

The Role of Risk Factors in The Formation of University Teachers' Health

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ABSTRACT

Background

University teachers represent a professional group exposed to a wide spectrum of occupational and psychosocial risk factors. Chronic stress, excessive workload, and unfavorable working conditions significantly contribute to the deterioration of their physical and mental health.

Objective

To identify the role of occupational and psychosocial risk factors in the formation of university teachers' health and to assess the prevalence of associated health disorders.

Methods

A comprehensive review of national and international literature was conducted, combined with analysis of original empirical data obtained from an anonymous survey and medical examinations of 1,417 teachers from technical and humanities universities. Statistical analyses included χ^2 tests, Pearson correlation, and calculation of intensive/extensive indicators with 95% bootstrap confidence intervals.

Results

The majority of respondents (76.7%) reported deterioration of health. Chronic diseases were identified in 33.2% of teachers, with higher prevalence among women (41.9%) compared to men (23.6%), and in humanities universities (42.1%) compared to technical universities (24.3%). Visual impairment (49.8%), frequent respiratory infections (74.8%), cardiovascular (48%) and musculoskeletal disorders (44%) were the most common health problems. Occupational risk factors most frequently reported included excessive workload (66–75%), high occupational tension (59–68%), prolonged static posture (64–73%), intensive vocal load (45–59%), and visual strain (55–68%). Emotional burnout symptoms were detected in 40–70% of teachers, with strong correlations between burnout indicators and hypertension prevalence. Temporary disability rates increased 1.2-fold between 2013 and 2016, with higher values in humanities universities and among older teachers (>50 years).

Conclusion

The health of university teachers is shaped by the combined impact of occupational, psychosocial, and lifestyle risk factors. Preventive interventions are required at institutional and individual levels, including workload redistribution, psychological support, promotion of healthy behaviors, and systematic health monitoring.

Keywords

university teachers; occupational risks; psychosocial stress; burnout; preventive health

INTRODUCTION

The professional well-being of academic staff has received growing attention in recent decades. University teachers represent a distinctive occupational group, as they must navigate a combination of intellectual, emotional, and organizational demands. These pressures have become increasingly pronounced in the context of rapid educational reforms, growing administrative responsibilities, and limited institutional resources. Such challenges are particularly relevant in transitional higher education systems, including those of Kazakhstan and Russia, where academic staff are often expected to adapt to substantial structural and policy changes while maintaining high standards of teaching and research.

Emotional burnout, initially described by H. J. Freudenberger (1974) and later conceptualized by C. Maslach (2001), is among the most significant threats to teachers' health. International studies indicate that more than half of university teachers experience burnout or related psychosomatic disorders, resulting in decreased professional productivity, reduced job satisfaction, and increased morbidity^{1,2}.

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In Russia, studies show that between 68% and 20% of teachers suffer from chronic diseases of the cardiovascular, musculoskeletal, and respiratory systems. Similar findings have been reported in Kazakhstan, where psychosocial stressors and high workloads remain leading determinants of academic staff health ^{3,4}.

This study aims to analyze the prevalence and structure of occupational and psychosocial risk factors among university teachers and to assess their role in shaping health outcomes, with particular emphasis on gender, age, and institutional differences.

MATERIALS AND METHODS

Study design and population

The study integrated findings from national and international literature (WHO, OECD, UNESCO, Scopus-indexed research, 2020–2024) and original empirical data obtained from a survey and medical examinations of 1,417 teachers (Moscow, 2013–2016).

Survey instrument

An anonymous questionnaire (65 questions) assessed occupational conditions, health status, and psychosocial factors. Medical examinations included ophthalmologic, cardiovascular, musculoskeletal, and general health evaluations.

Statistical analysis

Data were processed using χ^2 tests for categorical variables, Pearson correlation for associations between burnout symptoms and health outcomes, and bootstrap resampling ($B = 500$) to estimate 95% confidence intervals for odds ratios ⁵.

RESULTS

Sociodemographic characteristics

The analysis of the sociodemographic profile of the study population revealed that women predominated among university staff, representing 57.7% of teachers in technical universities and 75.4% in humanities institutions. Men were more frequently represented in technical universities (42.3%) compared to humanities (24.6%), a pattern that reflects the historical gender distribution across academic disciplines. Age stratification demonstrated further differences: younger age groups (25–29 years) included a higher proportion of men, whereas women were more concentrated in

the 30–49 age category, suggesting cumulative effects of professional retention and gender-specific career trajectories.

Table 1. Distribution of teachers by gender and type of university

Gender	Technical (%)	Humanities (%)	p-value
Male	42.3	24.6	<0.01
Female	57.7	75.4	<0.01

Occupational risk factors

Teachers reported, on average, between five and six concurrent occupational risk factors, underlining the multifactorial nature of their professional environment. The most prevalent risks included excessive workload, chronic stress, prolonged static posture, and intensive vocal and visual strain. The prevalence of key occupational risk factors is summarized in Table 2 ⁶.

Table 2. Prevalence of occupational risk factors among teachers (per 100 surveyed)

Risk factor	Technical (%)	Humanities (%)	p-value
High workload (>36h/week)	66.2	74.5	<0.01
High occupational tension	59.3	68.2	<0.05
Prolonged static posture	64.1	72.6	<0.01
Intensive vocal load	44.5	59.1	<0.01
Visual strain	54.8	68.1	<0.01
Dissatisfaction with salary	64.4	66.5	n.s.
Inconvenient schedule	41.2	58.4	<0.01

Health outcomes

The majority of respondents (76.7%) reported a deterioration of their health status. Nearly half (49.8%) complained of visual impairment, and 74.8% experienced frequent respiratory infections. Chronic diseases were reported by 33.2% of teachers, with a markedly higher prevalence among women (41.9%) compared to men (23.6%). A disciplinary difference was also observed: humanities universities exhibited significantly higher rates of chronic morbidity (42.1%) compared with technical universities (24.3%). These findings suggest both gender- and context-specific vulnerabilities ^{7,8}.

Temporary disability

Analysis of temporary disability revealed a 1.2-fold increase in sick leave cases between 2013 and 2016. Humanities teachers consistently exhibited higher disability rates (127.6 per 100 teachers) than their technical counterparts (86.6 per 100). Age stratification demonstrated a clear gradient: older teachers (>50 years) had 2.1 times more cases of temporary disability compared with younger staff (<30 years), reflecting the combined burden of aging and occupational exposures.

Table 3. Temporary disability (sick leave) among teachers, 2013–2016 (per 100 teachers)

Year	Technical	Humanities	Total
2013	77.6	121.7	99.7
2014	92.4	126.2	109.3
2015	84.5	128.2	106.4
2016	91.9	134.4	113.2

Table 4. Temporary disability cases by age group (2013–2016, per 100 teachers)

Year	<30 years	30–39 years	40–49 years	50+ years	Total
2013	76.0	95.9	108.9	117.6	99.7
2014	62.0	85.9	109.2	180.0	109.3
2015	70.1	89.2	123.4	142.9	106.4
2016	68.9	99.8	135.9	148.1	113.2

Morbidity structure

The rank distribution of morbidity showed that respiratory diseases were the most prevalent in both men (29.3%) and women (32.1%). Digestive and cardiovascular diseases, musculoskeletal disorders, and genitourinary diseases followed in frequency. Injuries and poisoning were also notable, highlighting the heterogeneity of health risks faced by university staff⁹. These findings correspond with broader epidemiological trends observed in working populations but are intensified by the specific occupational context of academia. The detailed distribution is presented in Table 5¹⁰.

Table 5. Rank structure of morbidity by disease classes among male and female teachers (%)

Rank	Male teachers	%	Female teachers	%
1	Respiratory diseases	29.3	Respiratory diseases	32.1
2	Digestive diseases	16.9	Cardiovascular diseases	12.1
3	Injuries and poisoning	11.9	Genitourinary diseases	11.7
4	Cardiovascular diseases	9.7	Musculoskeletal diseases	8.6
5	Musculoskeletal diseases	7.3	Digestive diseases	7.8
6	Eye diseases	5.3	Nervous system diseases	6.7
7	Genitourinary diseases	3.8	Injuries and poisoning	4.7
8	Skin diseases	3.6	Eye diseases	4.3
9	Nervous system diseases	3.4	Skin diseases	3.7
10	Mental disorders	2.9	Mental disorders	2.8
11	Infectious/parasitic diseases	2.5	Infectious/parasitic diseases	2.4
—	Other	3.4	Other	3.1

Emotional burnout

The prevalence of emotional burnout ranged from 40% to 70%, depending on cohort characteristics. The most commonly reported symptoms included low energy, irritability, recurrent headaches, impaired concentration, hopelessness, and disappointment in professional activity. Teachers experiencing burnout exhibited nearly double the prevalence of hypertension (52.8%) compared to their non-burnout peers (27.6%), underscoring the close interconnection between psychosocial stress and somatic outcomes. The most frequent manifestations are summarized in Table 6.

Table 6. Emotional burnout symptoms among teachers:

Most frequent manifestations	Average cases per 100 teachers
Lack of energy	39.8
Low mood, irritability	39.8
Headaches	39.8
Impaired attention, difficulty concentrating	39.8
Hopelessness, disappointment in profession	39.8
Feelings of loneliness and uselessness	39.8

DISCUSSION

The findings of this study indicate that the health of university teachers is strongly influenced by a combination of occupational and psychosocial risk factors. The relatively high prevalence of chronic health conditions, emotional burnout, and temporary disability highlights the multidimensional nature of health vulnerability among academic staff. These findings suggest that the well-being of university teachers cannot be understood solely in terms of physical health; rather, it is closely connected to the psychological and organizational conditions in which they work ¹¹.

Occupational risks. Excessive workloads, high levels of psychosocial stress, and prolonged periods of static posture emerged as important factors associated with poorer health outcomes. These results are consistent with international research from Europe, North America, and Asia, which has shown that persistent occupational stress among teachers can contribute to cardiovascular problems, musculoskeletal disorders, emotional exhaustion, and declining mental well-being ¹². The demanding nature of academic work, which often requires teachers to combine teaching, research, administrative duties, and continuous professional development, may further intensify these risks ¹³.

Psychosocial stress and burnout. The high prevalence of burnout (up to 70%) in this study reflects a critical professional hazard. Emotional exhaustion and depersonalization not only diminish quality of teaching but also contribute to systemic health problems, including hypertension, sleep disorders, and depressive symptoms ¹⁴.

Gender and age disparities. Women reported higher rates of chronic morbidity, while older teachers were more frequently affected by temporary disability. These disparities may be attributed to gendered differences in coping strategies, societal role expectations, and cumulative occupational exposure ¹⁵.

Institutional and regional context. In the Central Asian higher education environment, occupational risks are exacerbated by structural reforms, limited financial resources, and inadequate systems of occupational health monitoring.

Preventive implications. Institutions should prioritize redistribution of workloads, reduction of overtime, and implementation of flexible schedules. Psychological support systems, including counseling and mentoring, are essential to mitigate burnout. Systematic medical examinations and early interventions are required to reduce chronic morbidity and prevent disability ¹⁶. Furthermore, promotion of physical activity, balanced nutrition, and health-preserving technologies should be integrated into daily academic practice.

CONCLUSION

This study provides comprehensive evidence that the health of university teachers is profoundly influenced by occupational, psychosocial, and lifestyle factors. High levels of chronic morbidity, frequent temporary disability, and widespread emotional burnout highlight the urgent need for preventive interventions.

The findings emphasize that universities and policymakers must adopt a multifaceted approach to safeguard the health of academic staff. By addressing both institutional conditions and individual health behaviors, it is possible to improve well-being, maintain productivity, and ensure the sustainability of higher education systems.

Source of fund: (if any). No Funding

Conflict of Interest: The authors declare no conflict of interest.

Ethical clearance: This study was conducted in accordance with ethical standards. Ethical approval was obtained from the appropriate institutional review board, and informed consent was secured from all participants prior to data collection.

Authors's contribution:

Data gathering and idea owner of this study: Farida Amirseitova,

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