

CONTRIBUTIONS OF CERTAIN LIFESTYLE FACTORS TO HEALTH STATUS OF CONTEMPORARY SCHOOLCHILDREN

Medvedeva NYu [✉], Gunina SV, Urtenova AYu

Voronezh State Pedagogical University, Voronezh, Russia

Healthy lifestyle is one of the factors determining the human health status. The study was aimed to estimate the contributions of certain lifestyle factors to the health status of the ninth-grade students attending school in Voronezh. During the study special attention was paid to the key role of school and family in shaping the school student's strive for healthy lifestyle. The questionnaire survey carried out under conditions that precluded discussion without time limit was used as the main method. Nutrition, motor activity, personal hygiene, daily routine, and harmful habits are highlighted among the studied lifestyle components. The crucial role of such lifestyle factors, as nutrition and motor activity has been proven. The lifestyle differences between girls and boys have been revealed. Analysis of the data obtained has made it possible to find out that the main risk factors in the group of school students with the almost healthy lifestyle are malnutrition in boys and reduced motor activity in girls. Furthermore, in school students, whose lifestyle is associated with health risks, all the lifestyle components can be considered as risk factors, regardless of the child's gender.

Keywords: lifestyle, health, school, students, nutrition, motor activity

Author contribution: Medvedeva NYu — literature review, statistical data processing; Gunina SV, Urtenova AYu — data acquisition, literature review, statistical data processing.

Compliance with ethical standards: the study that was conducted in accordance with the ethical principles stated in the Declaration of Helsinki and the European Community directives (8/609EC), it did not violate human rights of endanger the respondents and complied with the requirements of biomedical ethics.

✉ **Correspondence should be addressed:** Nadezhda Yu. Medvedeva
Admirala Chursina, 14, kv. 5, Voronezh, 394072, Russia; medvedeva.nadezhda21@yandex.ru

Received: 20.12.2022 **Accepted:** 09.01.2023 **Published online:** 26.03.2023

DOI: 10.24075/rbh.2023.064

ВКЛАД ОТДЕЛЬНЫХ ФАКТОРОВ ОБРАЗА ЖИЗНИ В ФОРМИРОВАНИЕ СОСТОЯНИЯ ЗДОРОВЬЯ СОВРЕМЕННЫХ ШКОЛЬНИКОВ

Н. Ю. Медведева [✉], С. В. Гунина, А. Ю. Уртенова

Воронежский государственный педагогический университет, Воронеж, Россия

Здоровый образ жизни является одним из факторов, определяющих формирование состояния здоровья человека. Целью настоящего исследования было оценить вклад отдельных факторов образа жизни в формирование состояния здоровья учащихся девятого класса одной из школ г. Воронежа. В ходе исследования особое внимание было уделено ведущей роли школы и семьи при формировании стремления школьника к здоровому образу жизни. В качестве основного метода использовали анкетирование, которое проводили в исключаяющих возможность обсуждения условиях без ограничения во времени. Среди изученных компонентов образа жизни выделены питание, двигательная активность, личная гигиена, режим дня и вредные привычки. Доказана ведущая роль таких факторов образа жизни, как питание и двигательная активность. Выявлены различия в образе жизни девочек и мальчиков. Анализ полученных данных позволил установить, что в группе школьников, ведущих приближенный к здоровому образ жизни, основными факторами риска были нарушения питания у мальчиков и снижение двигательной активности у девочек. При этом у тех школьников, чей образ жизни был связан с риском для здоровья, к факторам риска можно было отнести практически все компоненты образа жизни, независимо от пола ребенка.

Ключевые слова: образ жизни, здоровье, школа, обучающиеся, питание, двигательная активность

Вклад авторов: Н. Ю. Медведева — анализ литературы, статистическая обработка данных, написание статьи; С. В. Гунина, А. Ю. Уртенова — сбор материала, анализ литературы, статистическая обработка данных.

Соблюдение этических стандартов: исследование, проведенное с соблюдением этических норм, изложенных в Хельсинкской декларации и Директивах Европейского сообщества (8/609EC), не ущемляло права человека, не подвергало опасности респондентов, соответствовало требованиям биомедицинской этики.

✉ **Для корреспонденции:** Надежда Юрьевна Медведева
ул. Адмирала Чурсина, д. 14, кв. 5, г. Воронеж, 394072, Россия; medvedeva.nadezhda21@yandex.ru

Статья получена: 20.12.2022 **Статья принята к печати:** 09.01.2023 **Опубликована онлайн:** 26.03.2023

DOI: 10.24075/rbh.2023.064

Preserving and maintaining health of the younger generation is an urgent challenge faced by our society. Under conditions of modern educational system, school students are significantly affected by the informational and emotional stress, which adversely affects their health when combined with physical inactivity and malnutrition. Stress, harmful habits, physical inactivity, malnutrition, poor personal hygiene result in impaired function of certain systems, thus affecting the school student's body functional state and adversely affecting the state of all systems and organs [1–5].

It is obvious that school contributes very much to the student's health. Since the students spend quite a lot of time

in educational institutions, it is alterations in their activity that may ensure positive effects on the health of children and adolescents and correction of the extra-school negative factors. It is believed that the contribution of the school risk factors to the health of children and adolescents is 20–40% [6]. This has been confirmed by various studies, however, educational background, the child's attitude towards school, and his/her life priorities contribute significantly to the extent, to which the school student's health is affected by the educational institution.

The study was aimed to estimate the contributions of certain lifestyle factors to the health status of the ninth-grade students attending school in Voronezh.

Table 1. Lifestyle classification for school-age children

Lifestyle classification	Assessment of vital functions	Total score
Healthy lifestyle	Full compliance with healthy lifestyle	30–34
Almost healthy lifestyle	Almost healthy lifestyle, no harmful habits	35–44
Lifestyle associated with health risks	Non-compliance with healthy lifestyle based on one or two components, no harmful habits	45–59
Alarming lifestyle	Non-compliance with healthy lifestyle based on three or four components, first experience with tobacco smoking and alcohol consumption	60–74
Extremely alarming lifestyle	Non-compliance with healthy lifestyle based on one or more components, risk of developing harmful habits	75–84
Dangerous to health lifestyle	Non-compliance with healthy lifestyle based on one or more components, well-formed harmful habit	85–89

METHODS

Scientific research involved assessment of the data of the online questionnaire survey of the nine-grade students attending the Comprehensive Secondary School № 102 in Voronezh. The survey covered the issues allowing one to reveal the main risk factors capable of affecting the health of children and adolescents.

The study aimed to reveal the risk factors and assess the school students' lifestyle involved 62 nine-grade students, among them 29 boys and 33 girls. The study was carried out February to April 2022. This period was selected for the study due to the fact that it is the period when school students spend much more time in educational institutions.

The questionnaire consisted of 30 questions divided into five items, six questions per item. The method to assess the lifestyle of the school-age children reported in the manual [7] was used in the study. The responses to each question were assessed using the 3-point scale: score 1 showed that the factor posed minor health risk, while score 3 corresponded to high risk. The respondent could score 30–90. The lifestyle option that corresponded to classification provided in Table 1 was defined based on the total score. To obtain representative responses, the questionnaire survey was carried out under conditions that precluded discussion without time limit.

Statistical data processing was performed by standard methods using the Statistica 13.0 software package (StatSoft; USA). The data obtained were previously tested for normality.

RESULTS

Statistical processing of the data obtained by conducting the questionnaire survey has made it possible to compile the Lifestyle Profile of the Nine-Grade Students Attending the Comprehensive Secondary School № 102 provided in Table 2.

When analyzing the data obtained, it should first be noted that none of the respondents was assigned to the fifth or sixth category of the lifestyle classification. About 10% of school students can say that their lifestyle is healthy, almost a half

of students follow healthy or almost healthy lifestyle. The alarming lifestyle has been reported in 4.8% of the respondents.

Comparison of lifestyles in boys and girls shows clearly that girls predominate among students, who follow healthy or almost healthy lifestyle, while alarming lifestyle and lifestyle associated with health risks are more common in boys. Analysis of the findings shows that the share of girls with healthy or almost healthy lifestyle is 66.6%, while the share of boys following similar lifestyles is less than a half (44.8%).

Assessment of the lifestyle components aimed at identifying the risk factors that adversely affect the schoolchildren's health based on the previously obtained data is relevant for school students with the almost healthy lifestyle or lifestyle associated with health risks. Comparative analysis of the abundance of risk factors among boys and girls is provided in Fig. 1, 2.

According to the data provided in Fig. 1, the lifestyle downgrading observed in this category of school students is due to malnutrition and reduced motor activity. Thus, it is these lifestyle components that represent risk factors for these school students, since the average score for the total population of schoolchildren exceeds eight points. According to the lifestyle component assessment, scores 6–7 correspond to minor risk, scores 8–11 correspond to low risk, while scores ≥ 12 correspond to high risk.

It should be also noted that malnutrition is the main risk factor for boys in this group, while reduced motor activity is more common among girls. Furthermore, boys are more likely to disturb their daily routine and susceptible to developing harmful habits than girls.

The results of the questionnaire survey of the group of nine-grade students, whose lifestyle is associated with health risks, that are provided in Fig. 2 suggest that all lifestyle components, except personal hygiene, are almost at the same level and these components adversely affect the children's health. Thus, the lifestyle downgrading is due to additional impact of such factors, as daily routine disruption and developing harmful habits. The gender-related differences in the effects of various components are less obvious in school students with the lifestyle associated with health risks. It should be noted that harmful habits are more common in boys.

Table 2. Lifestyle profile of the nine-grade students attending the Comprehensive Secondary School № 102 (% of positive answers, n = 62)

Lifestyle classification	Boys	Girls	Total
Healthy lifestyle	6.9	12.1	9.7
Almost healthy lifestyle	37.9	54.5	46.8
Lifestyle associated with health risks	48.3	30.3	38.7
Alarming lifestyle	6.9	3.0	4.8
Extremely alarming lifestyle	0.0	0.0	0.0
Dangerous to health lifestyle	0.0	0.0	0.0

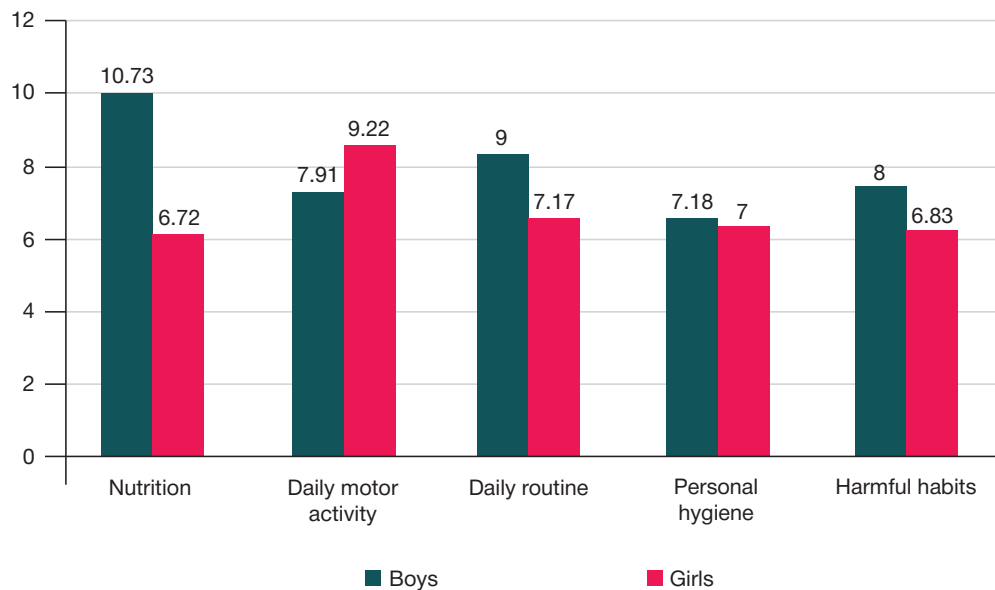


Fig. 1. Assessment of lifestyle components in the nine-grade students with the almost healthy lifestyle (scores)

DISCUSSION

Contemporary authors consider lifestyle as a system of the most typical characteristics of the mode of activity and the attitude towards oneself, people around and society that is formed through this activity [8–12].

By definition, healthy lifestyle is a system of conscious activity and motivated behavior that meets biological and social needs of the growing organism and corresponds to physical, mental, and social well-being, i.e. optimal health status.

Our findings show that the major causes of diseases in children and adolescents are associated with the effects of various negative factors, among which special niche is occupied by intra-school factors and lifestyle factors. Family, school, and society contribute significantly to shaping the school student's lifestyle. It is the features of lifestyle shaped under the influence of educational institution, society, and parental supervision that directly affect the child's health.

Nutrition, motor activity, personal hygiene, daily routine, and harmful habits are highlighted among the lifestyle components. The effects of various factors on these lifestyle components

define their type: negative or positive. The sources of negative factors may vary. Thus, malnutrition may be associated with insufficient family income, social and family risk factors, and high workload and the school student's engagement in the educational institution. Various risk factors often work in a complex adversely affecting the child's lifestyle, which, in turn, adversely affects his/her health.

The long-term research pursued by the Research Institute of Hygiene and Health of Children and Adolescents of RAMS and Sysin Research Institute of Human Ecology and Environmental Health has shown that the contribution of intra-school factors affecting the students' health is 21–27%, and students spend most of the day (about 70% of daytime) at school. As for their sanitary and epidemiological well-being, only 19% of institutions can be considered as prosperous, 55% — as conditionally prosperous, 25% — as vulnerable [13]. The researchers [14] note that it is necessary to take into account the age-related features and the fact that the child is through various stages of growth when assessing the school student's health.

Today, a lot of research is being done in this field. Each study is essential for both assessment of the efficacy of the currently

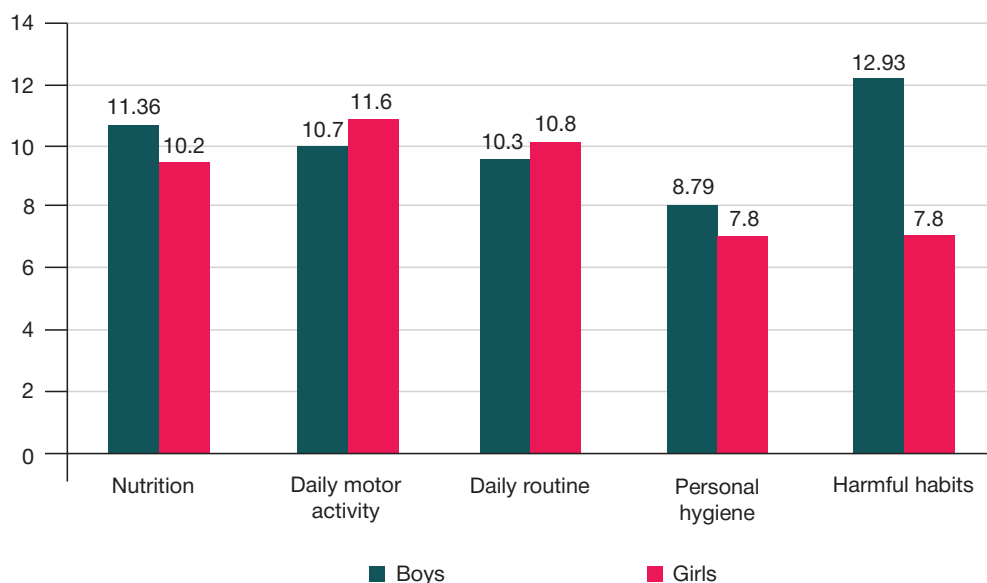


Fig. 2. Assessment of lifestyle components in the nine-grade students, whose lifestyle is associated with health risks (scores)

applied health preservation measures and identification of the major risk factors. Most data confirm the problems that have been already revealed in other regions. Some studies have revealed some features of health in children of certain age or children living in certain area together with some features of morbidity and physical growth associated with lifestyle and child's daily life [15].

The regions of our country are different, that is why different results can be obtained in these regions. The results would define the list of measures aimed at improving the school students' health. Every study, even the smallest one, is important, both for children it is focused on and for assessment of the overall picture, since despite the unique nature of each and every child, some common patterns, to varying extent typical for different regions or age groups of students, can be revealed.

On the one hand, unlike most recommendations, the totally personal approach to lifestyle adjustment in educational institutions is impossible, since the efforts cannot be focused directly on every single student. On the other hand, in today's conditions only personal approach to combating the risk factors appears to be effective enough, that is why it is necessary to consider the benefits of both approaches when developing the complex of measures aimed at preventive maintenance of a healthy lifestyle and shaping of the health preserving space in the educational institution. This would make it possible to effectively promote healthy lifestyles and prevent pathological conditions in schoolchildren in the context of efforts and resources available to the educational institution. The measures aimed at preventive maintenance of a healthy lifestyle and shaping of the health preserving space in the educational institution should include several phases, some of which may be represented by public events. When planning

and developing the events and various kinds of activities aimed at shaping a healthy lifestyle and health preservation, it must be remembered that hygienic education focused on prevention of harmful habits should be built not on a principle of prohibition and intimidation, but on a principle of explanation and adequate substitute [16–18]. Identification of children at risk, whose lifestyle is associated with health risks, would make it possible to focus the personalized efforts on them. Addressing the problems of these children in accordance on each and every lifestyle component based on the data obtained by monitoring would make working with the children even more effective.

CONCLUSIONS

The findings indicate that more than a half of the nine-grade students attending the Comprehensive Secondary School № 102 follow healthy or almost healthy lifestyle, among them girls prevail. The fact that there are no children who follow alarming or dangerous to health lifestyle among the surveyed school students can be considered a positive result. It has been found out that the main risk factors in the group of school students with the almost healthy lifestyle are malnutrition in boys and reduced motor activity in girls. It has been proven that in the group of school students, whose lifestyle is associated with health risks, all the lifestyle components, except personal hygiene, can be considered as risk factors. The data obtained by performing the questionnaire survey and processing the results can be used for both personalized lifestyle assessment and developing the profile of the class or certain group of schoolchildren. It is recommended to reveal the gender-related differences by dividing the samples into boys and girls when performing further research.

References

1. Bezrukikh MM. Zdorov'e shkol'nikov, problemy, puti resheniya. *Sibirskij pedagogicheskij zhurnal*. 2012; (9): 11–16 (in Rus.).
2. Semenkov TN, Kasatkina NEh, Kazin EhM. Faktory "riska", vliyayushchie na zdorov'e obuchayushchikhsya v processe obucheniya. *Vestnik Kemerovskogo gosudarstvennogo universiteta*. 2011; 2 (46): 98–106 (in Rus.).
3. Krikalo IN, Naumchik MN. Uroven' funktsional'nogo sostoyaniya i zabollevaemost' shkol'nikov starshego vozrasta. *Vestnik Mozyrskogo gosudarstvennogo pedagogicheskogo universiteta imeni I.P. Shamyakina*. 2019; 1 (53): 29–33 (in Rus.).
4. Gadzhikerimov GEh, Glushakov IA, Gasparyan LD, et al. Ocenka sostoyaniya zdorov'ya shkol'nikov na osnove analiza zhalob. *Byulleten' medicinskikh internet-konferencij*. 2020; 10 (2): 54 (in Rus.).
5. Sokolova NV, Popov VI, Kartysheva SI, Koroleva AO. Nekotorye aspekty profilakticheskoy deyatel'nosti uchitelya, napravlennoy na uluchshenie sostoyaniya zdorov'ya shkol'nikov. *Gigiena i sanitariya*. 2014; 93 (1): 90–1 (in Rus.).
6. Karakhanova TM. Vremya sna, pitaniya, ukhoda za soboj kak faktory sokhraneniya zdorov'ya. *Obshchestvo i zdorov'e: sovremennoe sostoyanie i tendencii razvitiya: sbornik materialov Vserossiyskoy nauchno-prakticheskoy konferencii, s mezhdunarodnym uchastiem, Moskva, 19–20 sentyabrya 2013 g. M.: Pervyj Moskovskij gosudarstvennyj medicinskij universitet imeni I.M. Sechenova Ministerstva zdoravookhraneniya i social'nogo razvitiya Rossiyskoy Federacii*, 2013: 554–65 (in Rus.).
7. Ignatova LF, Stan VV, Khamidulina KhKh. Metodika ocenki obraza zhizni u detej shkol'nogo vozrasta. M.: FGBOU DPO RMANPO, 2019; 54 p. (in Rus.).
8. Sukharev AG, Ignatova LF, Stan VV. Metodika ocenki obraza zhizni shkol'nikov. *Voprosy shkol'noj i universitetskoj mediciny i zdorov'ya*. 2015; (3): 13–16 (in Rus.).
9. Sukharev AG, Stan VV, Ignatova LF. Rol' obrazovatel'noj organizacii v formirovanii u uchashchikhsya motivacii k zdorov'yu i zdorovomu obrazu zhizni. *Voprosy shkol'noj i universitetskoj mediciny i zdorov'ya*. 2016; (2): 32–5 (in Rus.).
10. Sukharev AG, Ignatova LF, Stan VV. Rol' shkoly v formirovanii zdorovogo obraza zhizni obuchayushchikhsya. *Voprosy shkol'noj i universitetskoj mediciny i zdorov'ya*. 2015; (4): 56–7.
11. Esaulenko IEh, Popov VI, Zujkova AA, Petrova TN. Konceptual'nye osnovy okhrany zdorov'ya i povysheniya kachestva zhizni uchashchejsya molodezhi regiona. *Voronezh: Nauchnaya kniga*, 2013; 810 p. (in Rus.).
12. Kuchma VR, Ushakov IB, Sokolova NV, et al. Metody ocenki kachestva zhizni shkol'nikov. *Voronezh: Istoki*, 2006; 112 p. (in Rus.).
13. Komlev AV. Psikhologicheskoe zdorov'e obuchayushchikhsya v sovremennom obrazovatel'nom processe. *Edinoe obrazovatel'noe prostranstvo kak faktor formirovaniya i vospitaniya lichnosti: Materialy XIII Mezhdunarodnoj nauchno-prakticheskoy konferencii studentov, magistrantov i molodykh uchenykh, Ryazan', 25–26 aprelya 2019 g. Ryazan: Ryazanskij gosudarstvennyj universitet imeni S. A. Esenina*, 2019: 162–5 (in Rus.).
14. Sukharev AG, Ignatova LF, Stan VV. Metodicheskij podkhod k gigienicheskoj ocenke shkol'noj obrazovatel'noj sredy. *Voprosy shkol'noj i universitetskoj mediciny i zdorov'ya*. 2015; (2): 4–10 (in Rus.).
15. Chekalova NG, Matveeva NA, Silkin YuR, et al. Kompleksnaya ocenka zdorov'ya shkol'nikov s raznym sostoyaniem kostno-myshechnoj sistemy. *Gigiena i sanitariya*. 2014; 93 (4): 66–9 (in Rus.).

16. Beketova AV, Savinova KB, Dubogaj AD, Mishcherskaya GD. Vliyaniye zdorov'esokhranyayushchikh tekhnologiy na sostoyaniye zdorov'ya detej mladshogo shkol'nogo vozrasta. *Sovremennaya pediatriya*. 2018; 8 (96): 17–21 (in Rus.).
17. Makeeva AG, Bezrukikh MM, Filippova TA. Formirovaniye osnov kul'tury pitaniya u detej i podrostkov — metodicheskie aspekty. *Voprosy detskoj dietologii*. 2013; 11 (2): 44–7 (in Rus.).
18. Sokolova NV, Goncharova IG, Kuvshinova NM, Goncharova DG. Rol' shkoly v voprosakh formirovaniya cennosti zdorov'ya i zdorovogo obraza zhizni sredi podrostkov. *Kul'tura fizicheskaya i zdorov'e*. 2021; (4): 117–20 (in Rus.).

Литература

1. Безруких М. М. Здоровье школьников, проблемы, пути решения. *Сибирский педагогический журнал*. 2012; (9): 11–16.
2. Семенкова Т. Н., Касаткина Н. Э., Казин Э. М. Факторы «риска», влияющие на здоровье обучающихся в процессе обучения. *Вестник Кемеровского государственного университета*. 2011; 2 (46): 98–106.
3. Крикало И. Н., Наумчик М. Н. Уровень функционального состояния и заболеваемость школьников старшего возраста. *Вестник Мозырского государственного педагогического университета имени И. П. Шамякина*. 2019; 1 (53): 29–33.
4. Гаджикеримов Г. Э., Глушаков И. А., Гаспарян Л. Д. и др. Оценка состояния здоровья школьников на основе анализа жалоб. *Бюллетень медицинских интернет-конференций*. 2020; 10 (2): 54.
5. Соколова Н. В., Попов В. И., Картышева С. И., Королева А. О. Некоторые аспекты профилактической деятельности учителя, направленной на улучшение состояния здоровья школьников. *Гигиена и санитария*. 2014; 93 (1): 90–1.
6. Караханова Т. М. Время сна, питания, ухода за собой как факторы сохранения здоровья. *Общество и здоровье: современное состояние и тенденции развития: сборник материалов Всероссийской научно-практической конференции с международным участием, Москва, 19–20 сентября 2013 г. М.: Первый Московский государственный медицинский университет имени И. М. Сеченова Министерства здравоохранения и социального развития Российской Федерации*, 2013: 554–65.
7. Игнатова Л. Ф., Стан В. В., Хамидулина Х. Х. Методика оценки образа жизни у детей школьного возраста. М.: ФГБОУ ДПО РМАНПО, 2019; 54 с.
8. Сухарев А. Г., Игнатова Л. Ф., Стан В. В. Методика оценки образа жизни школьников. *Вопросы школьной и университетской медицины и здоровья*. 2015; (3): 13–16.
9. Сухарев А. Г., Стан В. В., Игнатова Л. Ф. Роль образовательной организации в формировании у учащихся мотивации к здоровью и здоровому образу жизни. *Вопросы школьной и университетской медицины и здоровья*. 2016; (2): 32–35.
10. Сухарев А. Г., Игнатова Л. Ф., Стан В. В. Роль школы в формировании здорового образа жизни обучающихся. *Вопросы школьной и университетской медицины и здоровья*. 2015; (4): 56–7.
11. Есауленко И. Э., Попов В. И., Зуйкова А. А., Петрова Т. Н. Концептуальные основы охраны здоровья и повышения качества жизни учащейся молодежи региона. Воронеж: Научная книга, 2013; 810 с.
12. Кучма В. Р., Ушаков И. Б., Соколова Н. В. и др. Методы оценки качества жизни школьников. Воронеж: Истоки, 2006; 112 с.
13. Комлев А. В. Психологическое здоровье обучающихся в современном образовательном процессе. Единое образовательное пространство как фактор формирования и воспитания личности: Материалы XIII Международной научно-практической конференции студентов, магистрантов и молодых ученых, Рязань, 25–26 апреля 2019 г. Рязань: Рязанский государственный университет имени С. А. Есенина, 2019: 162–5.
14. Сухарев А. Г., Игнатова Л. Ф., Стан В. В. Методический подход к гигиенической оценке школьной образовательной среды. *Вопросы школьной и университетской медицины и здоровья*. 2015; (2): 4–10.
15. Чекалова Н. Г., Матвеева Н. А., Силкин Ю. Р. и др. Комплексная оценка здоровья школьников с разным состоянием костно-мышечной системы. *Гигиена и санитария*. 2014; 93 (4): 66–9.
16. Beketova A. V., Savinova K. B., Dubogaj A. D., Mishcherskaya G. D. Vliyaniye zdorov'esokhranyayushchikh tekhnologiy na sostoyaniye zdorov'ya detej mladshogo shkol'nogo vozrasta. *Sovremennaya pediatriya*. 2018; 8 (96): 17–21.
17. Makeeva A. G., Bezrukikh M. M., Filippova T. A. Formirovaniye osnov kul'tury pitaniya u detej i podrostkov — metodicheskie aspekty. *Voprosy detskoj dietologii*. 2013; 11 (2): 44–7.
18. Sokolova N. V., Goncharova I. G., Kuvshinova N. M., Goncharova D. G. Rol' shkoly v voprosakh formirovaniya cennosti zdorov'ya i zdorovogo obraza zhizni sredi podrostkov. *Kul'tura fizicheskaya i zdorov'e*. 2021; (4): 117–20.