

Medical And Social Aspects of The Health State of Students of Russian Medical Universities

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Abstract

The period of study at medical universities is characterized by an extremely high psycho-emotional load that students are exposed to. In addition, the specifics of medical environment and activity nature add additional risk factors in comparison with training at technical and other universities. All this leads to the development of chronic diseases and a number of functional disorders, including emergence of insomnia, anxiety, deterioration of eye refraction, dilation of pelvis veins and lower extremities, alimentary disorders, pathology of reproductive sphere, etc. The health of future doctors is the subject of close attention of researchers because the professional activities of today's students should make a significant contribution to improving the health of the entire population in the future.

The purpose of this article is to highlight the existing problems associated with the deterioration of health state of medical students during their studies at the university.

Keywords: medical university, risk factors, students, nutritional disorders.

INTRODUCTION

Students refer to the social group characterized by high risks for health occurring due to significant mental and nerve loads, bad habits, irregular activity schedule and misbalanced nutrition. This group is vulnerable to the emergence of chronic diseases caused by insufficient attention to own health. Such aspects as standardization of study furniture and equipment designed for “an average student” precipitating the pathology of muscular-skeletal system can be a factor. Irregular sleeping time, vision tension, immersion into computers and gadgets contribute to the growth of chronic diseases [1].

Lengthy static tension harmfully affects health. Besides, future medical workers are negatively affected by the hospital environment in which they come across severe diseases, deaths, grief of the relatives. Annually, about 5.9 million students study in the Russian Federation but in recent decades their number has decreased by 10-16%, thus resulting in the incomplete enrolment to universities. The fact that only 10% of graduates of schools of general education are considered healthy can be another unfavorable consequence [2]. This causes the necessity in careful attitude to the available human resources.

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Access this article online

Quick Response Code:



Website:

www.pnrjournal.com

DOI:

10.47750/pnr.2022.13.04.233

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How to cite this article Gatiyatullina L L, Khidiyatova A.F., Gilfanova A. L., Sadeeva A. Z., Asadova A A, Medical And Social Aspects Of The Health State Of Students Of Russian Medical Universities, J Pharm Negative Results 2022;13(4): 1687-1691

Students are a labor force echelon replenishing the labor market and defining the state of economy and future of the country. In this regard, the health of students should be the object of careful attention to reveal the risk factors and search for possibilities of their elimination.

Diseases and functional disorders characteristic for students of medical universities

As a rule, several years of studies at the university are accompanied by the students' health deterioration. Thus, the specific weight of medical students with chronic pathologies in Astrakhan and Nizhny Novgorod regions increased during studies in 1.5 and 1.4 times, respectively. In Voronezh the share of students not suffering from chronic diseases decreased from the first to the fifth years of studies from 65% to 45%. For the five years of observations, the total and initial disease incidence in Ulan-Ude increased from 490.1 and 304.8 up to 525.9 and 320.1 per one thousand students. The diseases of respiratory and digestion organs were most frequently revealed out of the whole diagnosed pathologies [3].

It was demonstrated in the research by V.I. Gorbunov et al. that during six years of observations of students of Ulyanovsk State University the total disease incidence increased by 36%, and initial – by 69%. The disease incidence mostly increased among the diseases of musculoskeletal system (in 7 times), nerve system (by 28%), endocrine system (by 98%), eye and adnexa (by 83.4%). The overweight started to be also more frequently registered – among young men (10.6% vs 1.2%) and girls (36.7% vs 6.3%) [4].

The negative factors of studies at a medical university include: considerable time expenditures for transportation, thus increasing the study day duration; excessive physical, emotional and intellectual tension. In one interrogation 75.6% of medical students pointed out that the examination stress contributes a lot to “the increased physiological cost” spent for higher education [3].

Students of medical universities suffer from lengthy static tensions in the muscles of legs and pelvis resulting in the vessel disorder in these regions. Such diseases as varicosity of lower extremities and true pelvis, hemorrhoids, thrombophlebitis, flat foot, etc. are progressing. Nerve loads, irregular schedule and non-systematic nutrition result in the emergence of gastrointestinal, nerve and cardiovascular diseases. During 2019-2022 surgical diseases among the students were monitored at Astrakhan State Medical University. To III health group were referred: in 2019 – 2.8% of students, in 2020 – 5.3% of students, in 2021 – 5.4% of students. The venous dilation of lower extremities took the first position among all diagnosed cases. The frequency of this pathology evidently increased during the observed period: in 2019 it was 30.5%, in 2020 – 27.85%, in 2021 – 40.1% of cases. Nephropathy was the second disease by its frequency

found with the students (in 2019 – 11%, in 2020 – 8.68%, in 2021 – 7.3%). The third position by its frequency was taken by hemorrhoids (8.4%, 6.4%, 8.35%, respectively). The frequency of wrist joint hygroma increased (from 3.25% up to 13.02%) [5].

The 6-year monitoring of disease incidence with students of medical universities demonstrated that the overall disease incidence increased by 37.9%. Most of all, the students applied with ARVI, diseases of digestive and urogenital systems. Among the functional disorders, the most specific weight was accounted for the vision deterioration, disorders of gastrointestinal tract, endocrine system and metabolism. 22% of students were diagnosed with the defects of eye refraction, however, they did not see a doctor about that. The diseases of respiratory organs (18%) prevailed in the composition of chronic pathology. The pathological changes in musculoskeletal systems were observed with one-fifth of all students. The researchers also paid attention to high prevalence rate of adiposis and diabetes mellitus, bad habits [2].

R.I. Berdiev et al. discuss hygienic conditions of students' life and work. The study of maximum allowable concentrations (MAC) demonstrated that formaldehyde level exceeded MAC in the autopsy room and, thus, medical students were affected by an additional risk factor [6].

Out of unfavorable moments relevant for students, the low income level and, consequently, the material need and incomplete nutrition can be pointed out. The effect of ecological factors and excessive study load able to cause the misadaptation state is possible. The state of health, living conditions and study progress mostly influence students' life quality [6].

The hard study rhythm can result in the development of psychosomatic diseases. The elevated hostility indexes are already determined in the first years of studies at medical universities (59%), and in final years the high emotional instability is diagnosed with 73.3% of female students. The trait anxiety of female students of the first and final years of studies is about 41.2% and 52.2%, respectively. Further, this leads to abnormalities in reproductive system functioning and progression of stable disorders [7].

The excessive study load produces the integrative tension, which, in turn, results in fatigue. At the same time, loginess, apathy, increased or inadequate irritation, lack of desire to study, sharp intellectual decline, inability to solve even primitive problems, delayed reaction rate can be observed [8].

The sleep disorder caused by heavy overloads, especially during the examination sessions, is revealed with medical students. In the working days about 20% of students do not sleep at night, at least once a month, and 35% do not get asleep till 3 a.m. at least once a week. 12% of students miss classes due to sleepiness ≥ 3 times a month or sleep at classes. The students of medical universities demonstrate decreased health indexes in comparison with the students of

technical universities [9]. The experiments with week-long sleep deprivation of female students of the medical university resulted in expressed hypothonia with cognitive disorders. The insomnia incidence among the students of medical universities is about 61.9-79.3% in different periods of an academic year [10]. Sleep disorder, features of emotional tension and decreased life quality self-assessment were diagnosed with the students of Sechenov University by the end of the first year of studies [11].

Insomnia among students of 3 universities was studied in one research: North-Western State Medical University named after I.I. Mechnikov, Saint-Petersburg Mining University and Saint-Petersburg State University of Industrial Technologies and Design. The average sleep duration of medical students was 5.7 hours, and in groups 2 and 3 the sleep lasted for 6.5 and 6.8 hours in the average. Their emotional lability frequency was 64%, and of the rest of the students – 51-52%. The memory impairment was revealed in 35-26% of cases. The medical students had more complaints of headache, tachycardia, irritation [9].

Smoking is widely spread among students. The sociological survey among 159 1-year students of Kursk State Medical University demonstrated that 3.4% of girls and 20% of young men smoke on a regular basis. 9.2% of girls and 12.5% of young men smoke from time to time. Out of all those smoking, 33.3% of girls and 84.6% of young men have been smoking over 2 years [12]. The indicated negative sides of students' life require the preventive correction of the way of life.

Problems of irrational nutrition of medical students

Substandard living conditions, lack of material wealth, lack of information affect the nutrition quality of medical students. The results of mass questionnaire survey of the students of several medical universities and different Russian regions are presented in the research by D.D. Karpikova et al. 45-51% indicated that they ate irrationally. During the study time, 33-44% of students ate in students' canteens, 2-5% ate fast food, 5-13% went to cafes, and 12-15% of students did not eat at all. 41-43% pointed out the readiness to buy expired products with a discount. Only 10% of students followed the principles of rational nutrition [13].

A more extended survey of medical students was carried by D.V. Maksinev. All in all, 296 young men and 460 girls 18-22 years old were interrogated. They were split into 3 groups: the group of students with overweight; the group with somatic protein deficiency; the control group. Dinner was the most widely spread meal (50% of girls and 44% of young men). Only one third of students regularly had lunch, and breakfast – 14% of young men and about 10% of girls. One out of ten young men and 3.5% of girls had meal at night. A quarter of students ate cooked warm food every day. 60% of girls with protein deficiency ate cooked warm food only once a week, the girls with overweight ate

cooked warm food more often than the others. 70% of students had meals without any beverages. One third of girls and 13% of young men considered their nutrition to be rational [14]. The investigation results indicate multiple violations in the diet of medical students.

Food composition is very important to provide an organism with all necessary nutrients. However, not only irregular and scanty but also unvaried nutrition is characteristic for students. When surveying the students of Grodno Medical University it was revealed that 51.4% of all interrogated ate fish and only 19.4% – seafood – not more than 1-2 times per month. 58.3% preferred to eat wheat bread instead of dark rye one or wheat bread with brans. At the same time, the consumption of meat and dairy products was significantly below the age norm, but the consumption of bread and potatoes considerably exceeded the recommended levels. 27% ate fast food several times a week and 56.3% – once a month [7].

The food ration of medical students can vary considerably. Thus, the medical students of Azerbaijan Medical University had the excessive fat content in their food and deficiency of other nutrients, and, consequently, 24-25% of students were with overweight, especially young men [15].

The comparative questionnaire survey of the students of technical and medical universities revealed that the medical students demonstrated the interrelation between the dietary regime and study load to a greater extent than the technical students. Most of all, these differences were demonstrated by the students living separately from their parents [16].

The pandemic of COVID-19, which was spread all over the world, influenced the eating behavior of medical students. Social isolation caused by the pandemic could intensify the existing problems and fixate them. It was revealed that during the pandemic 40.7% of students had meals within 15-30 minutes, 56% – for more than half an hour, and 3% ate on the move. 23.7% of medical students had meals twice a day that is not optimal and can further affect their health [17].

Measures aimed at health level improvement

The following factors negatively affecting the psychophysical and reproductive health of students can be distinguished: study process intensification; transfer to modern technologies; information stress; continuous increase in intellectual and emotional loads; violation of normal labor, rest and meal regimes [3].

The negative tendency to neglect healthy life style formed among the students attracts attention of researchers concerned about the worrying situation. It is noted that during the examination session the students' physical activity decreases by 67% [18]. The physical activity between sessions and holiday activity also drop noticeably from year to year of studies. The physical activity of students decreases progressively during their studies at the educational institution. The students' interrogation showed

that physical training is the main source of physical activity but heavy study load (78%), lack of motivation (67%), underestimation of own physical fitness (56%) handicap it. The majority of students (76%) mainly practice passive rest (social media, movies, meetings with friends). Thus, physical activity is not a value-based dominating idea among modern students [19].

The examination of 230 students of Izhevsk Medical Academy with the determination of such functional markers as heart rate, arterial pressure, life index, height-weight index, endurance (running for 2 km), strength endurance, hand dynamometry and chronic pathology diagnostics is described in one article. Observation of the students of Izhevsk Medical Academy in the period from 2016 till 2021 revealed the shift from the region of good health to the regions “below average” and “poor”. Based on the results obtained it was recommended to take into account physical activity, working capacity, endurance, etc. when planning health and fitness programs [18].

Hypodynamia problems among students can be solved through fitness technologies improving physical capabilities and contributing to increased attention and intellect. In this regard, it is necessary to consider such activities as yoga, pilates, fitball-gymnastics, stretching, etc. [19].

The following health-saving technologies can play an important role in improving the health of medical students: medical and hygienic, health and fitness, ecological, educational, life safety guarantee. These technologies are provided by: educational institution infrastructure (recreation centers, resort centers, sport centers, health centers, etc.); documentary and legal grounds (orders, acts, etc.); information events targeted at healthy lifestyle promotion [3].

An important task is to provide students with healthy nutrition as far as it is possible, taking into account the tough study schedule. Each university has a student canteen offering cooked warm food. The federal project “Healthy Nutrition” of the national project “Demography” declares the principles of healthy nutrition. To turn these principles into reality, it is suggested to use computer technologies able to prepare the individual ration taking into account sex, age, season of the year, etc. [16].

For students with reduced health condition the classes of adaptive physical training, including 30% for physical therapy, 60% for special training, 10% for physical therapy with medical examination can be arranged. In the course of the program mainly graduated aerobic and force activities are involved, then there is a transition period with the improved technique of physical exercises. While arranging the classes, it is advisable to split students into the groups according to the pathology diagnosed (hearing, vision, nerve system, etc.) for individual selection of exercises [20].

CONCLUSION

University studies are a critical period in a young person’s life when all his or her adaptive mechanisms are challenged. Lengthy increased loads result in multiple functional disorders and progression of acute and chronic

diseases, the level of which is constantly growing among students from year to year of studies. Studies at medical universities differ in especially high intensity of processes in intellectual and emotional spheres. It is sometimes necessary to contact with harmful chemical and medicinal substances, and hygienic parameters of classrooms are not always optimal, thus resulting in additional loads on vision and musculoskeletal system. Nevertheless, it is advisable to decrease the risk factors, which can be controlled, to save the health of future specialists as much as possible.

Studies at a medical university are accompanied by high psycho-emotional loads leading to the increased frequency of insomnia, anxiety, psychic lability.

Study period at medical universities is characterized by gradual increase in general and initial disease incidence.

High level of static tension with medical students during practical classes contributes to the growth of vein diseases of lower extremities, pelvis and musculoskeletal system.

Studies at medical universities are characterized by progressive deterioration of eye refraction.

Hypodynamia, irrational nutrition, neglect of sleeping time, bad habits are characteristic for medical students.

Measures for improving health condition of medical students should include: improved awareness of risk factors, regular preventive medical examinations, involvement in physical activities (sport clubs, groups, physical therapy, sport games), diet normalization (special computer programs, improved sleeping quality (auto-training, schedule adjustment).

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