

## REVIEW OF FACTORS DETERMINING LIVING CONDITIONS OF MODERN SCHOOLCHILDREN

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Preservation and strengthening of health in the rising generation is declared as a key direction of the state policy in the Russian Federation. Systematic long-term influence of environmental factors, including mode of living and nutrition, on the processes of formation of health and physical development in children is currently taken as a pressing issue for the entire state, with regional peculiarities, specific to certain regions of Russia. The paper presents an analysis of modern Russian and foreign scientific literature regarding the influence of various environmental factors, conditions of training and education, basic components of the day regime and dietary habits on health of schoolchildren. Literature sources were searched through eLibrary, PubMed, Cyberleninka for the period from 2015 to 2022. In spite of the activities related to health protection of children and adolescents conducted by the state, official statistics and numerous studies display a continuous growth of the so-called school-associated morbidity. Analysis of historical data shows that effect of school and out-of-school factors on health of children and adolescents remains very pressing. Under these conditions, increased literacy of parents, teachers and children regarding hygienic education, formation of a healthy lifestyle and determination of managed sanitary and hygienic factors that can produce a positive influence on health and physical development of schoolchildren is given a great importance.

**Keywords:** physical development of children and adolescents, environmental factors of schoolchildren, daily regimen and nutrition, healthy way of life, hygienic education

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## ОБЗОР ФАКТОРОВ, ОПРЕДЕЛЯЮЩИХ УСЛОВИЯ ЖИЗНЕДЕЯТЕЛЬНОСТИ СОВРЕМЕННЫХ ОБУЧАЮЩИХСЯ

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Сохранение и укрепление здоровья подрастающего поколения декларируются как одно из ключевых направлений государственной политики Российской Федерации. В настоящее время систематическое длительное воздействие факторов среды обитания, в том числе образа жизни и питания, на процессы формирования здоровья и физического развития детей является актуальной проблемой всего государства, с региональными особенностями, специфическими для конкретных субъектов России. В работе представлен анализ современной отечественной и зарубежной научной литературы о влиянии различных факторов среды обитания, условий обучения и воспитания, основных компонентов режима дня и особенностей питания на здоровье детей школьного возраста. Поиск литературных источников проводился в базах данных eLibrary, PubMed, Cyberleninka в период между 2015 и 2022 гг. Несмотря на проводимые государством мероприятия по охране здоровья детей и подростков, данные официальной статистики и многочисленных исследований демонстрируют продолжающийся рост так называемой школьно-обусловленной заболеваемости. Анализ литературных данных показывает, что проблема воздействия как школьных, так и внешкольных факторов на состояние здоровья детей и подростков остается чрезвычайно актуальной. При таких условиях большое значение приобретает повышение уровня грамотности родителей, педагогов и самих детей по вопросам гигиенического воспитания, формирование установок здорового образа жизни и определение управляемых санитарно-гигиенических факторов, способных оказать положительное влияние на состояние здоровья и физическое развитие школьников.

**Ключевые слова:** физическое развитие детей и подростков, факторы среды обитания школьников, режим дня и питания, здоровый образ жизни, гигиеническое воспитание

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Health of children as an age group that constitutes the fundamental basis for the future state is one of the most important developmental characteristics. Due to high significance, numerous studies of Russian and foreign authors are devoted to examination of health and physical development of children [1–10].

Health protection and providing conditions for favorable growth and development of children and adolescents are included into priority areas of the state policy of the Russian Federation. They are based on formation of the teaching and educational process in accordance with sanitary standards and rules, performance of which will ensure preservation and strengthening of students' health. Restructuring the system of school education, digitalization of educational process, influence both of intra-school and extra-school factors produce

a significant effect on health formation of the rising generation [11, 12].

Research purpose is to analyze and generalize the results of scientific studies regarding the influence of environmental factors on health of schoolchildren in Russian and foreign sources from 2015 to 2022.

## MATERIALS AND METHODS

The scientific articles published from 2015 to 2022 that consider the influence of environmental factors, conditions of education and upbringing, basic components of daily routine and nutrition on health of schoolchildren were reviewed. The search is done through the following databases (eLibrary, PubMed, Cyberleninka).

## RESEARCH RESULTS

The existing model of educational organizations can be characterized as a multifactorial dynamic system leading to formation of a harmoniously developed and healthy personality [13, 14]. At the same time, many authors note that most of the day schoolchildren are under the influence of physical, biological, ecological, chemical, psychoemotional and other environmental factors for 11 years [15–20].

The acting educational standards are characterized by higher requirements to how education is organized. In its turn, this complicates the educational process and increases workload. In the majority of cases schooling is not consistent with physical development and health of a certain student, school teachers are not qualified enough regarding hygienic education, many parents and schoolchildren almost lack the skills of formation of a healthy lifestyle [21–25].

According to the results of numerous scientific research conducted both in Russia, and in other countries of the world during the first two decades of the new millennium, an increased number of children with overweight is found. In perspective, this can lead to an increase in the incidence of diseases due to obesity. Lifestyle of modern schoolchildren is characterized by insufficient motor activity, less time spent on walking, active outdoor games and training in sports sections, long-term watching TV, computer, smartphones or tablet games. Hypodynamia does not only determine the disharmonic physical development of children and adolescents, but also constitutes a risk factor of obesity and overweight [26–28].

Health of children and adolescents depends on nutritional regimen which is one of the main components of a lifestyle. Rational nutrition promotes balanced physical development, improves mental performance and physical activity, and non-specific protection of a child from unfavorable environmental factors. Intensive processes of a child's growth and development combined with high psychoemotional load due to a constantly evolving educational process and long-term effect of various factors of the school environment place increased requirements for the functional condition of a child's body. It includes arrival of all necessary nutrients in optimal amounts in case of properly organized regimen of nutrition both at school, and at home. Actual nutrition of modern schoolchildren is non-rational almost everywhere in the Russian Federation. When assessing the qualitative composition of food, low content of animal fat, vegetable fat and individual microelements is detected. The diet includes cereals, confectionary products and snacks. Children and adolescents prefer fast food, chips and biscuits, whereas a significant shortage of meat and milk is observed. Researches of many authors, including foreign ones, point at long-term intervals between food intakes, lack of breakfast and presence of late supper, resulting in reduced mental and physical performance, and body's defenses.

A number of researchers who examined eating habits of schoolchildren concluded that non-correspondence between qualitative and quantitative diet's characteristics, age and gender can produce an unfavorable effect on mental and physical performance of children and adolescents, increase a risk of metabolic disturbances, hypovitaminosis and microelementosis. A lack of the single systemic approach in implemented sanitary and hygienic activities aimed at prevention of overweight and obesity in children should also be noted [29–36].

Intense education at school is accompanied by stress resulting in sleep disturbances. Short sleep at night (less than 7 or 8 hours) can produce a negative effect on physical development. Sleep deficiency in schoolchildren is associated

with a long-term presence in social networks, computer games, and watching audio and video clips on different electronic devices. Disturbances of sleep and wakefulness regimen increase the risk of obesity, depression and anxiety, insomnia disorders associated with disturbed production of melatonin, pathologies of locomotor apparatus and organ of vision [21, 37–41].

A wide use of information and communication technologies (ICT) is a distinctive feature of modern education. In school education, electronic devices provide free access to various information resources, possible distant learning and learning interactivity, formation of educational communities with a flexible time and space schedule. Schoolchildren obtain any necessary or new information by searching it on the Internet without much effort [12, 14].

The current generation lives in hypermedia space. The data is a show of various events, distinctive and key feature of which is represented by an ability to attract attention of the user. Formation of digital environment is characterized by occurrence of factors capable of producing an unfavorable effect on health and physical development of children. Thus, while working with laptops a risk of disturbances of the locomotor apparatus and visual disorders is increased, as younger schoolchildren can't preserve a physiologically correct working posture. It is established that while reading from the display of an electronic device a number of eye movements and electroencephalographic activity of the brain is increased as compared with paper-based media. This testifies to marked fatigue of the CNS leading to a decrease in concentration, distraction and inability to perceive homogenous information [13, 21, 42–44].

To preserve and strengthen health of students, lessons of physical culture are available at school. However, coverage of students engaged in the lessons of physical culture is incomplete and doesn't allow to compensate for the need in movements completely. There are many reasons of poor physical activity. Thus, duration of outdoor walking and games, especially in the weekends, constitutes less than 2 hours. Children and adolescents prefer watching TV, playing computer games, using tablets and portable game consoles over physical educational and going in for sports [45].

## DISCUSSION OF RESULTS

The future intellectual and economical potential of the state and its defense capability are determined by healthy generation. However, morbidity of children demonstrates a steady growth within the last decades [1, 2].

Among schoolchildren, insufficient duration of separate components of daily regimen (motor activity, walking, night sleep) is observed. The reasons for an unhealthy way of life include a low level — and in some cases total lack — of motivation for going in for sport, lack of time because of an irrationally organized daily regimen, active use of ICT during a day, and at night. Disturbances of qualitative and quantitative characteristics are found among schoolchildren: obligatory presence of bakery and confectionary products, pasta and snacks in the diet, long-term intervals between meals, late supper and lack of some food products [30].

Properly used ICT can be very useful for modern schoolchildren. This fact is noted both by Russian and foreign researchers. Internet resources related to a healthy lifestyle are of particular importance. Promotion of a healthy lifestyle is a complex systemic process of working with population. Its purpose is to develop a responsible attitude to own health. Schoolchildren obtain data about the basic components of a healthy way of life from the network, less and less referring to parents and teachers

as the basic source of data. There is high involvement of girls and boys, positive influence of social networks, Internet sites with thematic interactive games, quizzes, actual video content, virtual societies and health centers that develop the issues of a healthy lifestyle and consult everyone who seems interested on the issues of hygienic education [46–50].

## CONCLUSIONS

Thus, analysis of modern Russian and foreign literature data shows that the influence of environmental factors on health of children remains extremely urgent.

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