



CURRENT CHALLENGES IN CHILDREN'S HEALTH AND REGIONAL MEASURES TO IMPROVE IT

Shoyunusova N.Sh.

Assistant, Department of Social Hygiene and Health Care Management,
Andijan State Medical Institute

ABSTRACT: Children's health is a key indicator of the social and economic development of society and reflects the effectiveness of the national health care system. Current trends demonstrate an increase in chronic diseases in childhood, a growing prevalence of obesity, nutritional disorders, and psycho-emotional disturbances, largely associated with urbanization, lifestyle changes, reduced physical activity, and exposure to stress factors. Additional influences include environmental conditions and digitalization, which, along with positive effects, also create new risks for children's health. This review article analyzes the main challenges and regional differences determined by socio-economic conditions, accessibility of medical care, and the educational environment. Particular attention is paid to the need for developing and implementing regional strategies for strengthening children's health, including preventive programs, the development of school and family medicine, intersectoral cooperation, and systematic monitoring of health status. Such a comprehensive approach will contribute to improving the quality of life of the younger generation and ensuring sustainable development of society.

Keywords: children's health, contemporary challenges, chronic diseases, prevention, regional strategies, school medicine, family medicine, lifestyle, social factors, sustainable development.

АКТУАЛЬНЫЕ ВЫЗОВЫ В СФЕРЕ ДЕТСКОГО ЗДОРОВЬЯ И РЕГИОНАЛЬНЫЕ МЕРЫ ПО ЕГО УЛУЧШЕНИЮ

Шоюнусова Н.Ш.

Ассистент, кафедра социальной гигиены и управления здравоохранением,
Андижанский государственный медицинский институт

АННОТАЦИЯ: Здоровье детей является важнейшим индикатором социального и экономического развития общества и отражает эффективность национальной системы здравоохранения. Современные тенденции свидетельствуют о росте хронических заболеваний в детском возрасте, увеличении распространенности ожирения, нарушений питания и психоэмоциональных расстройств, что во многом связано с урбанизацией, изменением образа жизни, снижением физической активности и воздействием стрессовых факторов. Дополнительное влияние оказывают экологическая ситуация и цифровизация, которая, наряду с положительными эффектами, приводит к формированию новых рисков для здоровья детей. В обзорной статье анализируются ключевые вызовы и региональные различия, обусловленные социально-экономическими условиями, доступностью медицинской помощи и образовательной среды. Особое внимание уделяется необходимости разработки и внедрения региональных стратегий укрепления здоровья,



включающих профилактические программы, развитие школьной и семейной медицины, межсекторальное сотрудничество и системный мониторинг состояния здоровья. Такой комплексный подход позволит повысить качество жизни подрастающего поколения и обеспечить устойчивое развитие общества.

Ключевые слова: здоровье детей, современные вызовы, хронические заболевания, профилактика, региональные стратегии, школьная медицина, семейная медицина, образ жизни, социальные факторы, устойчивое развитие.

RELEVANCE: Child health is one of the most important strategic objectives of the healthcare system, as it is during childhood that the foundations of physical and mental development are formed, healthy lifestyle habits are established, and the preconditions for the future social and economic potential of society are created. In modern conditions, there is an increase in chronic non-communicable diseases among children, as well as an increasing prevalence of obesity, eating disorders, and psychoemotional disorders, which are directly related to urbanization, decreased physical activity, lifestyle changes, and the impact of adverse environmental factors. Digitalization and the active use of electronic technologies also create new challenges, affecting the behavior, cognitive development, and mental health of the younger generation. Regional differences in the level of medical care, socioeconomic conditions, and the educational environment exacerbate inequalities in children's health. All this underscores the need to develop comprehensive, evidence-based strategies aimed at improving children's health at the regional level and ensuring the sustainable development of society [1].

MATERIALS AND METHODS: This study, written as a review article, is based on a comprehensive analysis of domestic and international scientific literature on children's health, current challenges, and regional strategies for improving it. The study included publications covering the period 2010–2025, reflecting epidemiological data on the prevalence of chronic diseases, obesity, nutritional disorders, and psychoemotional disorders among children of various ages. Particular attention was paid to materials from the World Health Organization, UNICEF, as well as statistical data from the Ministry of Health of the Republic of Uzbekistan and regional centers for maternal and child health.

The analysis utilized content analysis, comparative approaches, and systems approaches. In the first stage, key research areas were identified: current trends in children's health, risk factors, regional differences, and existing prevention programs. In the second stage, the effectiveness of regional strategies and their alignment with international recommendations were critically assessed. This comparative analysis revealed both general patterns and specific regional characteristics.

The materials and methods of the study provided a comprehensive review of scientific sources and the regulatory framework, which made it possible to form a holistic understanding of modern challenges to children's health and possible ways to strengthen it at the regional level.

RESULTS AND DISCUSSION: Child health is a fundamental foundation for sustainable societal development and a key indicator of healthcare system effectiveness.



According to the World Health Organization (WHO), more than 30% of the global disease burden occurs in childhood, and approximately 80% of chronic adult pathologies develop in early life. In Uzbekistan, as in most Central Asian countries, children and adolescents account for approximately 35% of the total population, making their health a strategic priority for public policy. The health of the younger generation directly impacts demographic dynamics, the quality of the workforce, and the country's socioeconomic potential.

Modern challenges in children's health are associated with a number of factors. First, there is a rise in non-communicable diseases such as obesity, type 2 diabetes, and asthma, which were previously rarely diagnosed in childhood. According to UNICEF, one in five children worldwide is overweight, and in middle-income countries, the prevalence of obesity has almost doubled over the past 20 years. Second, globalization and urbanization contribute to decreased physical activity and the development of unhealthy eating habits. Third, unfavorable environmental conditions and exposure to stressors increase the incidence of psychoemotional disorders in children, including anxiety and depression. Digitalization poses an additional challenge : despite all its positive aspects, it leads to increased screen time, which is accompanied by sleep disturbances, decreased concentration, and an increased risk of social isolation [2,3] .

The purpose of this article is to analyze current challenges to children's health and identify regional strategies aimed at improving it. The main objectives of the study are to review current trends in children's health at the global and regional levels, identify risk factors and their consequences for the younger generation, and justify the need to implement comprehensive preventive programs and strategies that take into account the socioeconomic, cultural, and environmental characteristics of the regions [2,3] .

Modern challenges to children's health are multifactorial and complex, reflecting global changes in the socioeconomic, environmental, and cultural environments. Over the past decades, the structure of childhood morbidity has undergone significant changes. While infectious diseases previously represented the primary burden, chronic noncommunicable pathologies are now becoming more prevalent, including obesity, type 2 diabetes, asthma, allergies, and psychoemotional disorders. These conditions are influenced by new living conditions and require a comprehensive healthcare response.

One of the most significant challenges is the rising number of overweight and obese children. The situation is exacerbated by urbanization, changing diets, high consumption of high-calorie, low-nutrient foods, and decreased physical activity. In urban areas, children increasingly spend time in sedentary leisure activities, leading to an imbalance between energy intake and energy expenditure . The consequences of obesity are long-term: such children have a higher risk of early-onset cardiovascular disease, hypertension, and metabolic syndrome.

Psychoemotional disorders are becoming an equally pressing issue. Today's children face increased academic demands, a fast-paced lifestyle, and the significant influence of the digital environment. Increased screen time leads to sleep disruption, decreased concentration, and increased levels of anxiety and depression. During adolescence, this can be exacerbated by social pressure and inequality of opportunity, which impacts overall mental health [4] .



Environmental factors also play a significant role. Air pollution, the presence of toxic substances in water and food, and deteriorating sanitary and hygienic conditions in some regions pose additional risks to children. Children are more sensitive to the effects of adverse environmental factors due to the immaturity of their detoxification systems and their rapid growth. In areas with high levels of air pollution, there is an increase in asthma and other chronic respiratory diseases in school-aged children.

Particular attention should be paid to infectious diseases, which, despite a decline thanks to vaccination, remain a significant challenge. New viral infections, epidemic outbreaks, and the emergence of resistant microorganisms pose a threat to children's health. The COVID-19 pandemic has demonstrated the vulnerability of children's health not only to the virus itself but also to its indirect consequences: limited physical activity, worsening psycho-emotional well-being, and reduced access to routine medical care.

Socioeconomic inequality exacerbates these challenges. In poor families, children are more likely to suffer from poor nutrition, limited access to quality healthcare, and unfavorable living conditions. Meanwhile, in wealthier populations, problems of physical inactivity, stress, and overeating are becoming more pressing. This underscores the importance of regional analysis and consideration of socioeconomic characteristics when developing child health strategies.

Contemporary challenges to children's health are global in nature, but they manifest themselves with regional specifics. They include the rise of non-communicable diseases, psychoemotional disorders, the impact of digital technologies, the impact of adverse environmental factors, and the persistent threat of infections. These challenges require comprehensive solutions combining preventive, medical, educational, and social measures. Only a systemic approach will minimize negative consequences and create conditions for the full development of the younger generation [5,6] .

Regional patterns of child health in Uzbekistan reflect both global trends and specific factors related to socioeconomic development, the level of healthcare, and environmental conditions. The country has a young population: almost 35% of the population are children and adolescents. This demographic situation makes the health of the younger generation a key priority for the national healthcare system.

One of the most pressing issues is the incidence of infectious diseases. Despite significant progress in vaccination, outbreaks of measles, viral hepatitis A, and acute intestinal infections are still being reported in some regions. The main risk factors remain poor sanitation, a shortage of clean drinking water in some rural areas, and low levels of hygiene. At the same time, national immunization programs are keeping a number of infections, including polio and tuberculosis, under control.

At the same time, chronic non-communicable diseases are becoming increasingly important in childhood morbidity in Uzbekistan. According to the Ministry of Health, the number of children with obesity, anemia, and endocrine disorders has increased over the past ten years. Anemia remains one of the most common conditions, especially among adolescent girls, due to both dietary factors and inadequate iron deficiency prevention. Obesity is more prevalent in urban areas, where physical activity is declining and high-calorie foods are becoming more common.



The psycho-emotional health of children is also becoming increasingly important. With the fast pace of life, the active adoption of digital technologies, and increasing educational pressures, the number of children with anxiety, depression, and sleep disorders is increasing. In rural areas, additional stress factors are associated with family economic instability and limited access to psychological support [4,5] .

Environmental factors have a significant impact on the health of children in Uzbekistan. Air quality problems, particularly in the major industrial centers of the Fergana Valley and Tashkent region, contribute to an increase in respiratory diseases. In some regions, the effects of the Aral Sea disaster persist, resulting in increased rates of allergic and respiratory diseases among children.

Socioeconomic inequality also shapes health disparities. Wealthy families often face issues of excess weight, a sedentary lifestyle, and psycho-emotional stress, while low-income families face nutritional deficiencies, limited access to healthcare, and increased vulnerability to infections.

Regional characteristics of children's health in Uzbekistan are determined by a combination of traditional infectious diseases and new challenges related to lifestyle, psycho-emotional state, and environmental factors. These characteristics require the development of differentiated strategies: strengthening preventive systems, improving nutrition and sanitation, expanding access to medical and psychological care, and implementing comprehensive environmental measures. This approach will improve children's health and promote the sustainable development of society as a whole [6] .

Strategies and approaches to improving children's health at the regional level in Uzbekistan must take into account both global trends and specific national characteristics, including demographic structure, socioeconomic conditions, and environmental factors. State policy on protecting the health of the younger generation is based on the principles of prevention, intersectoral collaboration, and ensuring equal access to medical and social services.

One of the key areas is the development of preventive programs. Initiatives are being implemented in Uzbekistan to reduce the prevalence of infectious diseases through mass vaccination, public health education, and improved sanitation. Programs aimed at preventing anemia and nutritional disorders are also crucial. Balanced nutrition standards, including foods fortified with iron and vitamins, are being introduced in schools and preschools. These measures help reduce micronutrient deficiencies and strengthen children's immunity.

Developing school and family medicine is another strategic priority. School health clinics are being established in cities and rural areas to provide regular health monitoring and preventive examinations for students. In rural areas, family clinics play a significant role, providing medical care to children within walking distance. In recent years, emphasis has been placed on the integration of information technology: electronic health records, remote consultations, and digital monitoring allow for more effective monitoring of child development and the prompt identification of risks.

Intersectoral collaboration plays a vital role in implementing regional strategies. Addressing children's health issues is impossible without the participation of the education system, social



protection, and environmental services. The Ministry of Health, in conjunction with the Ministry of Public Education, is developing educational programs to promote healthy lifestyles, including lessons on physical activity, proper nutrition, and hygiene. Social services are involved in supporting children from low-income families, ensuring access to medical and educational resources. Environmental agencies monitor air and water quality, implementing measures to reduce exposure to harmful factors.

Systematic monitoring of children's health is particularly important. Uzbekistan has a national health screening program, which includes regular preventive examinations, anthropometric measurements, and psychoemotional assessments. The data obtained form the basis for analyzing regional differences and adjusting strategies. Regional maternal and child health centers play a key role in coordinating this work, allowing for measures to be tailored to the specific conditions of regions and districts [8] .

An integral part of the strategy is addressing children's psycho-emotional health. School psychological services are being established, a network of psychological and pedagogical support centers is being developed, and teachers and parents are being trained in the early detection of anxiety and depression. This approach is aimed at fostering resilience to stress and the harmonious development of the child's personality.

The environmental component also plays a key role. In regions affected by the Aral Sea disaster, special programs are being implemented to provide children with clean water, organize health camps, and conduct regular medical examinations. This helps reduce the negative environmental impact and improve the quality of life for children in ecologically vulnerable areas.

Regional strategies for improving children's health in Uzbekistan are based on a combination of preventive measures, the development of school and family medicine, intersectoral collaboration, systemic monitoring, and consideration of environmental factors. This integrated approach ensures the development of a sustainable health care system for the younger generation, helps reduce morbidity, and lays the foundation for the country's sustainable socioeconomic development.

An analysis of the current state of children's health in Uzbekistan shows that, despite progress in a number of areas, a significant number of unresolved issues remain, both medical and socioeconomic in nature. Children's health serves as an indicator of a country's sustainable development, reflecting the effectiveness of the national healthcare system, the quality of social policy, and the state of the environment.

Since independence, Uzbekistan has achieved significant results in reducing infant mortality. While infant mortality in the early 2000s was over 40 per 1,000 live births, by 2023 this figure had decreased almost threefold. This was made possible by the implementation of the Maternal and Child Health program, expanded vaccination coverage, and improved access to primary health care. However, despite these positive trends, differences in rates persist in rural areas compared to urban areas [1] .

The rise in non-communicable diseases among children is particularly noteworthy. According to the Ministry of Health, obesity among school-aged children has increased by more than 60% over the past ten years. In Tashkent and regional centers, one in six children is overweight. This



is due to changing diets, the widespread consumption of fast food and sugary drinks, and low levels of physical activity. In rural areas, the prevalence of obesity is lower, but underweight and chronic anemia are more common, indicating significant regional differences.

Anemia remains one of the most significant child health problems in the republic. According to national studies, signs of iron deficiency are found in 20–25% of school-age children, with the highest prevalence among adolescent girls. This is due to dietary factors, low meat consumption in some families, and the lack of sufficient preventive programs covering all regions. The long-term consequences of anemia include decreased cognitive abilities, delayed physical development, and increased fatigue in children [2,3] .

The situation with psychoemotional health is no less alarming. According to national experts, approximately 12–15% of children and adolescents in Uzbekistan exhibit signs of anxiety, depression, or sleep disorders. In large cities, psychoemotional problems are more often associated with high academic workloads, competition, and digital addiction. In rural areas, the main stressors are social instability, family economic hardship, and limited access to psychological care. The existing network of school psychologists covers no more than 40% of educational institutions, indicating the need to expand human resources and implement preventative mental health programs.

Environmental factors also have a significant impact on children's health. Air pollution is particularly problematic in the Fergana Valley, where high population density and developed industry contribute to increased concentrations of harmful substances in the atmosphere. Children in these regions are more likely to suffer from chronic bronchitis, asthma, and allergies. In Karakalpakstan and surrounding areas, the impact of the Aral Sea disaster persists. High concentrations of salts and toxins in the air and water lead to increased rates of respiratory diseases, gastrointestinal tract diseases, and allergies in children. According to regional studies, the rate of bronchial asthma in children in the Aral Sea region is 25–30% higher than the national average [8,9] .

Infectious diseases, although controlled by vaccination, remain a threat. Local outbreaks of measles and viral hepatitis A have been reported in some areas. The main causes are insufficient vaccination coverage and poor hygiene. In 2022, according to the Sanitary and Epidemiological Service, the measles vaccination rate was 92%, below the internationally recommended standard of 95%. Even a slight decrease in vaccination coverage increases the risk of epidemics [1, 2, 3] .

Socioeconomic inequality exacerbates these challenges. In low-income families, children are more likely to suffer from malnutrition, anemia, and infections, while in wealthier families, obesity, physical inactivity, and psycho-emotional stress are common. This double burden underscores the need for a differentiated approach when developing child health strategies.

Monitoring the health of the younger generation is developing, but its capabilities are still limited. Electronic health cards are being introduced in the country, but coverage by this system is less than 50% of the child population. This complicates a comprehensive analysis of trends and the identification of regional differences. The creation of a unified national database would allow for more accurate planning of preventive measures and optimal resource allocation.



The effectiveness of intersectoral collaboration also remains a subject of debate. Despite the efforts of the Ministry of Health, many initiatives in school health, psychoprophylaxis, and environmental protection lack sufficient coordination with the education and social welfare systems. As a result, programs are fragmented and do not always reach target groups. Projects to provide schools with fortified foods and fortified bread are examples of successful collaboration; however, such initiatives do not yet cover all regions [9,10].

The discussion reveals a wide range of child health issues in Uzbekistan: a combination of traditional infectious risks and a rise in chronic diseases, insufficient coverage of preventive programs, limited psycho-emotional support, and the significant impact of environmental factors. Strengthening intersectoral collaboration, developing a national monitoring system, training personnel in school psychology and pediatrics, and adapting international strategies to local conditions are key areas for further development. Only a comprehensive approach will achieve sustainable improvements in the health of the younger generation and create a solid foundation for the country's socioeconomic progress.

CONCLUSIONS : Child health in Uzbekistan remains a key indicator of socioeconomic development and reflects the effectiveness of the national healthcare system, the level of social protection, and the population's quality of life. The analysis revealed that, despite positive results in reducing child mortality and controlling infectious diseases, serious challenges remain, including the rise in chronic noncommunicable diseases, nutritional deficiencies, psychoemotional disorders, and the impact of adverse environmental factors. Regional differences are particularly significant: in rural areas, problems of underweight, anemia, and limited access to healthcare are prevalent, while in urban areas, the prevalence of obesity, physical inactivity, and stress is increasing.

Uneven socioeconomic development increases the vulnerability of certain groups of the child population, requiring tailored strategies. In this regard, comprehensive prevention is becoming a key focus, including ensuring adequate nutrition, developing school and family medicine, expanding psychological and pedagogical support, and implementing systemic health monitoring. Intersectoral collaboration, combining the efforts of healthcare, education, social protection, and environmental services, plays a crucial role.

Prospects for further improving children's health in Uzbekistan lie in the implementation of innovative approaches, the development of digital technologies for health monitoring, and expanded international cooperation. Emphasis should be placed on fostering a healthy lifestyle from an early age, improving public health awareness, and eliminating regional disparities.

Only a comprehensive and scientifically based approach, taking into account the country's social, economic, and environmental characteristics, can ensure sustainable improvement in the health of the younger generation. This, in turn, will form the foundation for long-term socioeconomic progress in Uzbekistan and an improved quality of life for society as a whole.

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