

ГИГИЕНИЧЕСКИЕ АСПЕКТЫ ВОЗДЕЙСТВИЯ ФАКТОРОВ СРЕДЫ ОБИТАНИЯ НА ФОРМИРОВАНИЕ ЗДОРОВЬЯ УЧАЩИХСЯ

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В статье представлены материалы, свидетельствующие о растущем влиянии как школьных, так и внешкольных факторов на здоровье детей и подростков. Особое внимание уделяется рассмотрению основных классов «школьных» болезней.

Цель. Обоснование целесообразности изучения данной проблемы в городе Астрахань, в рамках комплексного подхода в применении здоровьесберегающих технологий.

Заключение. Проблемы, отраженные в статье, характерны практически для любого региона России, в связи с чем вопросам охраны здоровья детей, изучению влияния на него факторов среды обитания посвящено значительное количество исследований и в Астраханской области. Вместе с тем, отсутствуют работы, посвященные оценке комплексного использования здоровьесберегающих технологий в контексте их влияния на формирование здоровья учащихся, что, по нашему мнению, позволяет считать проведение таких гигиенических исследований актуальным.

Ключевые слова: гигиена; заболеваемость детского населения; факторы окружающей среды; учебный процесс; здоровьесберегающие технологии.

HYGIENIC ASPECTS OF INFLUENCE OF ENVIRONMENTAL FACTORS ON FORMATION OF SCHOOLCHILDREN'S HEALTH

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In the article materials showing the growing influence of both school and extra-school factors on health of children and adolescents are presented. Special attention is given to the main classes of school-related diseases.

Aim. To justify reasonability of studying this problem in Astrakhan within the frames of complex approach to application of health-saving technologies.

Conclusion. Problems described in the article are characteristic of practically any region of Russia, in this connection a significant number of studies are carried out in Astrakhan region devoted to issues of protection of children's health and to investigation of exposure of children to environmental factors. With this, absence of works on evaluation of complex use of health-saving technologies in terms of their influence on health of schoolchildren, permits to consider such hygienic studies actual.

Keywords: hygiene; morbidity rate of children's population; environmental factors; academic process; health-saving technologies.



A condition for socio-economic development of a nation is predominance in the country of healthy, and, consequently, able-bodied population. This factor is of high significance in the whole world, and in the Russian Federation (RF) as well. Being of high significance, issues of demography and preservation of health of the population are reflected in the Constitution of the RF and in federal laws. Since health of an individual is formed in the childhood, the world science and practical healthcare pay special attention to issues of protection of children's health in the general problem of preservation of health, in particular, in the International Program of Study of Health and Way of Life of Schoolchildren coordinated by the World Health Organization (WHO).

The *aim* of the given work is substantiation of reasonability of study of this program in Astrakhan within the frames of complex approach to use of health-saving technologies.

Protection of health of children's population that makes a mainstay of the future of the nation, and creation of optimal conditions for growth and development of children and adolescents aimed at protection and strengthening of health of the coming generation, are included into the priority direction of the public policy of the RF [1].

Formation of health of an individual is conditioned by many factors. A prolonged exposure of an organism to unfavorable environmental factors may result in impairment of parameters of physical development. On the contrary, as it is noted in many studies, improvement of conditions, good daily regime and a healthy way of life promote physical development of an individual.

Recent changes in the structure of the educational system in our country also influence the health status of the younger generation. A study in new educational institutions such as specialized such as specialized gymnasias, lyceum schools and private educational organizations, requires considerable mental and physical effort of pupils that significantly exceed their adaptation capacities. Here, with

complication of the academic program, the total duration of the working time also increases. In result, a pupil must continually perform mental work in conditions of deficit of time, and one day-off is often insufficient for complete recovery of the working capacity of a pupil which leads to functional disorders of in a child's organism [2].

The academic program in many schools exceeds recommended hygienic parameters of a week's academic load. Because of extensive academic programs, breaks between lessons become shorter, in junior school doubled lessons are often conducted, the number of pupils exceeds the established norms. In most educational institutions timetables are often made up without taking into consideration gradation of subjects by complexity. Thus, despite the results of many observations stating that in the morning hours the working capacity, in particular, mental capacity of pupils is low and reaches the optimal level by the 3^d-4th lesson, the most difficult subjects go first in the timetable. The ability to acquire new material is low on Monday, increases on Tuesday, reaches maximum on Wednesday and Thursday, while on Friday physical and mental abilities of an organism appropriately decline. With this, a brief emotional outburst may occur before the coming day off, called 'end spurt' phenomenon. However, very often in making up timetables, the fact of variation of the working capacity within a week, with periods of physiological declines and rises, is not taken into account.

A direct correlation relationship between neglect of hygienic requirements to organization of studying, health condition and performance of schoolchildren is confirmed by numerous studies.

Apart from everything else, health of schoolchildren also depends on physical activity, time of stay out-of-doors, regime of sleep and nutrition. With this, with beginning of study at school, physical activity of children considerably decreases [3].

In the modern practice of school teaching, only 10-18% of the total time is dedi-

cated to physical activity. This results in impairment of physical reactions in children and in faster development of fatigue [3].

The existing model of educational institution is in search for new ways of teaching aimed at all-sided development of children with taking into account all individual psychophysiological and intellectual capacities. Technological re-equipment of schools, introduction of new subjects into academic plans, make the pedagogical process more complicated, which increases the academic load on schoolchildren. With this, the academic activity is often not adapted to the peculiarities of development and health condition of some schoolchildren, teachers are not well educated in problems of formation and preservation of children's health, many families and children themselves do not possess any skills of formation of a healthy way of life.

It is especially important with the underlying acceleration characterized by disharmonic physical development.

In many regions of the RF, a tendency to increase in height and body mass of children and adolescents, and of the speed of biological development is observed in comparison with children of the same age of the end of the previous century. These shifts in physical development are also observed in the countries of the European Community, the USA and Canada [3-5].

Health of children and adolescents is formed under action on a growing and developing organism of different environmental factors that increases the risk for development of chronic diseases. According to the data of Research Institute of Hygiene and Protection of Health of Children and Adolescents of RAMS, 33.0% of children are referred to the first health group, 36.9% – to the second group (group of risk), and 14.3% – to the third group. Only 20.0-25.0% of adolescents may be considered healthy by the time they finish school. More than 30.0% of schoolchildren of Russia, have 4 to 6 health problems. As a consequence, the amount of children of the third and fourth health groups increases [5].

In the structure of school-related pathology the most common disorders are diseases of the musculo-skeletal systems, of gastrointestinal tract and of the organ of vision [6]. The leaders are diseases of musculo-skeletal system. This may be attributed to insufficient motor activity (hypokinesia) which not only leads to disharmonic physical development of children and adolescents, but is also a risk factor for metabolic osteopathies [5].

To strengthen health of schoolchildren, classes of physical culture are conducted with obligatory division of children to groups according to their health condition. Besides, out-of-school activities are practiced in different sports groups, gym circles, etc. Nevertheless, not all children are covered by lessons of physical culture which does not permit to compensate for the natural need in motion. Thus, a study of factors influencing the condition of health of schoolchildren of the Republic of Belarus showed that 8.5% of 10-year-old and 12-year-old schoolchildren do not participate in physical culture lessons. Each fifth child spends less than two hours out-of-doors at weekends, 80% of questioned children every day watch TV, and spend 1.5-3 or more hours a day playing or working on the computer. There are many reasons for sedentary life style of schoolchildren. Thus, walking is often replaced with use of transport means, the interest in computer games prevails over interest in physical culture and sports.

An inseparable part of a correctly organized regime of a schoolchild is a night sleep. Insufficient (less than 8 hours) sleep may negatively influence physical development of children and adolescents both on the whole and in separate parameters. Thus, the incidence of excessive body mass in children with regular lack of sleep is higher than in children with normal duration of sleep and may lead to pathological conditions [5]. Lack of time for recovery of the function of the visual analyzer probably favors chronic diseases of the organ of vision which share the leading positions in incidence with disorders in the musculo-skeletal apparatus.

A high intensity of the academic process, use of innovative forms and technologies of teaching (computers, mobile devices), early start of systematic education with visual presentation of the educational material (interactive boards) may produce a negative effect on the health condition of a schoolchild. Children and adolescents working on the computer, are to a higher extent exposed to the negative influence than adults. Influence of the unfavorable factors of the academic process in complex with a prolonged use of personal computers and of the Internet may lead to disorders in the function of the visual analyzer.

As it was noted earlier, the third most common chronic pathology among schoolchildren is diseases of the gastrointestinal tract. The problem of nutrition of schoolchildren, its irrational character take on great importance as one of the most significant factors determining health condition of schoolchildren. Incorrect nutritional habits that may form at this age, may remain lifetime. Insufficient entry of nutrients may produce an adverse effect on the parameters of physical development, success in study and may favor development of metabolic disorders and chronic diseases [7].

Intense growth and development of a child, in combination with high psycho-emotional load associated with a very tight academic process, requires continuous entry of a complex of all nutrients with food. These are proteins and their components, fats and separate fatty acids, carbohydrates, vitamins, vitamin-like and mineral substances. This can be realized only on condition of correct dietary regime in educational institutions and at home [4]. Insufficient nutrition of children is a very strong factor that can frustrate the growth rate and facilitate diseases.

Published works of Research Institute of Nutrition of RAMS, and of some foreign researchers showed that development of many diseases and their prolonged recurrent

course are associated with deficit conditions. Here, children receiving nutrition according to the age-related demands, get ill more rarely [8]. Probably due to this, one of priority directions of the national policy of Russia in protection of health of the population is creation of conditions for rational nutrition of children that provide normal harmonic development, support and stimulate the activity of functional systems of an organism, and enhance resistance of an organism to different unfavorable environmental factors [10].

Rational nutrition provides correct and timely development of different organs and systems (digestive, musculo-skeletal), and plays a role in prophylaxis of fatigue [8]. The main principles of rational nutrition of schoolchildren in educational institutions are: optimal energetic value, balanced and maximally diverse diet, adequate technological processing of products and cooking with preservation of the initial nutritional value and taste characteristics; individual approach to a child, education on peculiarities of feeding behavior (allergic reaction, intolerance to some products); correspondence to hygienic and sanitary-epidemiological requirements to nutrition of children and adolescents including requirements to the condition of dining facilities, to the supplied food products, their transportation, storage, preparation and dispensation of food [9].

Conclusion

Problems described in the article are characteristic of practically any region of Russia, in which connection a significant part of studies are devoted to issues of protection of children's health and to investigation of exposure of children to environmental factors in Astrakhan region as well. With this, there are no works evaluating complex application of health-saving technologies in the context of their influences on formation of health of schoolchildren which, in our opinion, justifies implementation of such hygienic studies.

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Дополнительная информация [Additional Info]

Финансирование исследования. Бюджет ФГБОУ ВО Астраханский ГМУ Минздрава России. [Financing of study. Budget of Astrakhan State Medical University.]

Конфликт интересов. Авторы декларируют отсутствие явных и потенциальных конфликтов интересов, о которых необходимо сообщить, в связи с публикацией данной статьи. [Conflict of interests. The authors declare no actual and potential conflict of interests which should be stated in connection with publication of the article.]

Участие авторов. Девришов Р.Д. – сбор, перевод и анализ материала, написание текста, Коломин В.В. – концепция литературного обзора, анализ материала, редактирование, Филяев В.Н., Кудряшева И.А. – редактирование. [Participation of authors. R.D. Devrishov – collection, translation and analysis of material, writing the text, V.V. Kolomin – concept of the review, analysis of material, editing, V.N. Filyaev, I.A. Kudryasheva – editing.]

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Цитировать: Девришов Р.Д., Коломин В.В., Филяев В.Н., Кудряшева И.А. Гигиенические аспекты воздействия факторов среды обитания на формирование здоровья учащихся // Российский медико-биологический вестник имени академика И.П. Павлова. 2019. Т. 27, №4. С. 530-535. doi:10.23888/PAVLOVJ2019274530-535

To cite this article: Devrishov PD, Kolomin VV, Filyaev VN, Kudryasheva IA. Hygienic aspects of influence of environmental factors on formation of schoolchildren's health. *I.P. Pavlov Russian Medical Biological Herald*. 2019;27(4): 530-5. doi:10.23888/PAVLOVJ2019274530-535

Поступила/Received: 09.04.2019
Принята в печать/Accepted: 16.12.2019