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## SELF-ASSESSMENT OF THE HEALTH STATUS OF TEACHERS

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**Abstract.** *Teachers' health plays an essential role in achieving an effective education system. Many relationships with school management, students, and parents characterize the teaching profession. Thus, teachers are exposed to many risk factors related to the work process, the most prevalent being the psycho-social microclimate. A pilot study on teachers' subjective opinions of their health status showed that hearing problems were more likely to occur in teachers with more extended experience due to the high noise level in schools. The data also showed that prolonged computer use during online learning is a prerequisite for overstraining the visual analyst, as more time is required to develop lessons and learning content. There is a tendency for problems related to the vocal apparatus, such as voice strain, to be more pronounced during face-to-face training compared to distance training. However, data regarding complaints related to headaches and problems with the cardiovascular system are conflicting. The trend showed that musculoskeletal disorders in the lower back, neck, and wrists were more common during distance learning due to the sitting posture of the teachers. High levels of stress and increased mental workload are the most common problems among teachers. Chronic diseases such as hypertension (35.2%) and hypotension (32.6%) were found to be the most common diseases among teachers, followed by MS diseases (37.6%) and Migraine/chronic headache (29.2%). It is necessary to take adequate measures regarding the mental and physical health of persons employed in economic activity Education.*

**Keywords:** health condition; teachers; education.

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## INTRODUCTION

Teaching is considered one of the most stressful professions, with diverse risk factors that affect the health of educators (Saïd et al., 2022). The physical, chemical, biological, and social factors in the workplace, known as the workplace microclimate, impact teachers' overall health. Their multiple roles and responsibilities, including transmitting knowledge and caring for students' well-being, can lead to resource depletion and burnout syndrome (Exceed College, 2019). The mental and physical health of those employed in the economic sector and education are crucial for an effective education system. Teachers can suffer from mental and physical health problems due to the heavy workload and multiple psychosocial factors of the learning environment. The prolonged impact of stressors negatively affects teachers' physical and emotional well-being, leading to more severe pathologies and illnesses and may lead to leaving the profession (Kyriacou & Sutcliffe, 1979; Agyapong et al., 2022). The most common pathological conditions affecting teachers are related to the visual system (68%), cardiovascular system (48%), and musculoskeletal system (44%). A large majority of teachers experience psychological discomfort while at work; 85% of them are in continual stressful situations due to their teaching responsibilities, and one-third of teachers suffer from nervous system disorders (Hamilton et al., 2020; Cheptea, 2021). Digital eye strain has become more prevalent during the Covid-19 pandemic (Dossari et al., 2022). Chronic diseases pose significant challenges from individual, social, and economic standpoints. Among teachers, the most common chronic conditions include cardiovascular, malignant, and respiratory diseases and diabetes (Bortkiewicz et al., 2020). Teachers frequently report voice disorders, possibly indicating excessive vocal strain that can last for hours, days, or even weeks (de Medeiros et al., 2008).

**OBJECTIVE:** To validate the questionnaire and compare teachers' subjective assessments during distance and face-to-face learning.

## MATERIAL AND METHODS

A pilot study was conducted among teachers in the secondary education system in the territory of the Republic of Bulgaria. The sample consists of 146 teachers who sent completed online survey cards from the six regions of Bulgaria (North-East, North-Central, North-West, South-East, South-Central, and

South-West). The survey card was sent to 24 schools nationwide in electronic version (link to online form) and PDF format. The schools were randomly selected from all schools in Bulgaria—study period: From December 20, 2023 to January 10, 2024.

The survey card consists of four parts: Personal details – 8 questions; Self-assessment of health status – 18 questions; Questions related to COVID-19 – 7; Chronic diseases – 7 questions. The questions related to the self-assessment of health status apply both to the period of distance learning (2020-2021) and to face-to-face teaching (2022-2023). The self-assessment of the state of health is on a 5-point scale: 1 – I have never had complaints; 2 – I rarely had complaints; 3 – sometimes I have complaints, sometimes I have no complaints; 4 – I often had complaints; 5 – I have had complaints exceptionally often.

Cronbach's alpha; Descriptive Statistics:

Absolute frequency and Relative frequency

Arithmetic Mean  $\pm$  Standard Deviation and 95% Confidence Interval (95%CI)

Z coefficient (Wilcoxon rank test) for comparison between the studied categories

The SPSS v.20 statistical package was used for the statistical analyses. The chosen level of significance  $\alpha = 0.05$  (5%). The standard error  $\alpha = 0.05$  with study power/power of 80%. The quadratic error  $\beta = 0.2$  and is dependent on the study's power.

## RESULTS AND DISCUSSION

One hundred forty-six teachers took part in the study and submitted completed questionnaires. The majority were women—121 (82.9%), while men made up 25 (17.1%).

In distance learning, the Reliability and Credibility Test for the health assessment questionnaire resulted in a Cronbach's Alpha of 0.949 for 19 items, indicating a reliability and validity of 94.9% based on 19 questions. In face-to-face learning, Cronbach's Alpha was 0.948 for the same 19 items, demonstrating reliability and validity of 94.8% based on 19 questions. These results show that the health assessment is highly reliable.

The distribution by settlements is as follows: from the capital, 25 teachers (17.2%) participated in the survey; from large cities – 71 (49%); from small towns – 39 (26.9%); and villages – 10 (6.9%). One hundred thirty-seven teachers (93.8%) work in public schools and 9 (6.2%) in private schools. The most significant number of teachers surveyed were from Vocational high schools (VIII-XII grades) – 43 (29.7%), followed by Primary schools (I – VII

grades) - 39 (26.9%) and High schools (VIII-XII grades) - 37 (25.5 %). The mean age of the study sample of teachers was  $49.54 \pm 9.064$  years, with a mean total work experience of  $25.14 \pm 9.379$  years and a mean exceptional work experience of  $19.65 \pm 11.739$  years. The confidence intervals for the general population of the mean age was 95%CI: [48.04; 51.05], for mean total work experience is 95%CI: [23.57; 26.7], and for the average length of service in the specialty is 95%CI: [17.71; 21.58].

Of all in the sample, 34.5% never had hearing problems during in-class training, and 23.9% rarely had problems 23.9%. During distance learning, 39.4% never had hearing problems, 28.9% rarely had problems. During in-class training, 28% rarely had problems with visual strain, and 28% often had problems. In distance learning, 32.6% had problems, and 30.6% had problems. 36.8% often had problems during attendance, and 27.1% had problems exceptionally often. During distance learning, 28.2% often had problems, 21.1% extremely often had problems, and 21.1% rarely had problems.

During in-person training, 26.2% of participants sometimes experienced headaches, while 24.8% often had problems. For distance learning, 31% often experienced headaches, and 20% sometimes did not. 38.3% never had cardiovascular system problems during face-to-face training, while 43% did not have issues during distance training. Additionally, 24.8% rarely had cardiovascular problems in face-to-face training, and 16.9% often had them during distance learning.

During in-person training, participants rarely experienced pain in their hands and wrists, with 33.6% and 24.5% reporting never having pain. This reassuring finding provides a positive aspect amidst the prevalence of other pains. 28.7% rarely experienced low back pain, and 28% sometimes had no complaints. 24.8% often had leg pain, while 24.8% sometimes did not have pain. Sometimes, they had back pain, with 27.3% not experiencing it and 25.9% rarely having complaints. Sometimes, they had neck or shoulder pain, with 27.1% not having it and 27.1% rarely complaining.

During distance learning, 28.2% often had low back pain, and 23.9% had complaints exceptionally often. Sometimes, they had leg pain, with 25.2% experiencing it and 21.7% never having it. They never had pain in their hands and wrists 26.8% of the time, and sometimes had complaints, while other times not, 24.6% of the time. 30.3% often had back pain, and 26.1% had it exceptionally often. They often had neck or shoulder pain, with 28.5% experiencing it often and 27.1% experiencing it exceptionally often.

During the on-site training, 32.6% of the participants never had problems with communication, while 25.5% rarely experienced issues. Many reported complaints related to an increased level of stress, with 30.3% and 23.9% experiencing problems exceptionally often. Complaints related to increased mental workload were persistent, with 33.6% experiencing them frequently and 23.8% experiencing them often. In distance learning, 24.6% often had communication problems, whereas 23.9% never had any. Participants often encountered problems with an increased level of stress, with 25.2% experiencing it often, 18.9% never having it, 18.9% rarely having it, and 18.9% experiencing it exceptionally often. Furthermore, 25.4% often had an increased mental workload, and 23.2% experienced it exceptionally often.

In in-person training, 27.3% of the participants often experienced general fatigue, and 27.3% rarely complained. The educators never had stomach or intestinal problems; 43.3% rarely had problems, and 29.8% rarely had problems. 49.3% never had kidney problems, and 23.2% rarely did. 32.4% often experienced general fatigue during distance learning, and 21.1% sometimes did. 54.1% never had stomach or intestinal problems, and 25.4% rarely had problems. Similarly, 54.2% never had kidney problems, and 20.4% rarely did. Regarding complaints about breathing due to dustiness, 33.6% never had them during attendance training, 20.7% rarely had problems, and 20.7% sometimes had problems. In the case of distance learning, 50% never had breathing problems due to dust, and 25.4% rarely did.

During the on-site training, 49.6% never complained about dermatitis and skin allergies, and 23.4% rarely had problems. During distance learning, 57.7% never had problems with dermatitis or skin allergies, and 19.7% rarely complained. They never complained about varicose veins, 40.3% during the face-to-face training and 44.4% during the remote training. They rarely had problems, 19.4% in person and 21.5% remotely. The most common chronic diseases are related to the cardiovascular system: Hypertension – 51 (35.2%) and Hypotension – 45 (32.6%), followed by Diseases of the musculoskeletal system – 53 (37.6%) and Migraine/chronic headache – 42 (29.2%). Diabetes and Malignant diseases are significantly less common - 9 each (6.3%). Respiratory diseases (COPD or asthma) are also rare – 20 (14%).

A statistically significant difference was found in the presence of hearing problems of teachers during distance and face-to-face learning ( $Z = 2.675$ ,  $p < 0.001$ ). The high noise level in schools may

cause hearing problems in teachers with more extended experience. A statistically significant difference was demonstrated in teachers' visual strain problems during distance and face-to-face learning ( $Z = 5.644$ ,  $p < 0.001$ ). In daily work with computers in distance learning, it is very likely to feel pain and strain on the eyes. In the presence of voice overstrain problems, a statistically significant difference between the observed periods is demonstrated ( $Z = 3.757$ ,  $p < 0.001$ ). Daily overstrain of the vocal apparatus in face-to-face teaching is more common, while in distance learning, more careful use is possible to prevent damage.

There was insufficient evidence for differences between distance and face-to-face learning in teachers' assessments of headache ( $Z = 1.035$ ,  $p > 0.05$ ) and cardiovascular problems ( $Z = 0.002$ ,  $p > 0.05$ ), as well as General exhaustion among teachers ( $Z = 0.568$ ,  $p > 0.05$ ), stomach or intestinal problems ( $Z = 0.407$ ,  $p = 0.684 > 0.05$ ), and Kidney problems ( $Z = 0.998$ ,  $p > 0.05$ ).

A significant difference was found in all investigated musculoskeletal system diseases among teachers during distance and face-to-face learning. The following differences were observed:

- Low back pain ( $Z = 3.798$ ,  $p = 0.0001$ ,  $< 0.05$ )
- Leg pain ( $Z = 2.098$ ,  $p < 0.05$ )
- Pain in hands and wrists ( $Z = 2.715$ ,  $p < 0.05$ )
- Back pain ( $Z = 4.67$ ,  $p < 0.001$ )
- Neck or shoulder pain ( $Z = 5.438$ ,  $p < 0.001$ )

Musculoskeletal system diseases are prevalent among teachers due to their working posture. In distance learning, sitting for extended periods can lead to pain in the lower back, back, neck, and shoulders. Conversely, standing for long periods in the classroom can result in complaints of leg and back pain.

The study found a significant difference in the presence of all studied psycho-social problems and teacher complaints during distance and face-to-face learning. Specifically, there were higher levels of communication problems ( $Z = 4.919$ ,  $p < 0.001$ ), increased stress ( $Z = 3.058$ ,  $p < 0.05$ ), and increased mental workload ( $Z = 3.117$ ,  $p < 0.05$ ) during distance learning. The pandemic necessitated a fundamental change in teaching style and methodology, requiring the quick acquisition of new computer skills, which ultimately proved beneficial for teaching. Communication with students, parents, and colleagues also had to be adapted significantly. The overall stress and mental strain experienced during this time were on a different level.

A statistically significant difference was demonstrated during distance and face-to-face training among teachers for the presence of Breathing problems due to dustiness ( $Z = 4.717$ ,  $p < 0.001$ ), Dermatitis, and skin allergies ( $Z = 2.248$ ,  $p < 0.05$ ) and Varicose veins ( $Z = 2.432$ ,  $p < 0.05$ ).

The study found that a high % of teachers, 63.9%, reported being ill with COVID-19. Among the sick teachers, 32.6% got sick once, 20.1% got sick twice, and 11.1% got sick three or more times. A significant majority of the sick teachers, 79.3%, believe they were infected in the work environment due to their profession. Teachers were among the most affected professions during the pandemic. The study also revealed that 81.7% of schools provided protective equipment during the pandemic, and 75% offered healthy workplaces. Additionally, 93.7% of teachers confirmed compliance with necessary school protection measures during the pandemic.

The results of this study, which support the theory of the authors mentioned earlier, bring to light some surprising and intriguing findings. The study reveals that teachers are exposed to multiple risk factors in the work environment, which have a negative impact on their physical and mental well-being and can lead to severe diseases. This finding is particularly intriguing as it aligns with the views of many authors who have stated that the main predictors of mental and physical health issues among teachers are professional stress and psycho-social factors in their working environment. The review of Bulgarian literary sources indicates that such a comprehensive study has not been conducted in Bulgaria before, making it a novel and essential contribution to scientific research on teachers' health. This study also compares teachers' opinions on face-to-face and distance learning during the COVID-19 pandemic, adding another layer of novelty to the research. The subjective assessment of teachers working in education system is an essential factor in determining the accuracy and reliability of this research.

## CONCLUSION

Teachers are exposed to many risk factors related to their teaching activity. Professional stress in the education sector is increasing on a large scale, both at national and global levels. Teaching professions require qualified medical assistance tailored to the specifics of the work process. This should be ensured within a network of experts, including psychologists, psychiatrists, psychosomatic specialists, and attending physicians, to improve teachers' physical and mental health. The results obtained from this

study can serve as a basis for developing a program for the prevention and health protection of Bulgarian teachers. This study can be practically applicable to the management levels of the educational institution in order to improve the working conditions and the working environment.

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