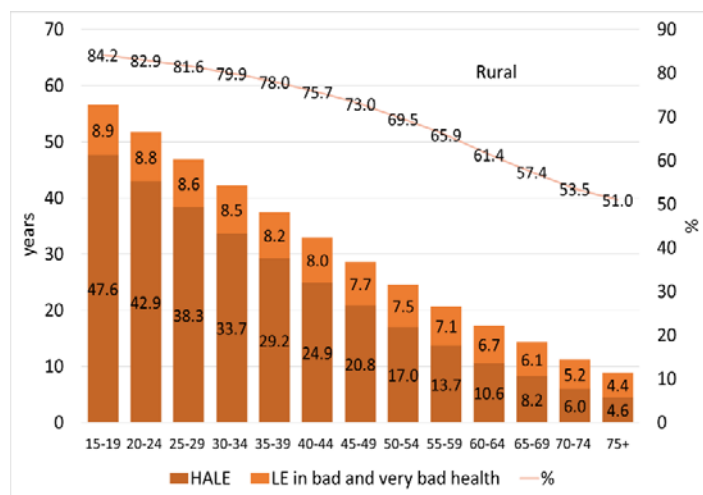
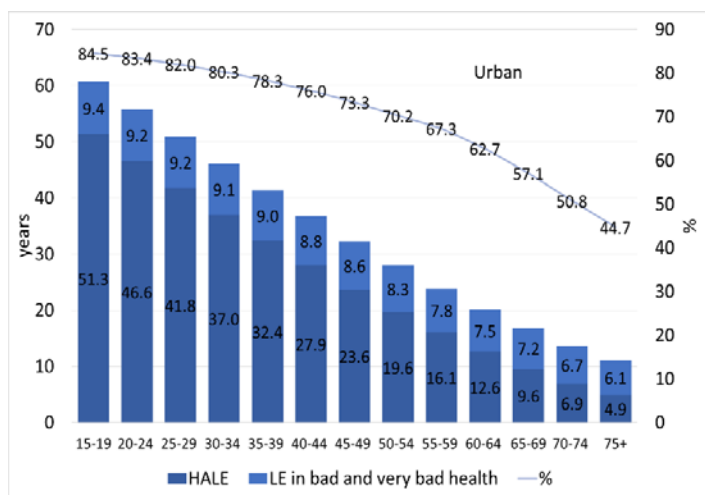
**Fig. 6. The proportion of time spent in good health, 2013, in %**

*Source:* calculated by authors based on NBS data.

## PEOPLE FROM VILLAGES LIVE LESS AND HAVE A LOWER HEALTHY LIFE EXPECTANCY THAN THOSE FROM CITIES

The area of residence is an important factor that influences the life span and HALE. In the age group 15-19 years, in cities, life expectancy accounted for 67.7 years, and HALE for 51.3 years (84.5%); in rural areas, life expectancy accounted for 56.6

years and HALE for 47.6 years (84.2%). Therewith, the proportion of time spent in good health does not differ significantly, but at older ages this indicator registers higher values than in rural areas (*Fig. 7-8*).



**Fig. 7-8. HALE and life expectancy in bad and very bad health, by age groups and area of residence, 2013**

*Source:* calculated by authors based on NBS data.

## HALE AT OLDER AGES

For the elderly it is important to maintain longer the functional capacity and autonomy. The results of the research show that the age group 60-64 years will spend a significant amount of time in bad and very bad health. Thus, the life expectancy for women is about 20 years, the HALE is 11.56 years (in good, very good and fair health), and 8.49 years will be spent in very bad and bad health (42.3% of the time). The life expectancy for men from the same age group is about 16 years, 11 years will be spent in very good, good or fair health (HALE), and only 4.95 years – in bad and very bad health (31%).



**Fig. 9. Years spent in different states of health, age group 65-69 years, 2013**

*Source:* calculated by authors based on NBS data.

The results of the research demonstrate the existence of issues related to the burden of disease for women, especially in older ages. This can be partially explained by some events experienced by these generations: hunger and limited financial resources after the Second World War, double overcharging in the economic and family sector, socio-economical crisis after 90s. Nowadays, the situation of elderly women is unfavourable: the risk of living in solitude and more likely in poverty is three times higher than for men.

The unfavourable situation of men is associated with premature mortality, they are being more exposed to different social risks. Researches in this area show that men and women react differently to stressful events in life: men through aggression and alcohol abuse, women through psychotic disorders.

## WHAT ARE THE MAIN CAUSES OF LOW HALE?

The underfunding of the health system is made evident by the lower value of total health expenditure per person (553 USD PPP) in healthcare. Republic of Moldova significantly lags behind European countries (with a mean difference of 4.3 or lower). Among the reference countries, Lithuania and Latvia are the closest to the average amount allocated per capita in the total health expenditure in the EU countries.

Unlike the compared countries, Republic of Moldova is facing chronic shortcomings in terms of allocated financial resources with direct consequences on provision with equipment and medications, and, especially, a decent remuneration in healthcare. In the condition of low level of living standards, the international statistics show a large

share of health expenditure paid out-of-pocket by Moldovan citizens (about 45% of total health expenditure). These costs exceed almost 4 times the out-of-pocket expenses recorded in Europe and the European Union. The same situation is viable in the most of the reference countries, except Georgia, where such costs account for 62% of total.

**Table 1. Health expenditure, in comparison, 2013**

	Health expenditure			
	Total (% of GDP)	Public (% of GDP)	Total expenditure per capita (in PPP int. \$)	Out-of-pocket expenses, % of total
Lithuania	6,7	4,1	1579	32,6
Latvia	5,9	2,6	1310	36,5
Serbia	10,6	6,3	987	37,9
Romania	5,6	4,2	988	19,7
Georgia	9,2	1,6	697	61,9
Ukraine	7,5	3,8	687	42,8
<b>Moldova</b>	<b>11,8</b>	<b>5,2</b>	<b>553</b>	<b>44,6</b>
Europe	8,9	5,7	2402	19,7
EU-28	10,2	7,8	3260	13,6

*Source: World Development Index, Word Bank.*

A quarter of the population lacks the compulsory health insurance, the main reason is the unemployment, informal employment and the incapacity of paying the cost of personal insurance policy. The NBS researches show that among persons who do not beneficiate from the system of compulsory healthcare over a quarter have low incomes (first group quintile), while in the rural areas every third person has no medical insurance policy [1].

Studies in this area note that changes in the health of the population among the countries and among different categories are identified as inequalities in the healthcare, that in a proportion from 25% to 75% are the result not only of the physical health factors, but mostly due to social factors that are susceptible to failures of the policies in the social, economic and health spheres [6].

Thus, the main causes of poor health of the Moldovan population are:

1) a great part of the population have low incomes, fewer opportunities to maintain a healthy lifestyle (malnutrition, lack of rest, psychological stress, alcohol abuse to relieve stress) and marginalization of the population (unemployment, professional and cultural degradation);

2) reduced availability of high quality health

services for socially vulnerable groups due to low functionality of the medical insurance, selling of healthcare services, high prices for medications and services.

Public health researches show that most European countries have made significant progress in increasing the life expectancy and HALE due to fighting the cardiovascular diseases (so-called cardiovascular revolution), which represents one of the main causes of mortality of the population in the European area, including the Republic of Moldova. Currently cardiovascular diseases incidence and mortality are decreasing in the countries of Northern, Southern and Western Europe, while in the central and Eastern countries the situation remains without any positive changes. However the majority of cardiovascular diseases can be prevented by taking measures regarding risk factors such as tobacco use, unhealthy diet and obesity, hypodynamics and harmful alcohol use, by using strategies covering the entire population.

Even if in European countries the cardiovascular mortality rate is declining, currently the number of patients (males and females) with cardiovascular diseases is increasing. This paradox is related to the increasing longevity and improved survival of people with cardiovascular diseases.

## CONCLUSIONS AND RECOMMENDATIONS

Longer life expectancy in good health represents an important objective for ageing societies. Healthy ageing is not just about the absence of disease, more important is to maintain the functional capacity. If the necessary policies are not implemented and the adequate investments in public health for HALE facilitation are not provided, the losses for the society will be very high, which will be difficult to recover [8].

Improving the population health is a complex objective that requires the involvement of all stakeholders from different areas (healthcare, education, primary sector, media etc.) in promoting health, personal responsibility for health and its management by adopting behaviours that exclude health risks.

Currently, the main goals of state health policies are:

- to increase accessibility to high quality medical services for socially vulnerable groups;
- to reduce disparities in morbidity and mortality between different sociodemographic groups;

- to increase the functionality of the medical insurance policy and to reduce the personal expenses (out-of-pocket) in total health expenditure;

- to fight cardiovascular diseases through health promotion and health education, implementing programs for the entire population, involving all stakeholders, to build partnerships for health and social development between different sectors at national and local level;

- to increase investments for improving the health through a multisectorial approach, including the allocation of additional resources for education, working conditions, housing and health sector.

In order to improve the national statistics, the availability of data for calculating HALE and its implementation in practice according to the international standards, it is necessary to include in the HBS questionnaire the question regarding the functional limitations in the daily life: For at least the past six months, to what extent have you been limited because of a health problem in activities people usually do? 1 – severely limited, 2 – limited but not severely, 3 – not limited at all.

## REFERENCES

1. Household Budget Survey. NBS, 2012-2014.
2. Creating a coherent set of indicators to monitor health across Europe The Euro-REVES 2 project. [http://eurpub.oxfordjournals.org/content/eurpub/13/suppl\\_3/6.full.pdf](http://eurpub.oxfordjournals.org/content/eurpub/13/suppl_3/6.full.pdf)
3. Health at a Glance: Europe 2014. OECD. [http://ec.europa.eu/health/reports/docs/health\\_glance\\_2014\\_en.pdf](http://ec.europa.eu/health/reports/docs/health_glance_2014_en.pdf)
4. Penina O. The excess mortality in the Republic of Moldova. In: Annals of the National Institute of Economic Research, Chişinău, 2014, No. 2, p.142-147.
5. Sullivan D. F. A single index of mortality and morbidity. HSMHA Health Reports, 1971.
6. The European health report 2012: charting the way to well-being. WHO, 2013.
7. The Minimum European Health Module. Eurostat Statistics Explained++. [http://ec.europa.eu/eurostat/statistics-explained/index.php/Glossary:Minimum\\_European\\_Health\\_Module\\_\(MEHM\)](http://ec.europa.eu/eurostat/statistics-explained/index.php/Glossary:Minimum_European_Health_Module_(MEHM))
8. World report on aging and health. WHO, 2015, 260 p.

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