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THE ROLE OF HIGH-NORMAL BLOOD PRESSURE IN THE DEVELOPMENT OF ARTERIAL HYPERTENSION IN YOUNG PEOPLE AND IMPROVEMENT OF PREVENTIVE STRATEGIES

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Abstract Background: Arterial hypertension is one of the leading risk factors for cardiovascular morbidity and mortality worldwide. High-normal blood pressure in young people represents an important clinical and preventive concern, as it may be associated with an increased probability of developing sustained hypertension and future cardiovascular complications.

Objective: To investigate the role of high-normal blood pressure in the development of arterial hypertension among young people and to identify effective approaches for improving its early prevention.

Materials and Methods: The study is based on a review and analysis of contemporary scientific literature, international clinical guidelines, and evidence concerning elevated blood pressure, cardiovascular risk factors, and hypertension prevention in young adults. Comparative, analytical, and systematic approaches were used.

Results and Discussion: The analysis indicates that elevated blood pressure in young people is associated with several modifiable and non-modifiable risk factors, including overweight and obesity, physical inactivity, excessive dietary sodium intake, psychological stress, sleep disturbances, unhealthy dietary habits, and genetic predisposition. Persistent elevation of blood pressure may contribute to endothelial dysfunction, increased vascular resistance, and early cardiovascular remodeling. Regular blood pressure screening, comprehensive cardiovascular risk assessment, lifestyle modification, and individualized preventive interventions are essential components of early prevention.

Conclusion: Early identification of high-normal blood pressure and timely implementation of preventive measures may help reduce the future burden of arterial hypertension among young people. An integrated approach combining screening, risk stratification, lifestyle modification, and regular follow-up should be considered a priority in preventive healthcare.

Keywords: young adults, high-normal blood pressure, elevated blood pressure, arterial hypertension, cardiovascular risk factors, early detection, primary prevention, lifestyle modification.

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Introduction Arterial hypertension remains a major global public health challenge and an important contributor to cardiovascular diseases, stroke, chronic kidney disease, and premature mortality. Although hypertension is traditionally considered a disease affecting middle-aged and older individuals, its development frequently begins much earlier in life.High-normal blood pressure is an important early indicator of potential cardiovascular risk. In young individuals, persistent elevation of blood pressure may precede the development of established arterial hypertension and may reflect early functional and structural changes in the cardiovascular system. According to the 2024 European Society of Cardiology (ESC) Guidelines, office blood pressure values of 120–139 mmHg systolic and/or 70–89 mmHg diastolic are classified as elevated blood pressure. The guidelines also emphasize the importance of cardiovascular risk assessment and preventive lifestyle interventions in young adults aged 18–40 years.Despite the importance of early prevention, elevated blood pressure in young populations is frequently underdiagnosed because of the absence of clinical symptoms and insufficient awareness of cardiovascular risk.Therefore, identifying early blood pressure abnormalities and developing effective preventive strategies are essential for reducing the long-term burden of arterial hypertension.
Aim of the Study To evaluate the role of high-normal blood pressure in the development of arterial hypertension among young people and to substantiate approaches aimed at improving early detection, cardiovascular risk assessment, and primary prevention.
Materials and Methods The research methodology was based on the analysis of contemporary scientific publications, international clinical guidelines, and epidemiological evidence concerning elevated blood pressure and arterial hypertension in young adults.
The following methods were applied:
• Analysis of scientific literature and international recommendations.
• Comparative assessment of cardiovascular risk factors.
• Evaluation of current approaches to blood pressure measurement and monitoring.
• Systematization of preventive strategies for young individuals with elevated blood pressure.
Particular attention was given to the recommendations of the 2024 ESC Guidelines for the management of elevated blood pressure and hypertension. Clinical approaches to blood pressure assessment included repeated standardized office measurements, home blood pressure monitoring (HBPM), and 24-hour ambulatory blood pressure monitoring (ABPM).
Results and Discussion The analysis of contemporary scientific evidence demonstrates that elevated blood pressure in young people is a multifactorial condition influenced by genetic, metabolic, behavioral, and environmental factors. Among the major modifiable risk factors are overweight and obesity, insufficient physical activity, excessive sodium consumption, unhealthy dietary patterns, chronic psychological stress, inadequate sleep, and harmful habits. The persistence of elevated blood pressure may contribute to endothelial dysfunction, increased peripheral vascular resistance, arterial stiffness, and early cardiovascular remodeling. These mechanisms may facilitate the progression from elevated blood pressure to clinically established arterial hypertension.
The 2024 ESC Guidelines identify young adulthood (18–40 years) as an important

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period for cardiovascular prevention. The guidelines emphasize that hypertension awareness, treatment, and control remain insufficient in this population. An important diagnostic consideration is the possibility of white-coat hypertension and masked hypertension. Therefore, a single office blood pressure measurement should not be considered sufficient for establishing a diagnosis. Repeated measurements and out-of-office monitoring are particularly important in young individuals. Based on the analyzed evidence, the improvement of preventive strategies should include the following key components:

1. Early screening and monitoring. Regular blood pressure measurement during preventive medical examinations should be implemented to identify young individuals with persistently elevated blood pressure.

2. Comprehensive cardiovascular risk assessment. Assessment should include body mass index, waist circumference, family history, dietary habits, physical activity, smoking status, and relevant metabolic parameters.

3. Nutritional intervention. Reduction of excessive sodium intake, increased consumption of vegetables and fruits, and adoption of a balanced dietary pattern should be encouraged.

4. Promotion of physical activity. Regular aerobic exercise and reduction of sedentary behavior are important measures for improving vascular function and maintaining optimal blood pressure.

5. Psychological and behavioral interventions.

Stress management, adequate sleep, smoking cessation, and avoidance of harmful habits should be incorporated into individual preventive programs.

6. Individualized follow-up and digital monitoring.

Young individuals with persistently elevated blood pressure should receive regular medical follow-up. Home blood pressure monitoring and digital health technologies may improve awareness, adherence, and early detection of unfavorable changes. Particular attention should also be paid to identifying secondary causes of hypertension in young patients with confirmed arterial hypertension.

Conclusion

High-normal blood pressure represents an important early cardiovascular risk indicator in young people and deserves greater attention in preventive medicine. [04/11/2026 11:22] Dildora Dilmurodovna: The analysis demonstrates that the development of arterial hypertension is associated with a combination of genetic predisposition, metabolic abnormalities, and modifiable lifestyle factors. Improving preventive strategies requires an integrated approach that combines early screening, standardized blood pressure assessment, comprehensive risk stratification, lifestyle modification, and continuous monitoring. The implementation of individualized preventive programs among young people with elevated blood pressure may contribute to reducing the future incidence of arterial hypertension and improving long-term cardiovascular health.