

CHARACTERISTIC OF ACUTE ILLNESS OF HIGHER EDUCATION STUDENTS

Reznichenko O. G., Gridnieva S. V., Martynenko M. V.

Abstract. The problem of student health has become of great importance in recent decades and remains unresolved at the current time. The article presents the data of the study of acute morbidity of students of higher educational establishments, its frequency and structure, the gender peculiarities and the state of resistance of their organism are analyzed. Highlighted the priority diseases groups, their specificity and differences. According to the results of the study, the state of adaptation of the students' body in the first year of study was revealed. At the same time, there are signs of tension and breakdown of these mechanisms, decrease in body resistance may be primarily due to sudden changes in the habitual environment of students, impaired diet and quality of work-rest cycle, the presence of a large number of students who have bad habits, constant increase of educational and information load in the present conditions. Only 18.46 ± 1.16 % of medical high schools and even fewer students of technical high schools have 7.81 ± 0.63 % satisfactory indicators of resistance to the body, which indicates a possible discrepancy between the impact of the educational complex and external factors to the adaptive capacity of the student body. In the structure of acute morbidity prevail respiratory diseases in both study groups (KhNMU – 80.16 ± 2.58 %, KhNURE – 80.37 ± 2.61 %). Also, quite a large part was taken by diseases of the digestive system and urogenital system. Students of a technical university had worse indicators of body resistance compared to students of a medical university. It was also found that boys had poorer body resistance compared to girls in all groups. In future all this has negative social and economic consequences for the country as a whole.

KEY WORDS: students, higher education institutions, acute illness, body resistance

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INTRODUCTION

Health is a kind of reflection of the quality of life, it affects the mental and physical performance, functional and psycho-emotional sphere first and foremost of a young person. Maintaining and promoting health must be part of human behavior. Healthy Lifestyle, Preventive, and Health-Oriented Lives are the basis of this strategy [1, 2, 3, 4].

In recent decades, the problem of students health has become of great importance in Ukraine. This is said by research of leading scientists, which shows information on the growth of chronic morbidity, the prevalence of bad habits, decreased physical development, etc. [5, 6, 7, 8]. All this leads to

negative consequences, including socio-economic losses for the country [9, 10, 11].

Students of higher education institutions (HEIs) are a particular component of society. At this age stage, they are influenced by three main factors: 1. Physiological processes of restructuring and formation of the body; 2. Intensive involvement in social processes; 3. Complex of external factors that accompanies the educational process in a higher education institution in the present conditions. This is a large amount of information loads, significant changes in the usual way of life (living conditions, diet, day regime, etc.), the impact of a complex of socio-hygienic factors of the educational and extra-curricular environment, etc. [10, 11, 12]. All this requires the students to apply physical, intellectual, psycho-

emotional potential to adapt to new conditions of existence and can lead to disturbances of these processes. This allows students to be at-risk for developing acute and chronic illnesses.

The data of the Ministry of Education and Science of Ukraine show that the morbidity rate of students of universities in the country is in the range of 650.1–750.8 per thousand students per year. Respiratory diseases prevail in the structure of morbidity with 55–72 % rate. [10]. In addition, studies of a large number of scientists include data of the poor health of students, namely: 90 % of students have health disabilities, more than 50 % of students have poor physical development [6].

OBJECTIVE

That is why one of the stages of our study is the study of the frequency and structure of acute morbidity of the students, especially at the beginning of study at a university, because this ostentatiously indirectly reflects the level of resistance of the organism. On this basis, we performed an analysis of acute morbidity of students, in the same conditions of organization of the educational process, but in fundamentally different according to the profile of universities.

MATERIALS AND METHODS

The study involved 299 students of Kharkiv National Medical University (KhNMU) – the main research group, and 296 students of Kharkiv National University of Radio Electronics (KhNURE) – a comparison group. All students participating in the research were in their first year of study at the age of 18–21. Each group of students was divided in half by the number of boys and girls. The students' health status was investigated on the basis of data from in-depth medical examinations of students by the specialists of Communal non-profit enterprise City Student Hospital of Kharkiv City Council.

To compare the results obtained from the studied groups, we used the parametric criterion for comparing samples that are distributed according to the normal law – Student's T-test. For more information and classifying students by indicators, a cluster analysis was applied.

RESULTS AND DISCUSSION

The first stage of the study assessed the incidence of diseases with temporary disability. It was found that 13.02 ± 1.09 % of boys and 9.53 ± 0.89 % of girls – students of KhNMU were ill four or more times a year. Among the students of KhNURE four or more times a year were ill a slightly larger number of students, namely 19.13 ± 1.42 % of boys and 15.25 ± 1.47 % of girls. Therefore, these students had reduced body resistance. In addition, a significant difference was found between the two higher education institutions, namely, students of KhNMU, who suffered four or more times a year, both boys and girls, were less than those in KhNURE ($p < 0.01$).

The largest proportion among the study groups were students who had acute illness once a year. In KhNMU, these numbers were 33.42 ± 1.78 % of boys and 35.04 ± 1.96 % of girls, and in KhNURE – 35.43 ± 1.92 % of boys and 39.06 ± 1.86 % of girls. There was no significant difference in this indicator ($p > 0.05$).

Only 18.66 ± 1.22 % of boys and 18.24 ± 1.46 % of girls – students of KhNMU did not get acute illness at any time during the year. Among KhNURE students, this indicator was 6.62 ± 0.58 % among boys and 9.00 ± 0.77 % among girls, and was significantly lower than among KhNMU students ($p < 0.001$).

When comparing the study groups without gender distribution, similar data were obtained, namely the same acute illness rate of three two and once a year among students of KhNMU and KhNURE ($p > 0.05$). The largest group consisted of students from both universities, who were ill only once a year (34.23 ± 1.79 % – students of KhNMU, 37.24 ± 1.98 % – students of KhNURE, $p > 0.05$). Significant differences were found among students who were ill four or more times a year and did not get ill (Fig. 1). Thus, the number of KhNURE students who suffered four or more times a year was 17.19 ± 1.09 % and was significantly higher than the number of such KhNMU students – 11.27 ± 1.08 %, $p < 0.01$. In addition, the number of KhNURE students who had never been ill was much smaller than that of KhNMU students (7.81 ± 0.63 % and 18.46 ± 1.16 %, respectively, $p < 0.001$).

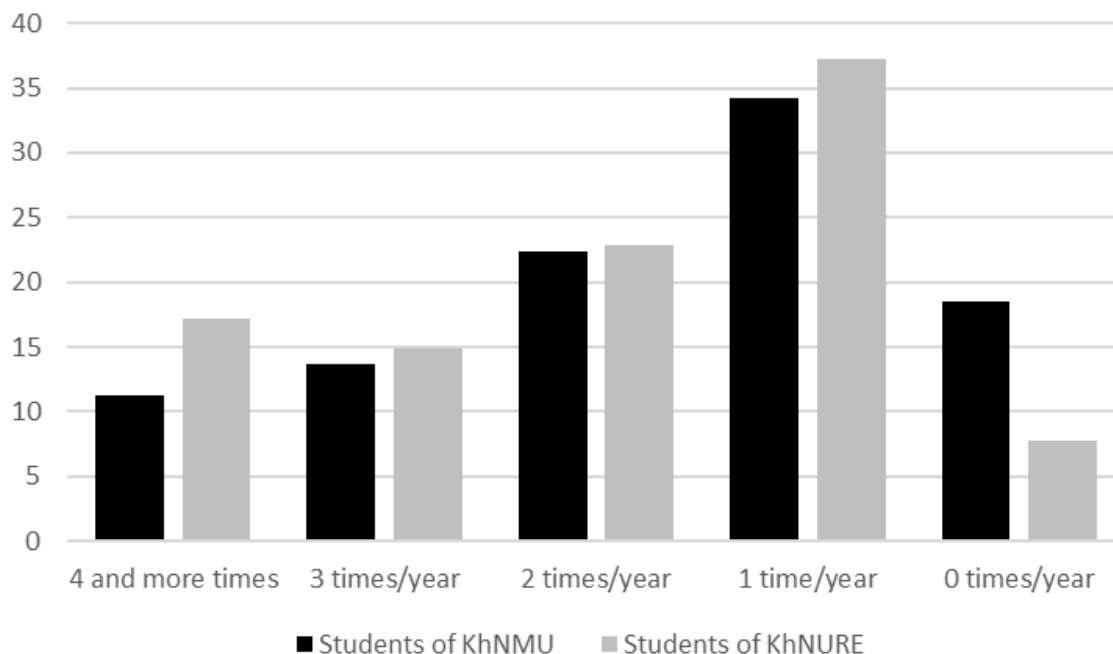


Fig. 1 Indicators of acute morbidity of students of KhNMU and KhNURE

The duration of acute illnesses of the two study groups was 3–7 days and had no significant differences ($p > 0.05$). The numbers among students of KhNMU – $60.23 \pm 2.71\%$ and among students of KhNURE – $62.84 \pm 2.13\%$. However, gender differences were found, namely, young students, both KhNMU and KhNURE, differed in somewhat longer duration of the disease, which averaged 7–14 days ($29.347 \pm 1.86\%$ and $32.11 \pm 1.87\%$) respectively, $p < 0.05$).

At the next stage we investigated the structure of acute morbidity of students of the studied groups.

Respiratory diseases were at the forefront of acute morbidity, they were $82.43 \pm 3.03\%$ for boys and $77.85 \pm 2.86\%$ for girls of KhNMU students, and for KhNURE students $81.77 \pm 2.99\%$ for boys and $78.97 \pm 2.92\%$ for girls. The second place was taken by digestive diseases and was $11.22 \pm 1.39\%$ for boys and $8.03 \pm 0.83\%$ for girls of KhNMU students, and for students of KhNURE $10.01 \pm 1.23\%$ for boys, and $9.72 \pm 0.82\%$ for girls.

There were no significant differences between the study groups on the first two indicators ($p > 0.05$).

Diseases of the genitourinary system, made up of KhNMU students-boys

$5.31 \pm 0.47\%$, girls – $10.05 \pm 0.49\%$, and at KhNURE students at boys – $6.18 \pm 0.92\%$, girls – $9.24 \pm 1.02\%$. At the same time, gender differences of this indicator were found in both study groups, namely its prevalence in girls ($p < 0.05$). This can be explained by the anatomical and physiological features of this group, and confirmed by studies of other scientists [6, 10].

According to the index «diseases of another genesis» the following indicators were revealed: KhNMU students – $1.04 \pm 0.56\%$ – boys and $4.07 \pm 0.38\%$ – girls; KhNURE students – $2.04 \pm 0.36\%$ – boys and $2.07 \pm 0.41\%$ – girls. It was found that the index among the girls-students of KhNMU was significantly higher than that of other students of these universities ($p < 0.01$). This may be related to the specific features of this group of students and needs further study.

An analysis of the structure of acute morbidity without gender distribution revealed that the students of both study groups were significantly dominated by acute respiratory diseases, mainly due to acute respiratory viral infections (ARVI). KhNMU students has numbers $80.16 \pm 2.58\%$, and at the KhNURE students – $80.37 \pm 2.61\%$ (Fig. 2). Acute diseases of the digestive organs were second in frequency, they

amounted to 9.60 ± 0.96 % for students of KhNMU, and 9.86 ± 0.98 % for students of KhNURE. The third place was occupied by acute diseases of the genitourinary system and made up 7.68 ± 0.91 % in the students of KhNMU, and 7.71 ± 0.96 % among the students of KhNURE. Acute diseases of other

genesis accounted for the smallest proportion. At KhNMU students they made 2.56 ± 0.66 %, and at KhNURE students – 2.06 ± 0.42 %. No significant differences in these parameters were found between the study groups ($p < 0.05$).

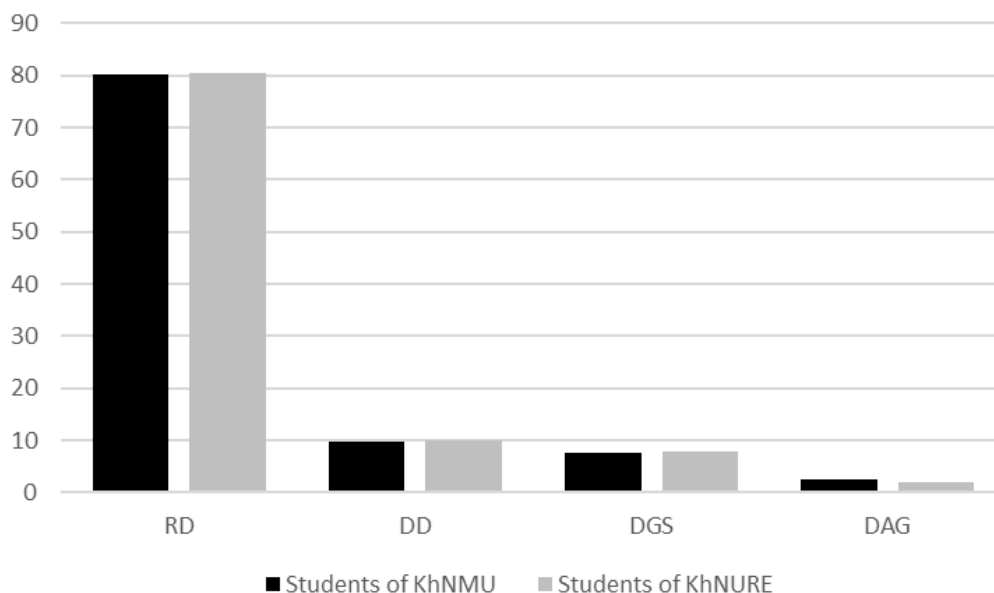


Fig. 2 Structure of acute morbidity of KhNMU and KhNURE students

RD – respiratory diseases, DD – digestive diseases, DGS – diseases of the genitourinary system, DAG – diseases of other genesis.

Additionally, we processed the data on acute morbidity of students using hierarchical cluster analysis. Using this method, students with similar indicators were grouped. The basis for the distribution is the number of students. This made it possible to identify three main groups of students with similar indicators. The first and largest group

consisted of students who were ill once a year. This confirmed our previous calculations. The second group included students who did not get ill at all, or fell ill twice a year. The third group included students with unsatisfactory organism resistance rates who became ill three or more times a year (Fig. 3).

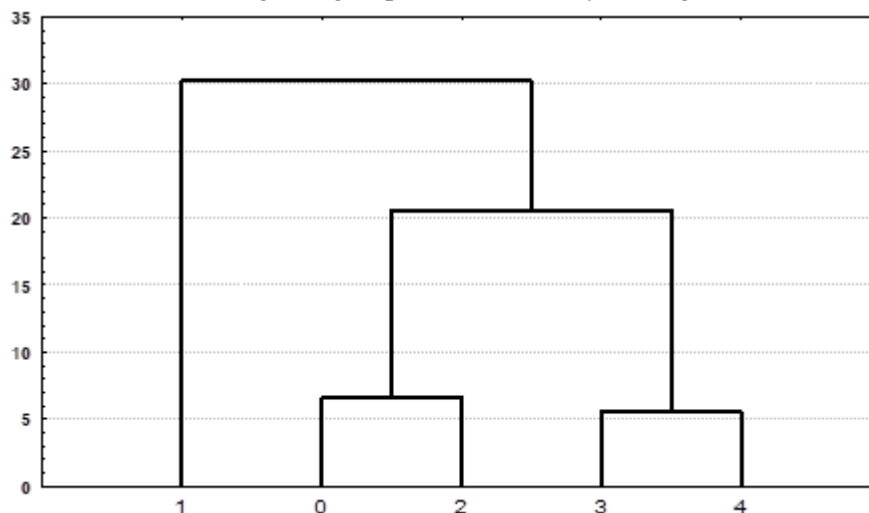


Fig. 3 Distribution of university students by indicators of acute morbidity

The information obtained as a result of the analysis gives us a general idea of the state of the adaptive mechanisms of the students' organism. This may be due in the first place to sudden changes in the habitual environment of students, impaired diet and quality of work-rest regime, the presence of a large number of students who have bad habits [4, 6, 9], constant increase of educational and information load in the present conditions. In addition, some scientists point to the presence of reduced levels of physical development and health before entering university [8]. Better indicators of the incidence of acute morbidity of medical university students are most likely related to the professional orientation of students in this group and adherence to healthy lifestyle rules.

CONCLUSIONS

The results of our study have identified existing indicators and risks to the health of students at the present stage. Only $18.46 \pm 1.16\%$ of medical high schools and even fewer students of technical high schools have $7.81 \pm 0.63\%$ satisfactory indicators of resistance to the body, which indicates a possible discrepancy between the impact of the educational complex and external factors to the adaptive capacity of the student body. The study of the structure of acute morbidity revealed that the majority of diseases were respiratory diseases in both study groups

(KhNMU – $80.16 \pm 2.58\%$, KhNURE – $80.37 \pm 2.61\%$). Second and third place were taken by diseases of the digestive system and urogenital system, respectively. Diseases of other genesis accounted for only a small proportion in the structure of acute morbidity of students (KhNMU – $2.56 \pm 0.66\%$, KhNURE – $2.06 \pm 0.42\%$).

In addition, students at the technical university were found to have worse rates of acute morbidity and longer duration of the pathological process (in average 7–14 days), unlike medical university students who were less ill and had a disease duration of about 3–7 days.

It was also found that boys had poorer body resistance compared to girls in all study groups.

Therefore, preventive and curative measures should be aimed primarily at combating respiratory diseases and normalizing the diet of students. It is also necessary to identify the possible factors of maladaptation of students in the university and in the extracurricular environment, which lead to a decrease in work capacity, body resistance and development of disease.

PROSPECTS FOR FUTURE STUDIES

Our further research will focus on the study of students chronic morbidity, living conditions, and factors that affect students' mental and physical performance and health.

REFERENCES

1. Chernyavska, L. (2017). Stan zdorovya studentiv, problemy ta shlyakhy yikh vyrishennya [Students' health, problems and solutions]. In *Medsestrynstvo*, 1, 24–27 [in Ukrainian].
2. Namazi, A. (2015). The correlation between general health, emotional intelligence and academic achievement together on midwifery students. In *J Clin Nurs Midwifery*, 4, 20–8.
3. Yeremenko, N. (2019). Suchasni pidkhody do formuvannya kul'tury zdorov'ya studentiv v protsesi fizychnoho vykhovannya [Modern approaches to the formation of student health culture in the process of physical education]. In *Fizychna kul'tura, sport ta zdorov'ya natsiyi: zb. nauk. Prats'*, 7 (26), 57–63 [in Ukrainian].
4. Iarmak, O. (2015). Analiz zakhvoriuvanosti studentskoi molodi Bilotserkivskoho natsionalnoho ahrarnoho universytetu [Analysis of the incidence of student youth of Bila Tserkva National Agrarian University]. In *Fizychno vykhovann iai sport*, 18, 56–59 [in Ukrainian].
5. Sorokolit, N. (2019). Monitorynh stanu zdorov'ya studentiv I–II kursiv [Monitoring the health of first- and second-year students]. In *Naukovo-pedahohichni problemy fizychnoyi kul'tury (fizychna kul'tura i sport)*, 533–538 [in Ukrainian].
6. Futorny, S. (2013). Kharakterystyka stanu zdorovia studentiv vyshchych navchalnykh zakladiv [Characteristics of the state of health of students of higher educational institutions]. In *Teoriia i metodyka fizychnoho vykhovannia i sportu*, 2, 99–105 [in Ukrainian].
7. Maksymova, K. (2017). Monitorynh stanu somatychnoho zdorovia studentok i kursiv vyshchych navchalnykh zakladiv m. Kharkova [Monitoring the state of physical health of students and courses of

- higher educational institutions in Kharkiv]. In *Mizhnarodnyi naukovyi zhurnal «Internauka»*, 7 (29), 30–34 [in Ukrainian].
8. Kuidina, T. (2015). Monitoryng fizychnoho ta psykhychnoho zdorovia studentiv pershoho kursu klasychnoho universytetu [Monitoring the physical and mental health of first-year students of the classical university]. In *Mizhnarodni konferentsii: Bezpeka liudyny u suchasnykh umovakh No – NTU «KhPI»*, 147–150 [in Ukrainian].
 9. Tovkun, L. (2017). Otsinka rivnya somatychnoho zdorov'ya studentiv Pereyaslav-Khmel'nytskoho derzhavnoho pedahohichnoho universytetu imeni Hryhoriya Skovorody [Assessment of the level of somatic health of students of Pereyaslav-Khmelnytsky State Pedagogical University named after Hryhoriy Skovoroda.]. In *Molodyy vcheny, 9.1 (49.1)*, 167–170 [in Ukrainian].
 10. Kawyannejad, R., Mirzaei, M., Valinejadi, A. (2019). [General health of students of medical sciences and its relation to sleep quality, cell phone overuse, social networks and internet addiction]. In *BioPsychoSocial Med*, 13. DOI: 10.1186/s13030-019-0150-7
 11. Gomez-Pinilla, F. (2008). [The influences of diet and exercise on mental health through hormesis]. In *Ageing Research Reviews*, 7, 1, 49–62.
 12. Cockerham, W. (2006). [Psychological distress, gender, and health lifestyles in Belarus, Kazakhstan, Russia, and Ukraine]. In *Social Science & Medicine*, 63, 11, 2381–2394.

ХАРАКТЕРИСТИКА ГОСТРОЇ ЗАХВОРЮВАНОСТІ СТУДЕНТІВ ВИЩИХ НАВЧАЛЬНИХ ЗАКЛАДІВ

Резніченко О. Г., Гріднєва С. В., Мартиненко М. В.

Резюме. Проблема здоров'я студентів набула великого значення в останні десятиріччя та залишається невирішеною в сучасних умовах. В статті наведені дані дослідження гострої захворюваності студентів вищих навчальних закладів, її частоти та структури, проаналізовано статеві особливості та стан резистентності їх організму. Виділені пріоритетні групи захворювань, їх специфіка та відмінності. За результатами дослідження виявлено стан адаптації організму студентів на першому курсі. У той же час виявлено ознаки напруги і поломки цих механізмів, зниження опірності організму може бути обумовлено, перш за все, раптовими змінами в звичному середовищі учнів, порушенням харчування і режиму праці та відпочинку, наявністю великої кількості студентів, які мають шкідливі звички, постійним збільшенням навчального та інформаційного навантаження в сучасних умовах. Тільки $18,46 \pm 1,16$ % студентів медичних вузів і ще менше студентів технічних вузів $7,81 \pm 0,63$ % мають задовільні показники опірності організму, що свідчить про можливу невідповідність між впливом комплексу освітніх і зовнішніх чинників на адаптаційні можливості організму студентів. У структурі гострої захворюваності переважають респіраторні захворювання в обох досліджуваних групах (ХНМУ – $80,16 \pm 2,58$ %, ХНУРЕ – $80,37 \pm 2,61$ %). Також досить велику роль зіграли захворювання органів травлення та сечостатевої системи. У студентів технічного університету показники опірності організму були гірше, ніж у студентів медичного університету. Також було виявлено, що у юнаків була нижча опірність організму в порівнянні з дівчатами у всіх досліджених групах. Надалі все це буде мати негативні соціально-економічні наслідки для країни в цілому.

КЛЮЧОВІ СЛОВА: студенти, вищі навчальні заклади, гостра захворюваність, резистентність організму

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ХАРАКТЕРИСТИКА ОСТРОЙ ЗАБОЛЕВАЕМОСТИ СТУДЕНТОВ ВЫСШИХ УЧЕБНЫХ ЗАВЕДЕНИЙ

Резниченко А. Г., Гриднева С. В., Мартыненко М. В.

Резюме. Проблема здоровья студентов приобрела большое значение в последние десятилетия и остается нерешенной в современных условиях. В статье приведены данные исследования острой заболеваемости студентов высших учебных заведений, ее частоты и структуры, проанализированы половые особенности и состояние резистентности их организма. Выделены приоритетные группы заболеваний, их специфика и отличия. По результатам исследования выявлено состояние адаптации организма студентов на первом курсе. В то же время выявлены признаки напряжения и поломки этих механизмов, снижение сопротивляемости организма может быть обусловлено, прежде всего, внезапными изменениями в привычной среде учащихся, нарушением питания, режима труда и отдыха, наличием большого количества студентов, имеющих вредные привычки, постоянным увеличением учебной и информационной нагрузки в современных условиях. Только $18,46 \pm 1,16$ % студентов медицинских вузов и еще меньше учащихся технических вузов $7,81 \pm 0,63$ % имеют удовлетворительные показатели сопротивляемости организма, что свидетельствует о возможном несоответствии между воздействием комплекса образовательных и внешних факторов на адаптационные возможности организма студентов. В структуре острой заболеваемости преобладают респираторные заболевания в обеих исследуемых группах (ХНМУ – $80,16 \pm 2,58$ %, ХНУРЭ – $80,37 \pm 2,61$ %). Также довольно большую роль сыграли заболевания органов пищеварения и мочеполовой системы. У студентов технического университета показатели сопротивляемости организма были хуже, чем у студентов медицинского университета. Также было обнаружено, что у юношей была более низкая сопротивляемость организма по сравнению с девушками во всех исследованных группах. В дальнейшем все это будет иметь негативные социально-экономические последствия для страны в целом.

КЛЮЧЕВЫЕ СЛОВА: студенты, высшие учебные заведения, острая заболеваемость, резистентность организма

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