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IMPACT OF EDUCATIONAL PROCESS FACTORS ON THE HEALTH OF TEACHERS OF EDUCATIONAL INSTITUTIONS

Continuous changes are commonplace in modern society, and health issues, including the health of teachers, are becoming one of the most important. The complication of the conditions of professional and scientific work of teachers requires constant tension, which negatively affects their health, the indicators of which have been deteriorating recently. The purpose of the study was to assess the influence of the leading factors typical for the educational process on the health and morbidity of teachers of general educational institutions. As part of the study, data on the health status of teachers of general education institutions (GEI) were analyzed using the methods of sociological surveys and statistical analyses. The results showed that the most common diseases among teachers of GEI are diseases of the musculoskeletal system, diseases of the digestive system, respiratory system and cardiovascular system. The main cause of diseases, according to most teachers, is the specificity of their professional activities, which is associated with constant overstrain, overloads and traumatic factors. Occupational stress is also increasingly becoming a cause of psychosomatic diseases. It was revealed that teachers' health problems are associated with a low level of motivation and value attitude to their own health, as well as with insufficient awareness of risk factors and methods of prevention of occupational diseases. In conclusion, it was noted that further work is needed to develop social and medical prevention programs aimed at preserving the health of teachers and introducing them into the practice of general educational institutions.

Keywords: questionnaire survey, teachers of general educational institutions, factors affecting health, morbidity, stress, fatigue, prevention.

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Жалпы білім беру мекемелеріндегі мұғалімдердің денсаулығына оқу процесі факторларының әсері

Заманауи қоғамда тұрақты өзгерістермен денсаулықты сақтау, оның ішінде мұғалімдер үшін де маңызды мәселелердің бірі болып табылады. Кәсіби педагогикалық және ғылыми қызмет үшін жағдайлардың күрделене түсуі соңғы уақытта көрсеткіштері нашарлаған профессорлық-оқытушылық құрамның денсаулығына әсер ететін күш-жігерді үнемі арттыруды талап етеді. Жұмыстың мақсаты: жалпы білім беретін мекемелердегі мұғалімдердің денсаулық көрсеткіштеріне және сырқаттануына әсер ететін негізгі факторларды анықтау. Зерттеу объектісі – жалпы білім беру ұйымдарының мұғалімдері (ЖББ). Социологиялық сауалнама және статистикалық әдістер қолданылды. Сауалнама нәтижелері бойынша білім беру ұйымдарының мұғалімдері арасында нозология бойынша аурулар құрылымында тірек-қимыл аппаратының аурулары бірінші орынға шықты. Одан кейін ас қорыту мүшелерінің, тыныс алу мүшелерінің, жүрек-тамыр жүйесінің аурулары болды. Аурулардың негізгі себебі мұғалімдердің көпшілігі өздерінің кәсіби қызметінің ерекшеліктерін шамадан тыс жүктеме, психотравматикалық факторлармен, соның ішінде психосоматикалық аурулардың қоздырғыш факторлары ретінде әрекет ететін кәсіби стрессермен: невроз, ишемиялық және гипертониялық аурулар, асқазан-ішек жолдарының зақымдануы, эндокринопатиямен байланысты деп санайды. Мұғалімдердің денсаулығына қатысты проблемалар олардың денсаулығына, денсаулық мәдениеті мен салауатты өмір салтына мотивациялық-құндылық қатынасының төмен деңгейімен, қауіп факторлары мен кәсіптік аурулардың алдын алу жолдары туралы хабардар болуымен байланысты екендігі анықталды. Мұғалімдердің денсаулығын сақтау үшін әлеуметтік және медициналық-профилактикалық бағдарламаларды әзірлеуге және

енгізуге, білім беру мекемелерінің практикасында денсаулықты сақтаудың педагогикалық тәсілдерін іске асыруға көп көңіл бөлу қажет.

Түйін сөздер: сауалнама, жалпы білім беру мекемелерінің мұғалімдері, денсаулыққа әсер ететін факторлар, сырқаттанушылық, стресс, шаршау, алдын алу.

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Влияние факторов образовательного процесса на здоровье учителей общеобразовательных учреждений

В современном обществе с его постоянными трансформациями вопросы здоровьесбережения, в том числе и педагогов, стоят в ряду особо значимых. Усложнение условий профессиональной педагогической и научной деятельности требует постоянного повышенного напряжения сил, что сказывается на здоровье педагогических работников, показатели которого в последнее время ухудшаются. Цель работы: определить основные факторы, влияющие на показатели здоровья и заболеваемость учителей общеобразовательных учреждений. Объект исследования – учителя общеобразовательных учреждений (ООУ). Использовались методы социологического опроса, статистические методы. По результатам анкетирования в структуре заболеваний по нозологиям у учителей ООУ на первое место вышли болезни костно-мышечной системы. Далее шли по убывающей заболевания органов пищеварения, органов дыхания, сердечно-сосудистой системы. Главной причиной заболеваний большинство учителей считают специфику своей профессиональной деятельности, связанную с перенапряжением, перегрузками, психотравмирующими факторами, в том числе и профессиональные стрессы, которые все чаще выступают причинными факторами психосоматических заболеваний: неврозов, ишемической и гипертонической болезней, поражений желудочно-кишечного тракта, эндокринопатий. Выявлено, что проблемы со здоровьем у педагогов обусловлены низким уровнем мотивационно-ценностным отношением к своему здоровью, культуры здоровья и здорового образа жизни, осведомленностью о факторах риска и способах профилактики профессиональных заболеваний. Для сохранения здоровья педагогов необходимо уделять большое внимание разработке и внедрению социальных и медико-профилактических программ, реализации в практике образовательных учреждений педагогических подходов к здоровьесбережению.

Ключевые слова: анкетный опрос, учителя общеобразовательных учреждений, факторы, влияющие на здоровье, заболеваемость, стресс, утомление, профилактика.

Introduction

Pedagogical work plays a key role in shaping the student's personality and preparing him for life in society. This is a responsible activity that requires not only considerable time, but also emotional efforts. A modern teacher has to make non-standard decisions, switch abruptly and adapt to rapidly changing conditions, work in conditions of uncertainty, lack of time and an abundance of information [1].

Professional risk factors for the health of teachers [2] are the peculiarities of work, such as a high degree of responsibility, the length of working hours (including outside educational institutions), an intense load on assimilation, preservation and transmission of information, significant loads on the voice apparatus, as well as checking written works of students and preparing for lessons.

According to the manual R2.2.75599 [3], the teacher's work is characterized as overstressed, assessed by the third level of the third grade of nervous tension, especially in terms of intellectual and sensory loads [4]. Due to the intensive work schedule, physical and emotional stress, teachers often have health problems.

The professional health of a teacher, on the one hand, is the basis for successful work in a modern school, and on the other hand, it becomes a strategic problem of education [5]. This problem is especially relevant for teachers working in large industrial cities and in areas with high levels of anthropogenic pollution.

Of particular importance are the intense psychoemotional loads and stresses faced by teachers and which significantly affect their health [6, 7].

Psychoemotional stresses are increasingly becoming the cause of a number of psychosomatic

diseases (neuroses, coronary heart disease, diseases of the digestive system, diseases of the endocrine system and oncology) [8, 9].

Consequently, teachers can be classified as a high-professional risk group, which includes criteria such as academic workload, financial situation, social security, the level of their own health and medical activity [10]. To solve health problems, it is necessary to further study the features of teachers' professional activities, identify the leading factors characteristic of the educational process that can have a negative impact on the state of health.

The purpose of the work was to identify the main factors affecting the health indicators and morbidity of teachers of general educational institutions.

Materials and methods

The study involved 128 teachers of general education institutions of Astana city aged from 21 to 64 years.

The research design corresponded to a descriptive cross-sectional study.

The participants were divided into three age categories: group 1 – 26 teachers under 30 years old (average age – 26.2 ± 0.42 years, work experience – 4.8 ± 0.44 years); group 2 – 50 teachers from 30 to 45 years old (average age – 36.6 ± 0.636 years, work experience – 13.7 ± 0.758 age); group 3 – 52 teachers over 45 years old (average age – 54.3 ± 0.711 years, experience – 29.9 ± 1.105 years).

Inclusion criteria: – employment as a full-time teacher at a general education institution; – age 21–64 years; – work experience of at least 1 year; – absence of acute illnesses at the time of survey; – voluntary consent to participate.

Exclusion criteria: – severe chronic diseases in the stage of decompensation (cardiovascular, endocrine, respiratory, oncological); – current use of antihypertensive, psychotropic or hormone-modifying medications that may affect physiological indicators; – temporary disability (sick leave) at the time of survey; – refusal to participate.

Participation in the survey was anonymous and voluntary; therefore, no separate written consent was required, and the return of the questionnaire was regarded as signed informed consent to participate in the study and permission for data processing. The study was approved by the Local Bioethics Committee of the Non-Commercial Joint Stock Company

‘Karaganda Medical University’ (Protocol No. 17, dated October 22, 2024).

The assessment of medical and preventive activity and health status was carried out using a questionnaire survey [11]. The analysis of morbidity by nosological groups was performed using the WAI (Work Ability Index) questionnaires [12], which take into account the presence of diseases diagnosed by a physician. The number of steps was recorded with a Tanita AM–120 pedometer (Japan). Height and weight measurements were conducted, and the body mass index (BMI) was calculated using the standard formula: $\text{Body weight (kg)} / \text{Height} \times \text{Height (m)}$.

Statistical analysis of the research results was performed using the standard software package STATISTICA 10.0. The mean value of each variable, its standard error, and Student's t-criterion were calculated. For the statistical processing of percentage indicators, the proportion of individuals meeting a specific criterion relative to the total number in each group was determined, along with the percentage error. Differences were considered statistically significant at $p < 0.05$.

Results and discussion

The analysis of morbidity by nosological groups showed that the diseases of the musculoskeletal system came out in the first place among the teachers of GEI.

An analysis of the results of a questionnaire survey in age group 1 showed that diseases from the musculoskeletal system (Table. 1), identified by a doctor, were observed in $23 \pm 0.016\%$ of the surveyed teachers of general educational institutions, in two other groups (30–45 years old and over 45 years old), there was an increase to $46.94 \pm 0.01\%$ and $41.51 \pm 0.009\%$, respectively.

More than half of the respondents answered positively to the question «Have you ever experienced back or neck pain» (Table. 2), in addition, with age, there was an increase in positive responses from $73 \pm 0.017\%$ in age group 1 to $87.7 \pm 0.006\%$ in age group 2 and $90.5 \pm 0.005\%$ in age group 3.

Respondents in age group 1 indicated the cervical and lumbar spine to the question «In which part of the spine do you often feel pain?» (34.62% each). In age group 2, 28.57% respondents chose the cervical spine, 22.45% respondents chose the lumbar spine, in age group 3 – 32.08% and 37.74% , respectively (Fig. 2).

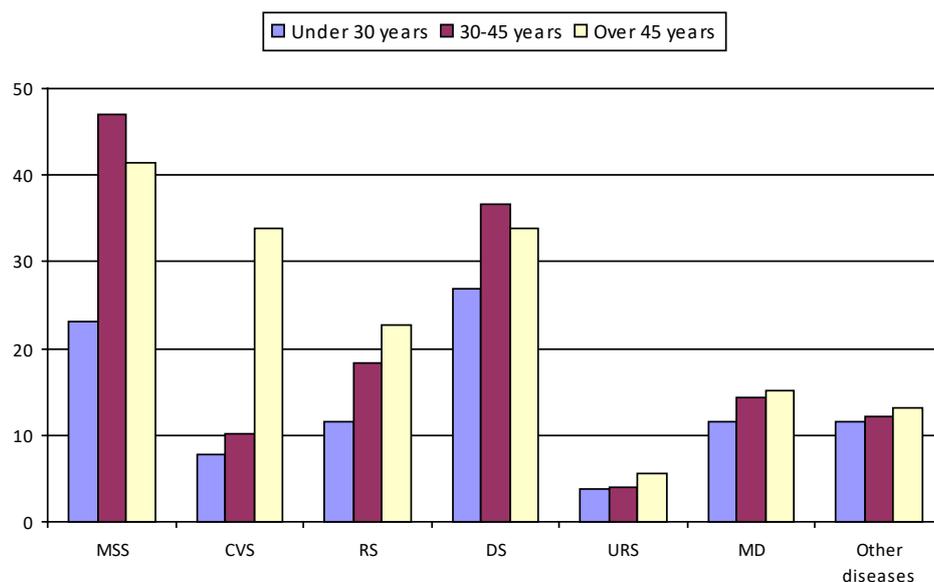


Figure 1 – The structure of morbidity among teachers of GEI

Note: MSS – diseases of the musculoskeletal system; CVS – diseases of the cardiovascular system; RS – diseases of the respiratory system; DS – diseases of the digestive system; URS – diseases of the urinary and reproductive system; MD – diseases associated with metabolic disorders.

Table 1 – Answers to the question «Have you ever felt back pain, neck pain?»

Age	Yes	No
Under 30 years	73 ± 0,017%	26,9 ± 0,017%
30-45 years	87,7 ± 0,006%	10,2 ± 0,006%
Over 45 years	90,5 ± 0,005%	9,4 ± 0,005%

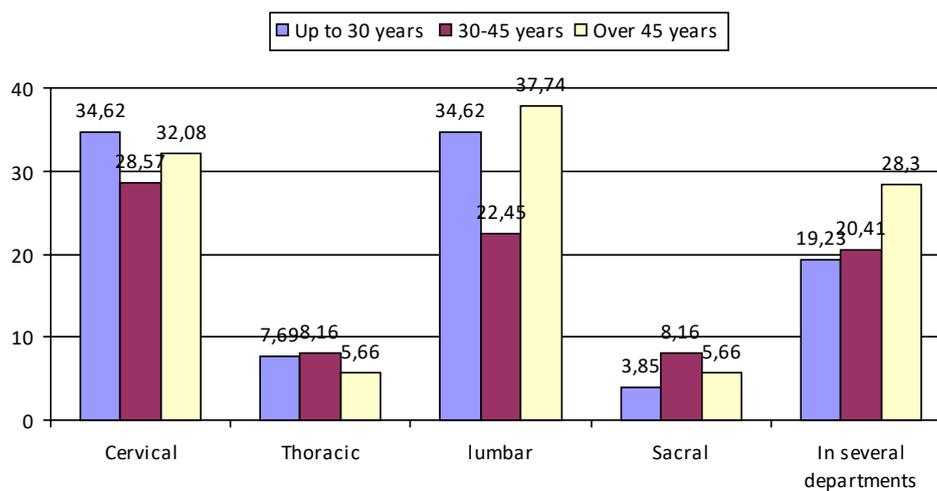


Figure 2 – Answers to the question «In which part of the spine do you often feel pain?»

According to the results of a questionnaire survey, the presence of diseases of the digestive system was also noted among teachers of GEI, an increase in the age aspect was recorded from $26.9 \pm 0.017\%$ in age group 1 to $36.7 \pm 0.009\%$ and $33.9 \pm 0.008\%$ in age groups 2 and 3, respectively.

To the question «Do you consider your diet to be rational?» (Table 2) 50% respondents in age group 1 answered negatively, $38.4 \pm 0.018\%$ – positively, $11.5 \pm 0.012\%$ respondents found it difficult to an-

swer. In age group 2, $42.8 \pm 0.01\%$ respondents answered this question negatively, $22.4 \pm 0.008\%$ – positively, $26.5 \pm 0.009\%$ respondents found it difficult to answer. In age group 3, $35.8 \pm 0.009\%$ respondents considered their diet irrational, $37.7 \pm 0.009\%$ – rational, $22.6 \pm 0.007\%$ respondents found it difficult to answer. Among the causes of irrational nutrition, the majority of respondents noted a violation of the diet ($53.8 \div 46.9\%$), monotonous diet ($13.2 \div 11.5\%$) and excess carbohydrates (sweets, pastries) ($23 \div 28.5\%$).

Table 2 – Answers to questions about nutrition

Age	Under 30 years	30-45 years	Over 45 years
1. Do you consider your diet to be rational?			
• Yes	$38,4 \pm 0,018\%$	$22,4 \pm 0,008\%$	$37,7 \pm 0,009\%$
• No	$50 \pm 0,019\%$	$42,8 \pm 0,01\%$	$35,8 \pm 0,009\%$
• I find it difficult to answer	$11,5 \pm 0,012\%$	$26,5 \pm 0,009\%$	$22,6 \pm 0,007\%$
2. The causes of irrational diet			
• Eating disorders	$53,8 \pm 0,019\%$	$46,9 \pm 0,01\%$	$33,9 \pm 0,008\%$
• Monotonous meals	$11,5 \pm 0,012\%$	$8,1 \pm 0,005\%$	$13,2 \pm 0,006\%$
• Excess carbohydrates	$23 \pm 0,016\%$	$28,5 \pm 0,009\%$	$13,2 \pm 0,006\%$
• Other	$3,8 \pm 0,007\%$	$4 \pm 0,004\%$	$11,3 \pm 0,005\%$

Calculations of BMI in age dynamics showed (Fig. 3a) that the «Excess» indicator was observed in $1,19.2 \pm 0.015\%$ teachers in age group 1, in 57.4% teachers in age group 2 and in $39.6 \pm 0.009\%$ teach-

ers in age group 3. The «Obesity» indicator was registered in $11.5 \pm 0.012\%$ teachers in age group 1, in $10.6 \pm 0.006\%$ teachers in age group 2 and in $32 \pm 0.008\%$ teachers in age group 3 (Fig. 3).

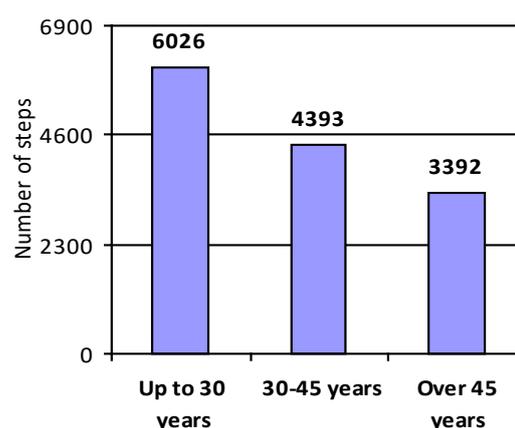
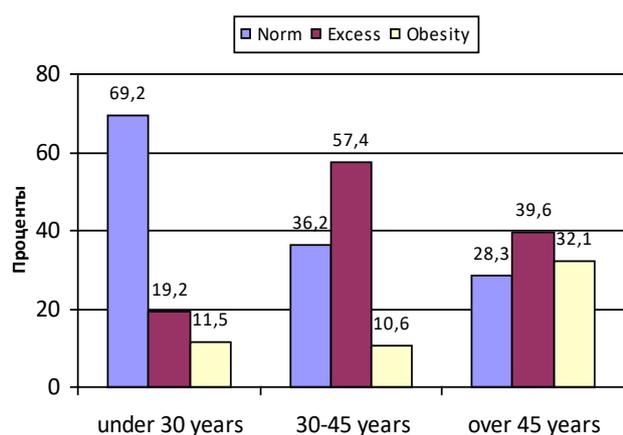


Figure 3 – Distribution of body mass index (a) and number of steps (b)

The number of steps per day (Fig. 3b) was 6026.3 ± 473.85 steps for teachers of age group 1, 4393.2 ± 165.82 steps for teachers of age group 2 and 3392.5 ± 170.59 steps for teachers of age group 3 ($p < 0.05$). At the same time, according to the questionnaire survey, the teachers of GEI had insufficient physical activity, especially in age groups 2 and 3 (Table 3). Thus, 53.8% respondents in age group 1 agreed that their physical activity is sufficient,

46.1% believe that their physical activity is insufficient. In age group 2, 28.5% respondents noted sufficient physical activity, 51% respondents replied that they lacked physical activity. In age group 3, 37.7% respondents chose the answer «Sufficient», and 45.2% respondents replied that they had insufficient physical activity. The answer «I find it difficult to answer» was chosen by 12.2-13.2% respondents in age groups 2 and 3.

Table 3 – Physical activity

Age	Sufficient	Insufficient	I find it difficult to answer
Under 30 years	$53,8 \pm 0,019\%$	$46,1 \pm 0,019\%$	$0 \pm 0\%$
30-45 years	$28,5 \pm 0,009\%$	$51 \pm 0,01\%$	$12,2 \pm 0,006\%$
Over 45 years	$37,7 \pm 0,009\%$	$45,2 \pm 0,009\%$	$13,2 \pm 0,006\%$

The results of the questionnaire on the identification of respiratory problems revealed an increase in the percentage of respondents with problems from $11.5 \pm 0.012\%$ in age group 1 to $22.6 \pm 0.007\%$ in age group 3 (Fig. 1).

The results of the questionnaire on the identification of problems with the cardiovascular system showed an increase in the percentage of respondents with cardiovascular problems from $7.6 \pm 0.01\%$ in age group 1 to $33.9 \pm 0.008\%$ in age group 2.

The following results were obtained to the question «Do you feel stress while working» (Table. 4): in age group 1, 42.3% respondents chose the answer

«Rarely», 38.4% chose the answer «Often», and 11.5% chose the answer «Constantly». In age group 2, 26.5% respondents chose the answer «Rarely», 34.6% chose the answer «Often», and 12.2% chose the answer «Constantly». In age group 3, 30.1% respondents chose the answer «Rarely», 26.4% chose the answer «Often», and 33.9% respondents did not feel stress.

When asked about specific factors that negatively affect health (Fig. 4), 26.5-28.3% respondents replied that they did not have enough time to rest, especially in age group 1 (50%), $40,8 \div 42,3\%$ respondents indicated production factors, $16,3 \div 24,5\%$ – external and $18,3 \div 24,5\%$ – inadequate sleep.

Table 4 – Answers to the question «Do you feel stress while working?»

Age	No	Rarely	Often	Constantly
Under 30 years	$7,6 \pm 0,01\%$	$42,3 \pm 0,019\%$	$38,4 \pm 0,018\%$	$11,5 \pm 0,012\%$
30-45 years	$18,3 \pm 0,007\%$	$26,5 \pm 0,009\%$	$34,6 \pm 0,009\%$	$12,2 \pm 0,006\%$
Over 45 years	$33,9 \pm 0,008\%$	$30,1 \pm 0,008\%$	$26,4 \pm 0,008\%$	$5,6 \pm 0,004\%$

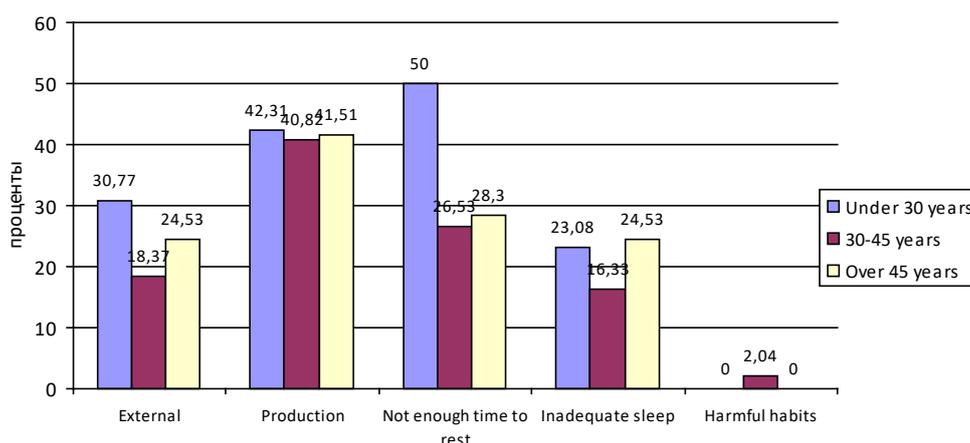


Figure 4 – Survey results on factors negatively affecting health

To the question «Do you take enough care of your health?» 19.2% of the surveyed teachers in age group 1 answered «Enough», 57.69% teachers chose the answer «I could care more» and 23.08% teachers chose the answer «Not enough» (Fig. 5). With age, the number of those teachers who believed that they cared «Enough» («Not enough») about health increased – from 22,4±0,008% (24,4±0,008%) in age group 2 to 28,3±0,008% (37,7±0,009%) in age group 3. On the contrary, the number of those teachers who considered «I could care more» decreased from 44.8±0.01% in age group 1 to 30.1±0.008% in age group 3.

To the question «Do acute illnesses force you to take a sick leave or a certificate of temporary disability?» the majority of the surveyed teachers of GEI answered «Yes, if the disease is serious» (Table 5). With age, the percentage of such responses decreases from 69.3±0.009% in age group 2 to 54.7±0.009% in age group 3. On the contrary, the percentage of those respondents who do not take sick leave increases – from 30.7±0.017% in age group 1 to 45.2±0.009% in age group 3.

Almost half of the respondents (46.15÷41.51%) answered «Rarely» to the question «How often do you visit a doctor?» (Fig. 6).

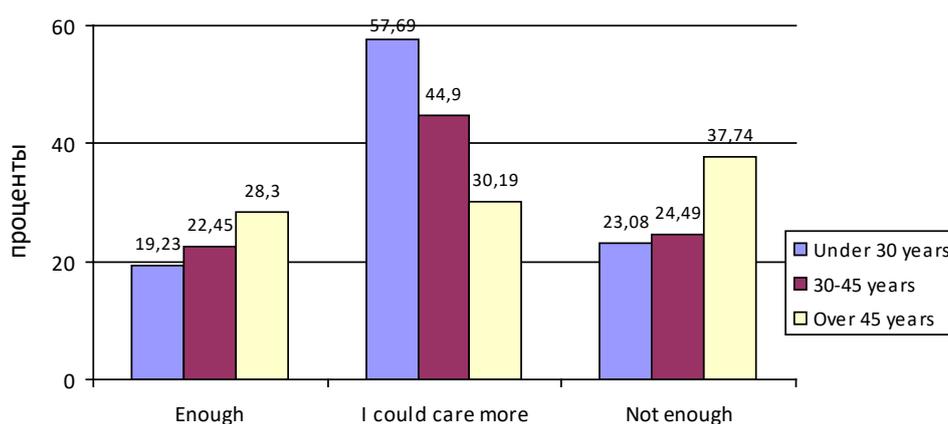
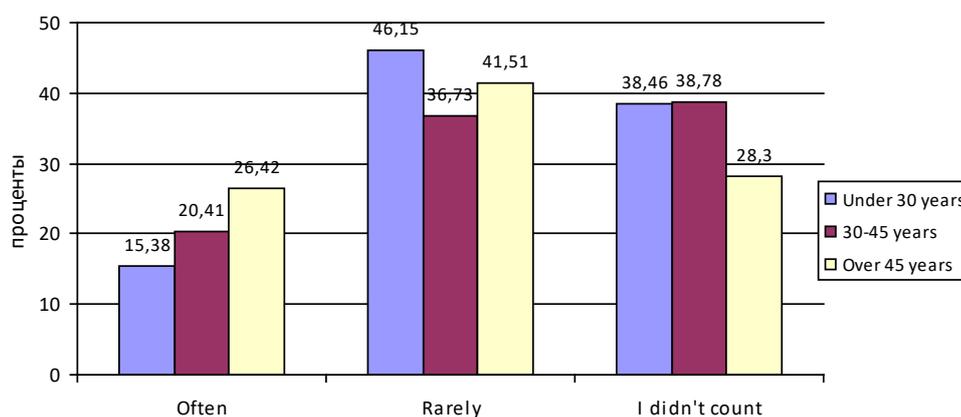


Figure 5 – Answers to the question «Do you take enough care of your health?»

Table 5 – Answers to the question «Do acute illnesses force you to take a sick leave or a certificate of temporary disability?»

Age	No	Yes, if the disease is serious	Constantly
Under 30 years	30,7 ± 0,017%	65,3 ± 0,018%	3,8 ± 0,007%
30-45 years	26,5 ± 0,009%	69,3 ± 0,009%	0 ± 0%
Over 45 years	45,2 ± 0,009%	54,7 ± 0,009%	1,8 ± 0,002%

**Figure 6** – «How often do you visit a doctor?»

In age group 1, according to the results of the questionnaire, 26.9±0.017% respondents indicated preventive examination as the reason for visit to a doctor, 30.7±0.017% respondents – poor health and acute illness occurrence, 15.3±0.013% respondents – exacerbation of chronic diseases. In age group 2, 18.3±0.007% respondents indicated preventive examination as the reason for visit to the doctor, 34.6±0.009% – poor health,

18.3±0.007% – exacerbation of chronic diseases, 22.4±0.008% – acute illness occurrence. The highest rate was recorded in age group 3 (32±0.008%). This means that teachers of this group regularly go for routine checkups. Poor health and acute illness occurrence were chosen by 24.5±0.008% respondents as the reason for visit to the doctor, exacerbation of chronic diseases – 18.8±0.007% teachers (Table 6).

Table 6 – Reasons for visit a doctor

Age	Preventive examination	Poor health	Exacerbation of chronic diseases	Acute illness occurrence
Under 30 years	26,9 ± 0,017%	30,7 ± 0,017%	15,3 ± 0,013%	30,7 ± 0,017%
30-45 years	18,3 ± 0,007%	34,6 ± 0,009%	18,3 ± 0,007%	22,4 ± 0,008%
Over 45 years	32 ± 0,008%	24,5 ± 0,008%	18,8 ± 0,007%	24,5 ± 0,008%

Teachers' professional performance is closely related to the functional state of the body and the level of physical fitness, as pronounced functional strain refers to a state of increased physiological load characterized by the depletion of adaptive reserves, reduced work capacity, and greater fatigue resulting from prolonged psycho-emotional and

physical stress. A decrease in these parameters leads to poor health, decreased performance and increased fatigue. In recent years, numerous studies [13, 14] indicate extremely low indicators of physical and mental health of teachers. These indicators decrease with service length increasing [15]. Constant overexertion can lead to the development of somatic

diseases such as stomach ulcers, coronary heart disease, diabetes mellitus and hypertension. According to the data, most teachers have all the listed risk factors after fifteen years of professional activity [16]. Older age, in particular the age over 45, is associated with the highest incidence [10].

The teaching profession ranks first in terms of tension and the presence of harmful factors in the workplace [16]. Among these factors are physical exertions, emotional stress, and a high degree of sensory stress on the organs of vision and hearing, as well as an intense load on the speech apparatus. Physical activity includes both kinetic and static loads on the musculoskeletal system and the cardiovascular system. Teachers whose work is related to mental often lead a sedentary lifestyle, which contributes to an increase in the incidence of diseases of the musculoskeletal system.

The results of a questionnaire survey of teachers of general education institutions showed that diseases of the musculoskeletal system occupy the first place among other diseases. In recent years, there has been a significant increase in the number of diseases of this group. Studies show that up to 60% of the adult population of our country suffers from structural and functional disorders of the musculoskeletal system. This is due to insufficient physical activity, eating and rest disorders, psychological stress and other factors [17, 18]. This phenomenon is not uncommon, including among teaching staff. In teachers, diseases of the musculoskeletal system, in particular structural and functional disorders of the spine are often associated with physical inactivity [19]. Studies also show that from 12 to 23% teachers involved in the educational process suffer from diseases of the musculoskeletal system [20, 21].

Osteochondrosis is a dystrophic degenerative change in the intervertebral discs. The majority of the world's population (35÷80%) suffer from this disease. According to recent studies, many diseases that are closely related to the musculoskeletal system and connective tissue are also often associated with osteochondrosis.

To the question «Have you ever felt back pain, neck pain?», more than 50% of the surveyed teachers answered positively, and with age, the percentage of positive responses increased from $73.0 \pm 0.017\%$ to $90.5 \pm 0.005\%$.

The modern lifestyle is characterized by insufficient physical activity and lack of mobility [23, 24]. This factor leads to a violation of blood circulation and nutrition in the paravertebral muscles, a decrease in their functional activity and, ultimately, to their atrophy.

The respondents chose mainly the cervical and lumbar spine as the answer to the question «In which part of the spine do you often feel pain?». In age group 1, 34.62% respondents indicated pain in the cervical and lumbar spine. In age group 2, 28.57% teachers chose the cervical spine, and 22.45% chose the lumbar spine. In age group 3, the index of cervical spine was 32.08%, and the index of lumbar spine was 37.74%. To date, osteochondrosis of the cervical spine is a widespread disease and has social significance [25]. Approximately 40% cases of all neurological and orthopedic diseases are attributed to this disease. Many researchers believe that one of the likely causes of the development of early osteochondrosis in young people is the general urbanization of the population, which contributes to a sedentary lifestyle and prolonged stay in an uncomfortable position (for example, at a computer or in class) [24].

A stressful professional environment can lead to the development of various chronic occupational diseases affecting the integrative life support systems of the body, including the digestive system [14, 15].

According to the results of the questionnaire, the teachers of GEI also noted the presence of diseases of the digestive system (from $26.9 \pm 0.017\%$ to $36.7 \pm 0.009\%$). Analyzing the age characteristics according to data [16], it was found that diseases of the digestive system are most common among teachers under the age of 45. Diseases of the digestive system can be a consequence of both mental stress and work stress in the workplace, as well as eating disorders, which are often found in the implementation of pedagogical activities.

The percentage ratio between the answers «Yes/No» to the question «Do you consider your diet to be rational?» was 38.4/50.0 in age group 1, index was 22,4/42,8 in age group 2 and 37,7/35,8 in age group 3. Among the reasons of irrational diet, the majority of respondents noted a violation of the regime nutrition (53.8÷46.9%), monotonous diet (13.2-11.5%) and excess carbohydrates (sweets, pastries) (23÷28.5%), which may be the result of fast snacks in between classes. In the study [10], only 17.5% of the surveyed teachers have a normal and regular diet. 31.7% of the respondents try to maintain a normal time regime, which is not always possible due to the peculiarities of the educational process. The rest (27.5%) eat according to the principle of «as it turns out».

Due to eating disorders, diseases associated with metabolic disorders develop in teachers. According to the results of the questionnaire survey, the highest

indicator was observed among teachers of age group 3 – $15 \pm 0.006\%$, in age group 2 – $14.2 \pm 0.007\%$. The lowest indicator was registered in the age group 1 and amounted to $11.5 \pm 0.012\%$.

Among the main risk factors affecting the health of teachers, many respondents note that among the causes of morbidity among teachers there are physical inactivity and orthostatic loads. An analysis of the factors influencing morbidity [5] showed that about 70% of the surveyed teachers noted a certain specificity of professional activity – low physical activity. In addition, more than 60.8% of the surveyed teachers note a sedentary lifestyle characterized by spending their free time in front of the TV, books reading or computer related activities. L. Ye. Nadeina notes in her research that teachers spend a lot of time on their feet during classroom and classroom activities, which is combined with insufficient physical activity [14].

The results of counting the number of steps taken by the teachers of GEI per day showed 6026.3 ± 473.85 steps per day in age group 1, in age group 2 – 4393.2 ± 165.82 steps, in age group 3 – 3392.5 ± 170.59 steps. The reason for the low number of steps per day is not only diseases of the musculoskeletal system, but also BMI increase.

Respiratory diseases are one of the urgent problems of modern medicine, as they affect the quality of life and social functioning. According to M.S. Mikerova [27], the incidence of respiratory diseases among teachers was 36.0 per 100 respondents. This type of pathology is one of the most common due to the peculiarities of teaching, including a significant strain on the vocal cords. Chronic bronchitis (18.1%), chronic pharyngitis (17.1%), chronic tonsillitis (15.1%) and chronic laryngitis (9.7%) are most often registered [28].

The results of the questionnaire on the identification of respiratory problems showed an increase in the percentage of respondents with problems from $11.5 \pm 0.012\%$ in age group 1 to $22.6 \pm 0.007\%$ in age group 3.

Eating disorders and physical inactivity often lead to an increase in body weight. Thus, BMI calculations in age dynamics showed that the «Norm» criterion decreased from $69.2 \pm 0.017\%$ in age group 1 to $28.3 \pm 0.008\%$ in age group 3, while the sum of the criteria «Excess» and «Obesity» increased from 30.7 to 71.6%. These results are consistent with the data of P.M. Abdurakhimova's study [9], according to which, the majority of the studied teachers were overweight (54.2%) and obese I and II degrees (19.2%).

Teachers experience significant emotional stress associated with intense psycho-emotional stress. They spend most of their working time in a state of high tension: they need to constantly concentrate, face emotionally intense work, and be responsible for the lives and health of children. In addition, the lack of a stable work and rest schedule, constant overwork and changes in the schedule of classes [16] enhance this effect. Constant stress leads to the development of a number of somatic diseases, including diseases of the cardiovascular system, such as coronary heart disease, hypertension and others.

The results of the survey on the detection of diseases of the cardiovascular system showed an increase in the percentage of respondents with this problem from $7.6 \pm 0.01\%$ in age group 1 to $33.9 \pm 0.008\%$ in age group 3. Diseases of the circulatory system are mainly manifested in teachers by such nosologies as coronary heart disease (up to 8.9% of all cases), hypertensive heart disease (up to 11.4%), cerebral circulatory disorders (up to 8.1%) [29].

The cause of problems with the cardiovascular system, in addition to the above, is stress [30].

This is confirmed by the results of a questionnaire survey, where the question «Do you feel stress while working?». The following responses were received: in age group 1, 42.3% respondents chose the answer «Rarely», 38.4% respondents chose the answer «Often», and 11.5% teachers chose the answer «Constantly». In age group 2, 26.5% respondents answered «Rarely», 34.6% – «Often», 12.2% – «Constantly». In age group 3, 30.1% respondents preferred the answer «Rarely», 26.4% – «Often», 33.9% respondents replied that they do not feel stress. The analysis of stress factors in modern teachers allowed identifying the main causes of psychological stress in the pedagogical sphere; these are information load, uncertainty in information, a sense of responsibility, lack of time, interpersonal and intrapersonal conflicts [1]. The information load is one of the most characteristic features of pedagogical work. The amount of information that needs to be processed often exceeds the mental capabilities of teachers. This high cognitive load becomes a powerful source of stress, increasing tension [1]. The lack of time is associated with constant pressure on time. This is due not only to the numerous tasks and functions that need to be performed, but also to the strict time constraints in which the teacher must work [1].

When asked about specific factors negatively affecting health, $26.5 \div 28.3\%$ respondents replied that they did not have enough time to rest, especially in age group 1 (50%), $40,8 \div 42,3\%$ teachers pointed to

production factors, 16.3÷24.5% – to external factors and 18.3÷24.5% – to inadequate sleep.

The main cause of diseases in 87.5% of teachers is the peculiarities of professional activity due to the presence of high voltage, overloads and stressful situations at work [10]. The results of the survey [10] also show that 28.3% (34) respondents consider themselves practically healthy and assess their health as good, 59.2% (71) consider it satisfactory, and 12.5% (15) consider it bad. However, according to the survey [31], 68% respondents consider themselves healthy, while medical examinations show that only 20.9% teaching staff are practically healthy. This is largely due to the fact that many teachers do not consider myopia as pathology, although it accounts for 33.3% of the total morbidity of teaching staff.

Analysis of the answers to the question «Do you take enough care of your health?» showed that in the age group 1, almost 20% of the surveyed teachers take care of their health «Enough» and «Not enough», and more than half of the respondents answered «I could care more». With age, there was an increase in the number of «Enough» («Not enough») responses, and a decrease in those who believed that they could care more.

Data on the attendance of teachers in medical institutions can serve as an indicator of their state of health, on the one hand, and the level of organization of medical care for this contingent, on the other.

It should not be forgotten that in most cases, the morbidity of teachers due to unaccounted cases is latent, i.e. hidden, which makes it difficult to obtain reliable results [21]. Annual preventive medical examinations of teachers reveal 3-3.5 times more diseases than registered in medical records. This is due to the extremely low attendance of teachers at medical institutions for registration of disability certificates, which is confirmed by the results of a sociological survey.

The majority of the surveyed teachers answered «Yes, if the disease is serious» to the question «Do acute illnesses force you to take a sick leave or a certificate of temporary disability?». With age the percentage of such answers decreases from 69.3±0.009% to 54.7±0.009%. On the contrary, the percentage of respondents who do not take sick leave increases with age from 30.7±0.017% to 45.2±0.009%. Usually, disability certificates are issued by teachers with up to 20 years of work experience. With more than 20 years of experience, teachers, especially women, more often continue to work, suffering illnesses «on their feet» [1]. The work of teachers, despite the existing standards, is not nor-

malized, and therefore teachers practically do not have time to go to the doctor. Similar results were obtained by M.S. Mikerova [27]. According to her, 14.2% of teachers do not feel the need for a disability certificate, which may be due to the schedule of classes or the possibility of colleagues replacing an absent teacher, 10.1% do not go to the doctor because of «distrust of doctors in clinic».

An equally important aspect in the context of teachers' health is their insufficient motivational and value attitude to their own health, a low level of healthy culture and lifestyle, as well as insufficient awareness of risk factors and methods of preventing occupational diseases [32]. Almost half of the respondents answered rarely (46.15÷41.51%) to the question «How often do you visit a doctor?».

Teachers have different reasons for visit a doctor. The results of the questionnaire showed that in age group 1 26.9± 0.017% respondents go for a preventive examination, in age group 2 – 18.3±0.007%, in age group 3 – 32±0.008%. Poor health and the occurrence of acute illness were chosen by 24.5÷34.6% respondents as reasons for going to the doctor, and exacerbation of chronic diseases – 15.3÷18.8%.

The subjective assessments received from teachers confirm the information revealed during preventive medical examinations, where there was a predominance of diseases from the circulatory and respiratory organs, musculoskeletal and digestive systems, and others. However, the authors note significant differences between subjective assessments of teachers' health status and actual morbidity, which, in their opinion, indicates an unsatisfactory quality of medical examinations. This is confirmed by the dissatisfaction of teachers (24%) with the organization of medical examinations, including insufficient attention from doctors and long queues at the polyclinic.

The teaching staff often does not show a sufficient level of medical responsibility, that is, control over their health, and often does not have stress management skills.

According to [16], in modern conditions, the professional activity of teachers negatively affects their health: 60% teachers constantly experience psychological discomfort, 85% teachers are in a constant state of stress, and work negatively affects family relationships of 85% female teachers, which leads to diseases of the nervous system in 1/3 of teachers. According to L.E. Nadeina [14], only 10.4% teachers are within the functional norm. Primary prevention plays a key role in maintaining the health of teachers, which is closely related to their lifestyle. Understanding the characteristics of nutrition, phys-

ical activity and attitudes towards bad habits helps to develop specific preventive measures.

Conclusion

According to the results of the survey, musculoskeletal diseases were in the first place in the structure of diseases among teachers of educational institutions. They were followed by decreasing diseases of the digestive system, respiratory organs, and cardiovascular system. Most teachers associate the causes of their illnesses with the characteristics of their professional activities, such as overstrain, excessive stress and psychological trauma.

Psychoemotional stresses are increasingly contributing to the growth of psychosomatic diseases (neuroses, ischemic and hypertensive heart disease, as well as diseases of the digestive system and endocrine disorders).

Teachers' health problems are caused by insufficient motivational and value-based attitude to their own health, a low level of health culture and a healthy lifestyle, as well as limited knowledge about risk factors and methods of occupational diseases preventing. Further work is needed to develop social and medical prevention programs aimed at preserving the health of teachers and introducing them into the practice of educational institutions.

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