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Abstract

Introduction. Cardiovascular diseases are recognized as worldwide (1) and national public health issue (2, 3). This is argued by having a leading position in the structure of general mortality and disability, the substantial loss of quality of life and the health system needs for increased costs. Prevention and control of cardiovascular disease has become one of the priority directions for global and national noncommunicable disease control strategies developed to reduce premature mortality (1, 5). The major cardiovascular diseases mortality was identified some aspects of premature mortality among the adult population in the Republic of Moldova. Overall decrease of mortality due to cardiovascular diseases among adults (-5.9%) has been accompanied by a relatively slower decrease in premature mortality (-2.4%) in the Republic of Moldova (6). Primary, secondary and tertiary prevention measures are essential in reducing the burden of cardiovascular disease and contribute to improving cardiovascular health at the population level. Nature is helping people to maintain their health through mechanisms much closer to them than pharmaceutical ones through the curative action of the various natural factors that form the climate of the respective territorial area.

Material and method. There is a descriptive study based on statistical data of the World Health Organization and official vital statistics of the Republic of Moldova.

Results and discussions. The climatic conditions of Moldova are favorable to cardiovascular prevention and rehabilitation. Moldova is located in the temperate continental climate influenced by the proximity of the Black Sea and the interference of warm-humid air from the Mediterranean. The annual air temperatures average in the country is 9,3°C. In the Republic of Moldova the warm weather with a comfortable temperature lasts 175 days and the relative humidity oscillates in the average from 66 to 87%. The country's thermal regime is the most important curative factor for treating chronic diseases and opportunity for the amplification of medical rehabilitation programs for patients with cardiovascular diseases. Application of methods based on the action of climatic factors in cardiovascular rehabilitation process contributes to its efficiency. Increasing the role of tertiary prevention is a good practice for the quality improvement of medical services for this category of patients. By making appropriate, timely and complex measures of primary, secondary and tertiary prevention cardiovascular disease can be substantially prevented.

Conclusions. Strengthening cardiovascular prevention centered on a complex approach to all its primary, secondary, and tertiary components is an opportunity to reduce premature mortality in the population.

Key words: *Cardiovascular diseases, prevention, premature mortality,*

Introduction

Cardiovascular diseases are the main public health issues at the global and national level (1, 2, 3, 4). The leading position of cardiovascular diseases in the distribution of general mortality and disability, the substantial loss of quality of life and the health system needs for increased costs are recognized as worldwide (1). Cardiovascular disease prevention is one of the priority directions for global and national noncommunicable disease control strategies in terms of reducing premature mortality (1, 5).

The major cardiovascular diseases mortality identified some aspects of premature mortality among the adult population in the Republic of Moldova. Overall decrease of mortality due to cardiovascular diseases among adults (-5.9%) has

been accompanied by a relatively slower decrease in premature mortality (-2.4%) in the Republic of Moldova (6).

The intensity of mortality due to diseases of the circulatory system in men in the age group 50-54 years in the Republic of Moldova corresponds to the intensity of similar mortality in the age group 70-74 years in the developed countries. Adjusted cardiovascular mortality rates are about 4 times higher in the Republic of Moldova compared to similar rates in Europe (6, 7).

WHO established the premature mortality target of a 25% reduction in overall mortality from major noncommunicable diseases (cardiovascular disease,

cancer, diabetes or chronic respiratory diseases) by 2025 (8).

WHO determined the indicator unconditional probability of dying between the ages of 30 and 70 years for monitoring progress of premature mortality reduction. This indicator expresses the probability (%) of dying of 30-year-old individuals from one of the main noncommunicable diseases before his or her 70th birthday (8).

The analysis of the change of the unconditional probability of dying between the ages of 30 and 70 years allowed the estimation of the premature cardiovascular mortality in the aspect of monitoring the intermediate progresses (2013-2016) in the Republic of Moldova. This identified a trend to decrease more slowly (-1%) compared to the expected one (-4.5%). In addition, the opposite directions of percentage evolution by sex were highlighted, in men with increasing tendency (+2.1%) vs. women with decreasing tendency (-5.4%). There is a delay in achieving the planned annual reduction (2013-2016) of premature mortality from cardiovascular diseases, which implies a risk for achieving the 2020 national targets and a future trend of premature death is not in line with the expected one (6).

Of all risk factors for noncommunicable diseases determined by the WHO for monitoring, only in case of one risk factor (insufficient physical activity) is identified a lower prevalence at the national level comparing to global level (8, 9, 10).

The assessment of cardiovascular health in the Republic of Moldova highlighted the substantial prevalence of poor cardiovascular health metrics (81.0%; 95% CI, 79.4% to 82.6%) compared to ideal cardiovascular health (0.6%; 95% CI, 0.3% to 0.9%) as a total and by sex and ages variables, as well (11). The results regarding the cardiovascular health assessment underlined the optimization needs in the prevention and control of major cardiovascular diseases.

Primary, secondary and tertiary prevention interventions are essential in reducing the burden of cardiovascular disease and contribute to improving cardiovascular health at the population level.

At once, nature is helping people to maintain their health through mechanisms much closer to them than pharmaceutical ones through the curative action of the various natural factors that form the climate of the respective area.

Material and Methods

There is a descriptive study based on statistical data of the World Health Organization and official vital statistics of the Republic of Moldova.

The aim of this article is to bring forward and to underline the importance of climatic factors and natural resources of the Republic of Moldova in providing opportunities for cardiovascular prevention and rehabilitation improvement.

Results and discussions

Recent research shows that the reduction of cardiovascular mortality is attributed to about 50% of the reduction of modifiable risk factors and another half of the risk is attributed to evidence based medical treatments (12, 13, 14, 15, 16, 17, 18, 19).

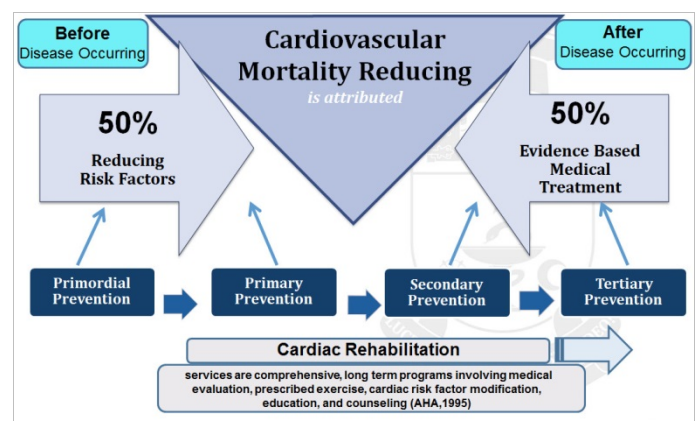


Fig. 3. The main directions of intervention in terms of cardiovascular prevention and control.

Cardiovascular rehabilitation in all its aspects is considered to be a consistent contribution to the prevention after disease occurring. Recent research offers more and more evidence of the benefits of cardiovascular rehabilitation for reducing mortality, morbidity and unplanned hospitalization, as well as improving the quality of life (Figure 3).

International guidelines underling the role of rehabilitation in the prevention and control of cardiovascular diseases recommend the cardiac rehabilitation services (20, 21).

In accordance with current recommendations at global and European level, the national clinical protocol and the standardized clinical protocol for physicians on cardiovascular rehabilitation was approved in the Republic of Moldova. Mentioned protocols regulate the cardiovascular rehabilitation in early stages (in the acute period of hospitalization) until the stable period, which provides rehabilitation services in an outpatient

regime, including rehabilitation services in the balneal-climatic facilities.

The climatic conditions of Moldova are favorable to cardiovascular prevention and rehabilitation and it is an opportunity to strengthen the cardiovascular prevention in the country.

Republic of Moldova is located in the temperate continental climate influenced by the proximity of the Black Sea and the interference of warm-humid air from the Mediterranean. The seasons are clearly defined with a short winter with a little snow and a long summer sometimes very hot and dry. The annual air temperatures average in the country is 9,3⁰C.

The continuous insolation in the average per year is in the North – 2064 hours, the Center – 2115 hours and the South – 2327 hours. Number of days without sun are as follows: North - 80, Center – 71, South - 63 days.

During the year in the Republic of Moldova the wind direction is more frequent to the northwest and less rarely to the southeast, with speeds deviating within the limits 3.3 to 6.1 m / sec. For the Republic of Moldova there are characteristic low and medium speed winds, which reach an average of 5 m / sec.

Seasonal weather conditions of the Republic of Moldova are determined in winter by unstable conditions with an average monthly temperature from 1.2⁰C to 3.3⁰C below zero. The coldest month of the winter is January: its average monthly temperature is 3-5⁰C below zero. During the winter season in the territory fall on average of 85-110 mm of precipitation, or 16-20% of the average annual amount. Precipitation falls mainly in the mixed phase: in the form of rain and snow, their daily maximum reached 50-70 mm. The unstable nature of the weather for the winter season does not determine it as an absolutely negative factor (22, 23).

In the spring the average of temperature ranges from + 8⁰C to + 10⁰C. In this season the number of hours of continuous isolation is increased, as follows: the North – 593 hours, the Center – 605 hours and the South – 642 hours. During the spring, the average precipitation falls 105-150 mm, or about 24% of the annual rainfall (22, 23).

The average temperature for the summer season range is from + 18.5⁰C to + 21⁰C. The hottest month of the summer is July, in which it is reported the

highest air temperature for the entire measurement period +41.5 ⁰C. Summer is characterized mainly by high temperatures and stable weather. During this time of year, the favorable temperature is recorded in 30-40% of days. Atmospheric precipitations in the hot season (April-November) are recorded in the average, as follows: the North – 380 mm and the South – 346 mm. The average monthly relative humidity is up to 45-47%.

Autumn is characterized by the gradual decrease of the air temperature, the increase of the wind speed and the number of days with precipitation. Autumn in the Republic of Moldova is mostly hot with clear days, the average air temperature is in the North + 9⁰C and in the South + 10.8⁰C. The first frosts appear in the North and the Center of the country after October 10 and in the South area even later.

In the Republic of Moldova warm weather with comfortable temperatures lasts 175 days and the relative humidity ranges from 66 to 87% on average. The thermal regime of the country climatic conditions is the most important curative factor for the treatment of chronic diseases.

The comparative analysis of the data on the weather conditions in the Republic of Moldova, based on the degree of negative exposure of the weather elements, confirmed that the climate of the Republic of Moldova belongs to the "favorable" and partially - "relatively favorable" climate group for the rehabilitation of patients with chronic diseases, including cardiovascular (22, 23). The climatic conditions of the Republic of Moldova are sufficiently favorable for carrying out cardiovascular prevention and rehabilitation using nature resources.

The main methods of climate therapy accessible to the Republic of Moldova are:

Heliotherapy – the beneficial action of sunlight is indicated for the treatment of skin diseases and nervous system;

Aerotherapy – the complex action of the weather elements on the body (temperature, humidity, wind movement, solar radiation and barometric pressure) by performing the doctor's prescribed walks in patients with various diseases, including cardiovascular;

Land-therapy – dosage walking on special routes for curative and rehabilitation purposes;

The main methods that use the natural resources

accessible to the Republic of Moldova are:

Ampelotherapy – the dosed use of grape juice for the treatment of various diseases is indicated for liver, kidney and circulatory system disorders.

Peloidotherapy – The dosage application of the curative sludge is indicated for the diseases of the musculoskeletal, gynecological, nervous, and circulatory system.

Balneotherapy – mineral water treatment that is done by internal and external administration. When administering, the chemical composition of the water is taken into account.

The favorable climate is a natural therapy with multiple possibilities to treat different chronic conditions. Large use of climatic factors in cardiovascular prevention programs will help improve cardiovascular health in the Republic of Moldova. Application of methods based on the action of climatic factors in cardiovascular rehabilitation process contributes to its efficiency improvement. Increasing the role of tertiary prevention is a good practice for the quality improvement of medical services for this category of patients. By making appropriate, timely and complex measures of primary, secondary and tertiary prevention cardiovascular disease can be substantially prevented.

Conclusions

Strengthening cardiovascular prevention centered on a complex approach to all its primary, secondary, and tertiary components is an opportunity to reduce premature mortality in the population.

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