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Formation of healthy lifestyle of children, adolescents and students at autonomous health centers on the basis of Zelenograd educational establishments

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It should be acknowledged that formation of a healthy lifestyle (development, upbringing, elaboration of skills) is a task not only for the public health organs. The main bulk of work rests upon shoulders of educators and teachers within the system of education, who are actively supported by state structures, mass media, business communities, church, sports and other sociocultural organizations. The article presents practical realization of a program for preventing diseases and forming healthy lifestyle at educational institutions of the Zelenograd administrative district of Moscow by founding autonomous centers of health status evaluation on the basis of educational institutions by the teaching staff. They anonymously poll students in order to reveal health risk factors, evaluate and predict health status of students and risk of development of diseases employing heart rate variability method.

Keywords: healthy lifestyle propaganda, prevention of diseases, anonymous polling, prenosological diagnostics.

The processes of change and reconstruction of organizational and management approaches to important daily life activity spheres take up a permanent character in Russia. The beginning to the latest positive changes in demography and health on both federal and regional levels was marked by the Order of the President of the Russia Federation #606 of 7 May, 2012 [1], which directs the Government of the Russian Federation towards “ensuring increase in the life expectancy in the Russian Federation up to 74 years by 2018.” State Program “Healthcare development” until 2020 was presented at the RF Ministry of Health board on 28 September, 2012. For the purposes of this article, it is extremely important that **prevention** of diseases and formation of healthy lifestyle (HLS) were named **the first** priority of this program. A new approach to the healthcare system operation was presented; it consisted in the shift of emphasis from treatment of diseases to prevention and prophylaxis in activity of the state healthcare system (pic. 1) [2].

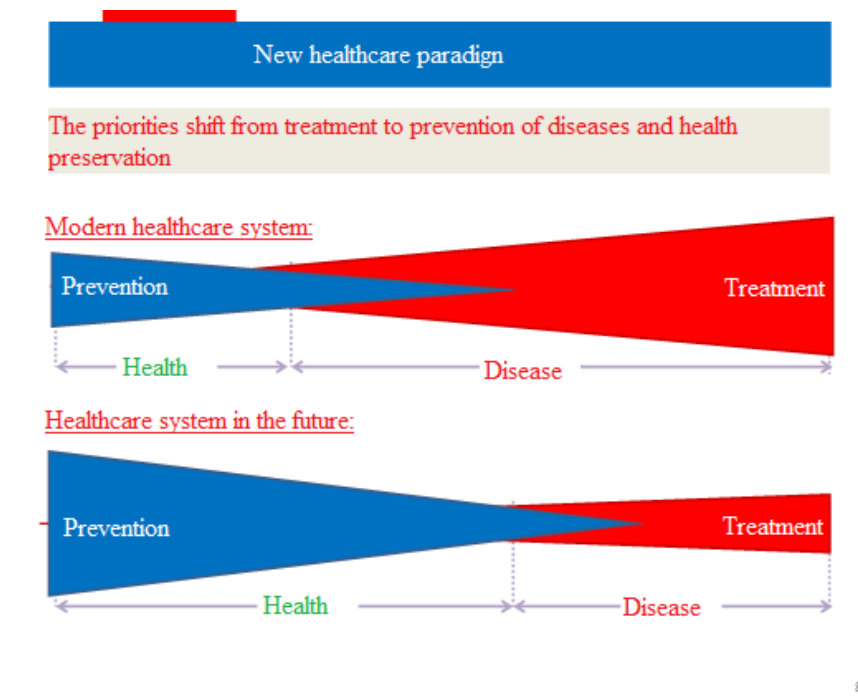
As long as health is affected by numerous factors (environment, factory works, lifestyle, heredity, medical provision level; pic. 2), it is necessary to determine which of the components a person can, should and want to affect in order to preserve and form health.

The work on forming a health priority in the system of sociocultural motivation can only be effective in the form of visual activity propaganda and connection of health to social and mental values of students of different age. The practice shows that new forms of healthy lifestyle propaganda are required on the modern stage. Booklets and sanitary bulletins are no longer

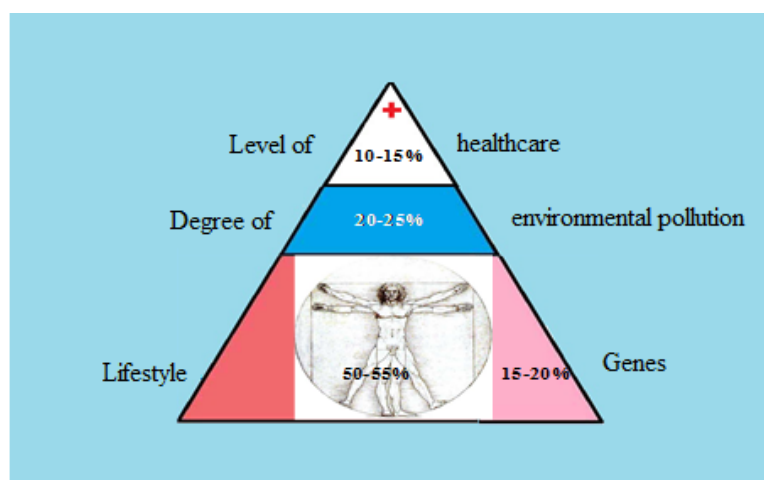
popular; radio and TV messages of medical specialists do not attract young people as well. Modern children require modern approaches.

It ought to be acknowledged that formation of a healthy lifestyle (in terms of development, upbringing and elaboration of skills is a task not only for the public health organs. The main bulk of work rests upon shoulders of educators and teachers within the system of education, who are actively supported by state structures, mass media, business communities, church, sports and other sociocultural organizations. In order to find optimal forms of interdepartmental and intersectoral cooperation in terms of HLS formation in children and adolescents, project “Formation of a healthy lifestyle of the population using methods of prenosological health status evaluation” was developed in 2009 and has since been being realized in the Zelenograd administrative district. This project is aimed at founding autonomous health status evaluation centers on the basis of educational institutions by the teaching staff. It is aimed at anonymous polling of students in order to reveal health risk factors, evaluate and forecast health status and disease development risk of students employing heart rate variability method and develop individual recommendations on health preservation and prevention of possible diseases development [3, 4].

Pic. 1. A new healthcare paradigm



Pic. 2. Structure of health-affecting factors



The project is implemented under the aegis of scientists from the RAS research institute of medical and biological issues, Medical Computer Systems, LLC, Institute for implementation of new medical technologies “Ramena”, non-profit organization “Fund “Social Center”, Burnazyan Institute of postgraduate professional education (Federal Medical Biophysical Center of the Federal Biomedical Agency of Russia), Moscow University of Culture and Arts, district departments of education and healthcare; the coordinating role in this process belongs to the Moscow local administration department of the Federal service on customers’ rights protection and human well-being surveillance in the Zelenograd Administrative District.

15 educational institutions of the Zelenograd Administrative District of Moscow were involved in our study: 13 schools, Moscow State Business Administration Academy and Medical College #8 – more than 6,000 participants.

Given that the significant part of health formation belongs to lifestyle, the authors analyzed the lifestyle components. Firstly, lifestyle consists of a diet; secondly, of day physical activity; thirdly, of pernicious habits (smoking, alcohol and drug abuse); fourthly, of personal hygiene; fifthly, of day regimen. Favorable psychoemotional atmosphere in the family, at the educational institution and in communication with friends is an important setting for healthy lifestyle.

When analyzing lifestyle, we believe that it is extremely curious to study the factor of spare time and how children, adolescents and students use it. Tb. 1 presents data on the structure of spare and leisure time of children, adolescents and youths in the Zelenograd Administrative District of Moscow, obtained by means of analyzing results of anonymous polling of the mentioned groups of respondents.

Table 1. The structure of spare and leisure time of children, adolescents and youths in the Zelenograd Administrative District of Moscow (as a percent of the total number of the poll participants per age group)

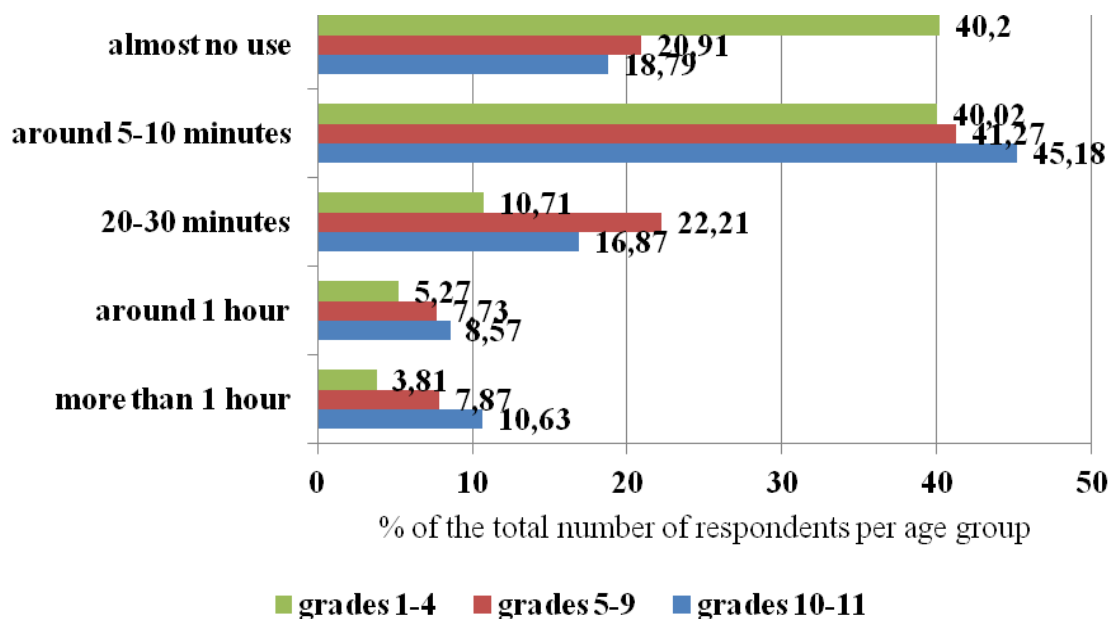
Poll topics	Students, grades 1-4, in %	Students, grades 5-9, in %	Students, grades 10-11, in %	University students, in %	Medical college students, in %
More than 4 hours of spare time per day	42	21	35	21	52
Walking with friends	25	20	25	29	20
Watching TV	18	24	17	15	17
Working on the computer at home (games, information retrieval, social	21	26	16	9	9

networks)					
Sports groups	10	9	10	10	10
Reading of books and magazines	13	13	17	19	16
Less than 7 hours of sleep	57	59	51	20	27
No sports	18	31	37	34	35

According to the obtained data, up to 50% of the respondents obtain information using technical means (TV and computer), whereas not more than 19% of the respondents use a traditional method – books. In their spare time, children realize physical activity in sports groups (not more than 10% of the respondents) and by “walking with friends” (up to 29% of the respondents). Thus, having more than 4 hours of spare time, ca. 60% of the respondents spend it in the conditions of insufficient physical activity; this reduces adaptive capabilities of the body. Hypodynamia (especially in older children), insufficient amount of sleep (less than 7 hours per day on the average in 42% of children and adolescents) are the most widespread features of lifestyle of the modern children and adolescents. Touching upon only one lifestyle component – use of spare time and compliance with day regimen, we would like to emphasize that “working on the computer” is starting to replace constructive and creative components of the healthy lifestyle.

Mobile (cellular) communication is popular among young people of different age. Cellular phone call duration in children is longer than in adults. Mobile communication results in daily irradiation of the brain with radio-frequency electromagnetic field (RF EMF). Moreover, all children are affected by RF EMF round-the-clock by base stations. Preservation of children’s health in the conditions of wireless communication development is one of the priority tasks of the World Health Organization. Pic. 3 presents data on the students’ average cellular phone use duration per day, obtained using anonymous polling of students.

Pic. 3. Duration of cellular phone use by students per day (authors’ data)



According to the diagram (see pic. 3), more than 10% of senior high school students, ca. 8% of junior high school students and even 4% of primary school students speak for more than 1 hour over cellular phone per day; the same amount of students speak over cellular phone for ca. 1

hour. Thus, 10-20% of students of this sample belong to the risk group, since the average cellular phone use duration per day for ca. 1 hour is equivalent to the accessible power stress for professional EMF irradiation [5].

In our anonymous polling of school students of the Zelenograd Administrative District of Moscow we also touched upon the issues of life quality of children, adolescents and youths. One of the poll's tasks was to prioritize universal values. Family was of the highest priority for most adolescents, followed by health, spiritual and moral values and education.

Another informative question regarded role models and references exemplars. Most respondents gave answer "parents". Thus, an action plan, i.e. to work together with parents in order to pursue a policy of health improvement and preservation and maintain favorable psychoemotional atmosphere in the family and in communication with friends and fellows, is suggesting itself.

Teachers, students and parents were actively involved in the process of health status determination. It ought to be mentioned, that school, college and university teachers and students were trained use devices of prenosological diagnostics. "Health schools" (#1,701, #1,702, #1,703 and #1,704), where the ideology is based on health preservation principles, stand out especially remarkably. There are all facilities for preventive measures: swimming pools and gyms for additional physical education classes. Nutritionists compile diets with balanced macro- and micronutrients.

Teachers, medics and psychologists obtain an action plan for working with students and their parents after a poll, since the analysis of responses reveals health risk factors: pernicious habits, number of students in for physical culture and sports, compliance with day regimen (e.g., night sleep duration), personal hygiene, use of spare time (if present) and other questions aimed at revealing whether a person is familiar with HLS principles. The education of students and their parents using recommendations of specialists in separate healthy lifestyle components with positive examples will allow making healthy lifestyle popular. The risk group (students with stressed adaptation mechanisms, dissatisfactory adaptation to environment and failure of adaptation mechanisms) ought to be forwarded to a Health center for a more detailed examination and, if necessary, to a polyclinic, where they will be treated by dedicated specialists. The possibility to learn one's health status and health scale movement vector using system "Vita" makes this work (polling and prenosological diagnostics employing heart rate variability method) viable, efficient and understandable for everyone. It is supported by the parent community as well. Creative development of this notion has been observed at different institutions.

Museum of "Hygiene and Health" was founded at health school #1,702, where the permanent exhibition organized by students and teachers present information on the secrets of human body. Model stands on smoking hazards, prevention of alcohol and drug addiction, nature and environment protection were made. Interactive seminars and discussions about various aspects of healthy lifestyle are held at the museum.

Almost all educational institutions taking part in the project regularly hold meetings with parents, where polling results, issues associated with children's lifestyle and ways of cooperation of teachers, students and parents regarding overall involvement in the process of healthy lifestyle formation are discussed. Parents also take part in polling and prenosological diagnostics. By involving parents in the common health formation process, we achieve succession of healthy lifestyle observance recommendations both at school and at home [3].

During the study of "Fundamentals of medical knowledge and healthy life style", 10th-grade students and the teacher of safety management in emergencies of school #1,351 developed a social project based on the polling of city residents regarding issues of health and HLS. The students prepared a presentation and a resultant report in the follow-up.

Considering dynamics of health status changes in children, adolescents and youths, the following tendencies may be observed: when the project began in 2009, the group of healthy primary school students from comprehensive schools constituted only 17-20%; 68-75% of children featured overstressed adaption mechanisms, 8-12% - failure of adaptation mechanisms. The

results were different at the health schools: they were much more students (70-80%) fitting the group of “physiologically normal” children, whereas the group “failure of adaptation mechanisms” constituted 2-4%.

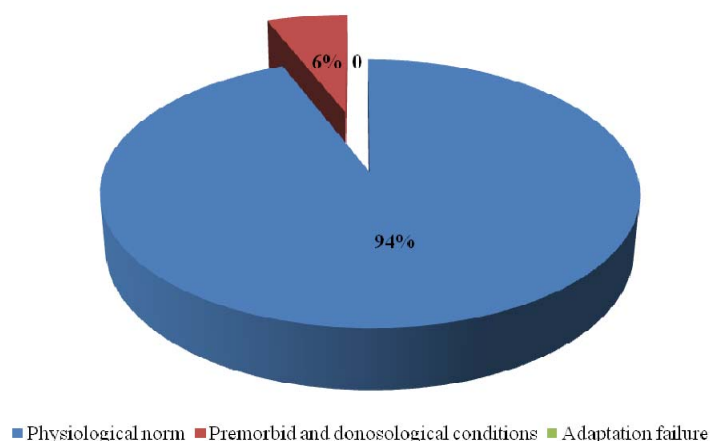
The university has been making a focused effort at involving students into the process of active observance of healthy lifestyle: firstly, the university territory has for several years been a smoke-free area; secondly, all students go in for ballroom dancing. Moreover, students are actively observed and assisted by psychologists, i.e. each case of adaptation failure is analyzed regarding presence/absence of social stress; this effort helps the situation to normalize; the adaptation failure group is steadily becoming smaller: from 5% in March 2010 down to 2% in March 2013. At the same time, the number of students in the group of “physiologically normal” youths is increasing: 52% - in 2010, 56% - in 2011, 70% - in 2012, 72% - in 2013.

In the end of 2009, a resource center educational institution (RCEI) was founded on the basis of one of the schools participating in the project (school #1,702); it is aimed at organizational and methodological support of innovations directed at positive changes in the activity of educational institutions. By April 2011, 94% of the children from school #1,702 belonged to the group of physiologically normal students regarding health status; no adaptation failures have yet been observed (pic. 4).

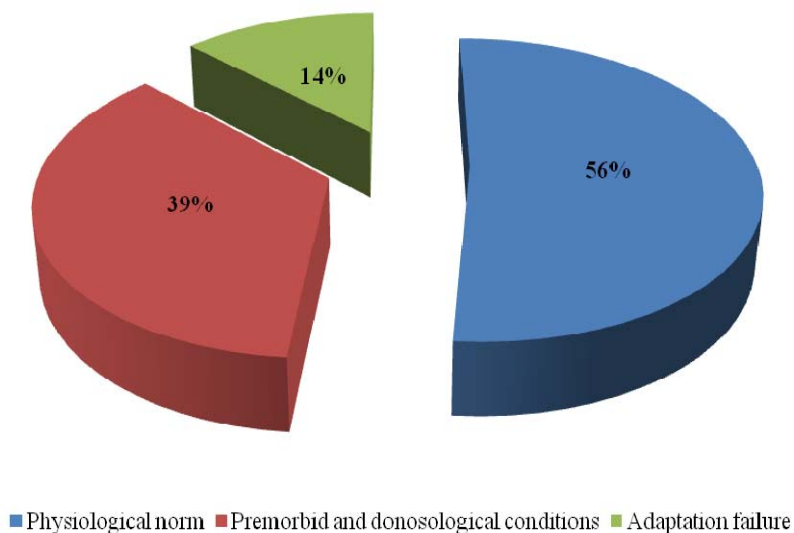
Unfortunately, in the autumn of 2012 SBEI PCS #1,703, #1,701, #1,702 and 1,704 were reorganized and merged with other schools. This resulted in withdrawal of medical personnel from the regular schedule and termination of all medical health-improving procedures. The situation has immediately affected health status of the students: the number of children with adaptation failures has grown, whereas the number of healthy children is reducing (pic. 5, 6).

Dynamics of health status changes in children, adolescents and youths in the setting of regular cooperation of teaching stuff of educational institutions with psychologists, medical personnel and in view of parental support convincingly demonstrate positive tendency towards health. Only a joint effort of all the concerned parties may result in effective health preservation and popularization of healthy lifestyle.

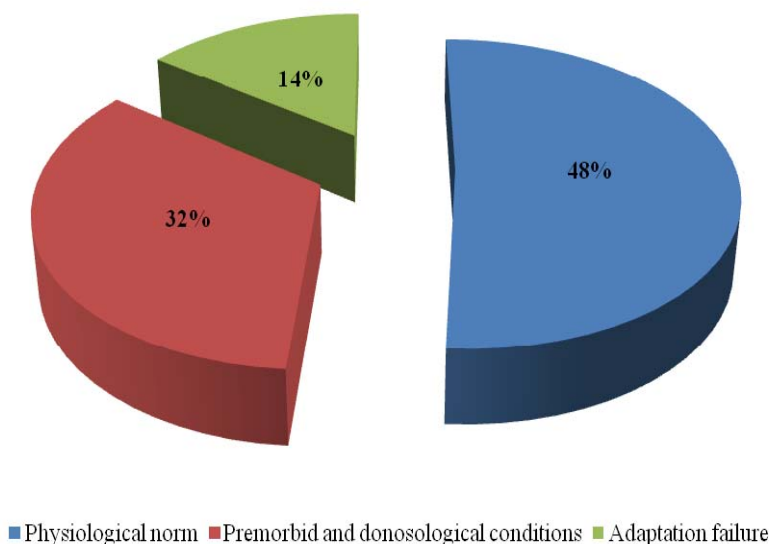
Pic. 4. Health status of students (school #1,702) in April 2011



Pic. 5. Health status of students (school #1,702) in the first trimester of school year 2012/2013



Pic. 6. Health status of students (school #1,702) in the second trimester of school year 2012/2013



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