



Working environment of health care professionals – focus on occupational stress

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A – Research concept and design, B – Collection and/or assembly of data, C – Data analysis and interpretation, D – Writing the article, E – Critical revision of the article, F – Final approval of the article

Saparniene D, Strukcinskiene B, Mineviciute G, Cizauskaite A, Rapoliene L, Grigoliene R, Paciauskaite I, Genowska A. Working environment of health care professionals – focus on occupational stress. *Ann Agric Environ Med*. doi: 10.26444/aaem/172116

Abstract

Introduction and objective. Healthcare professionals most often encounter occupational stress. The aim of the study was to investigate the working environment of health care professionals with the focus on expression of occupational stress, and oversee the possibilities of stress management and prevention.

Materials and method. 326 representatives from five different healthcare institutions were surveyed in Siauliai city, Lithuania. The validated questionnaires HSE Management Standards Indicator Tool and the SF-36 questionnaire were used.

Results. The study revealed that the most important organizational factors were lack of communication, inappropriate relations with authorities and colleagues, big workload and long working hours, quick decision-making, and manifestations of mobbing. Financial support was reported as one of the main motivators in stress management. The most frequent individual factors were emotional relations with patients and their relatives. The healthcare professionals who experienced stress at work more often felt aches that disturbed their work routine, and their health interfered more their ordinary social activities. The main stress prevention measures are involvement of employees in decision-making, annual interviews with authorities, education, assurance of a safe work environment, and elimination of manifestations of mobbing.

Conclusions. More attention must be paid to occupational stress management. It appeared that there is a lack of knowledge by institutions about the models of occupational stress management and internal stress management policy of organization. Therefore, this stimulates the search for measures that could help to change the situation.

Key words

occupational stress, healthcare workers, working environment, stress management, healthcare professionals, stress prevention

INTRODUCTION

A healthy working environment in the health care system has recently been one of the most relevant topics for public and occupational health. Stress factors, expression and stress management of health care professionals are important, not only for the professionals themselves, but also for society, since the quality of health care provided partly depends on the emotional status of health care professionals. Taking this into account, numerous studies are being carried out to discover the main stressors in health care facilities, and the strategies to cope with stress. These topics have been addressed by the authors from various countries, such as Ma et al. (2021), Wang et al. (2020), Makara-Studzińska et al. (2020), Hawermans et al., (2018), Goncalves et al., (2019), Kwiecień-Jaguś et al. (2018), and Burton et al. (2017) [1–7]. Health care professionals, which not encounter stress, fatigues, pressure, and are out of negative environment and stressful working conditions provide quality health care services. Unfortunately, work-related stress in the healthcare

sector is extremely dangerous, and is related with adverse health effects. Healthcare staff are at risk of burnout, and also of lower work efficiency, which impacts on increased staff turnover in healthcare settings [3, 8–10]. Occupational stress negatively affects the health-related quality of life of the healthcare professionals [11].

It is obvious that the demand for research on occupational stress in healthcare remains relevant and is increasing, together with the changing conception of occupational stress. The topic has also become more relevant because of the new global stressors, such as the COVID-19 pandemic and war in Ukraine. The growing relevance has resulted in more research on stress and its management in the healthcare sector. It is important to understand that due to global challenges, the accelerating pace of people's lives, continuous improvement of the health care system or organizational changes, occupational stress research will be important for a long time to come.

The majority of people spend most of their day at work where they experience stress, which means that work and stress are closely related. Work-related stress is a threat to the health and economy of modern society worldwide, which has consequences for countries at all economic levels. Occupational stress is multivariate and slowly progressing.

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Received: 06.08.2023; accepted: 09.09.2023; first published: 21.09.2023

Work environment stressors cause adverse health consequences, burnout, fatigue, and mental health risks, and induce suicides. Health care professionals are at high risk due to the huge burden of work-related distress and a significant number of suicides; in addition, they experience stressful verbal or physical abuse and bullying at the workplace [3, 8, 9, 12–16]. The scientific sources of Joseph et al. (2016) and Cocchiara et al. (2019) report that healthcare specialists are among the most stressed at work [17, 18].

Healthcare professionals both take care and treat patients. Nowadays, not only physicians, nurses and health care workers are employed in the health care sector, but also others, such as laboratory technicians, health care helpers, assistants, or even medical waste handlers [17]. Mao and Woolley (2016) emphasized that in health care, there is an increasing reliance on healthcare teams from a variety of specialists (nurses, physicians, physical therapists, social workers) [19]. Considering this, healthcare professionals have extremely high expectations from society; however, in order to achieve good results, social support at work must be received. Any kind of pressure may cause high stress and increase the possibility of burnout at work. Already during studies, healthcare professionals of the future encounter stress, which also contributes to early burnout [20–22].

The healthcare industry is one of the most hazardous work environments [17]. Healthcare institutions and their healthcare staff are at-risk for crises and emergencies during which natural disasters, pandemics, violence attacks, and cyber disruptions significantly impact on the health of healthcare professionals [23]. In such cases, there is often a lack of knowledge or experience about how to act, a lack of work tools, adherence to a poor work environment, intensity of workload and emotional load. These conditions are referred to as ‘work stressors’, for instance, people working in healthcare institutions were especially affected and under increased psychological pressure during the COVID-19 outbreaks. They additionally suffered from mental health problems (moderate depression, anxiety and post-traumatic stress disorder) [8, 24, 25]. In healthcare professionals, the reported prevalence of anxiety was 24.1–67.55%, depression – 12.1–55.89%, and stress – 29.8–62.99% [24]. Female gender, younger medical staff, nurses, frontline workers, extensive working hours, areas with higher infection rates, and risk of being infected were associated with more severe degrees of all psychological symptoms and mental health problems in healthcare workers [13, 24, 26, 27]. Not only COVID-19, but also other infectious diseases are among the more frequent causes of stress at work for healthcare professionals. These workers are more at risk than representatives from other sectors for becoming infected with diseases such as tuberculosis, hepatitis C and B, human immunodeficiency virus (HIV), influenza and other respiratory diseases, both through blood and through other body fluids. In addition, they are exposed to chemicals, radiation, noise, along with ergonomic challenges (long working hours, shift work, heavy lifting, and standing for long hours) [17, 28].

Occupational stress can affect the physical and emotional well-being of people working in the health sector. Excessive stress results in long-term and temporal disabilities, activates the central nervous system, and cause sleep disorder (insomnia) [29, 30]. Healthcare professionals who suffer from frequent stress are more likely to get burnout, compared to those who do not experience stress, and they are more

likely to complain that they are not satisfied with their work [5, 31, 32].

Different factors can be identified as stressors in the work environment in the healthcare sector: 1) individual factors (family issues, financial issues, and personality traits); 2) organizational factors (work resources, job control and manager support, organizational structure and culture, and bad management practices). Some of them are due to socio-demographic parameters, others due to the work environment. In the healthcare sector, high priority should be given to an adequate number of staff, modern medical facilities and social support [33–35].

Health care professionals are the group of workers that most often face stress in the workplace. Thus, in order to reduce the stress experienced by health care professionals and to maintain the appropriate quality of health care, more focus should be given to occupational stress factors, characteristics, reasons, and control. However, even if an increasing amount is observed in investigations on work-related stress, there still remain various gaps in the evidence. It is important to pay greater attention to the identification of occupational stress, from the context of a new challenging world, to the analysis of occupational stress prevention and management factors in changing healthcare system.

OBJECTIVE

The aim of the study was to investigate the occupational stress experienced among healthcare professionals in Siauliai, Lithuania.

MATERIALS AND METHOD

Study design. The quantitative study was carried out over 2022–2023, in five healthcare institutions in the city of Siauliai, Lithuania, the fourth largest city in the country with a population of 101,862 inhabitants. The criteria for its selection were: 1) the city has a network of both state and private healthcare institutions, and 2) a discussion was held recently in the media concerning cases of mobbing and suicide among specialists in healthcare institutions.

Permission to conduct the study was obtained from the authorities at the selected institutions. The selected case of healthcare institutions in Siauliai allow to expand the research field, and to include the management and prevention of occupational stress; thus the obtained results and conclusions may become a stimulus for developing further research in this area.

Study participants. The research was carried out using the representative probability sampling method. 326 respondents from five primary and secondary health care institutions participated in the study. Three of them are city governmental health care institutions: Republican Siauliai Hospital (N=1,387), Siauliai Centre Polyclinic (N=250), Tilze Medical Centre (N=27)), and two private institutions: the Lyra Family Health Centre (N=18), and PLC Rezus (N=58)). The sample size was calculated according to Panniot’s formula, when N=1740. The selection of employees was performed randomly and women (95%) dominated in the study sample. The participants were aged 21 to >55 years (aged up to 25

years – 17.5%, 26–35 years – 26%, 36–45 years – 18.5%, 46–55 years – 23.5%, over 55 years – 14.5%). More than a half of respondents were general practice nurses (53.1%), followed by physiotherapists (10.7%), whereas doctors and nursing assistants (9.8%) completed an equal number of questionnaires. A part of the health care workers (6.1%) classified themselves as ‘other’ and identified the positions they currently held: medical registrars, paramedic, occupational therapist, emergency medical aid specialist, resident doctor, obstetrician, operating room nurse, laboratory specialist, and others. The smallest part of respondents consisted of radiological technologists (4.3%), biomedical technologists (3.7%), and medical biologists (2.5%).

Measurement Tool. A questionnaire was created for the quantitative research, including: a) the validated questionnaire Health and Safety Executive (HSE) Management Standards Indicator Tool, for investigating occupational stress; b) the validated SF-36 questionnaire for evaluating health status; c) additional questions based on studies by other authors which were formulated for analysis of the main factors of stress at work, and the perceived attitude of healthcare professionals on stress management and preventive measures in their institutions.

a) The HSE Management Standards Indicator Tool created by the Health and Safety Service of the United Kingdom was used, the validity of which was checked by the Lithuanian Institute of Hygiene. It was adjusted and recommended to use this questionnaire in order to assess and analyze the stress at work in a Lithuanian setting [36]. The HSE questionnaire consists of 35 questions. The structure of the questionnaire consists of subscales reflecting the areas of the work environment: work demands (factors related to workload, structure and work environment), work control (employee influence on work performance), support from colleagues and managers (encouragement, help and supply from the institution, direct managers and colleagues), relations (encouraging positive relationships for avoiding conflicts and unwanted behaviour), work role (employee understanding his/her role in the organization and not feeling a conflicted role), and change (managing and communicating changes of various scales in the organization). The overall Cronbach’s alpha for the whole scale is 0.821, the Cronbach’s alpha estimates of individual subscales fell within the recommended range of over 0.7; thus the internal consistency reliability is considered sufficient, and the instrument is valid. It was confirmed that the Lithuanian HSE Indicator Tool is reliable and corresponds to the British version. The HSE Indicator Tool is valid for application in Lithuania [36].

b) The 36-Item Short Form Health Survey (SF-36) questionnaire is a short, multi-functional health questionnaire used in the survey to assess the impact of stress on health status. The questions reflect such areas as physical activity, limited activity, mental status, vigour, social relationships, pain, and general health. The SF-36 questionnaire is valid and reliable, and is widely applied in assessing the subjective quality of life (QOL) [37].

c) In order to properly complete the study, additional questions were formulated about stress and its prevention experienced by healthcare professionals in the work environment. The additional questions helped identify the main parameters of work-related stress, and revealed

how healthcare professionals perceive the ways of stress management, together with preventive measures in the institutions. The questions were formulated based on the following authors: Wang et al., (2020), Hawermans et al., (2018), Copanitsanou et al. (2017), Zheng et al. (2018), Caruso et al. (2022), Mento et al. al., (2020), Wang et al. (2019), and Andela et al. (2016) [2, 4, 14, 15, 38–41].

Study variables. The general part of the questionnaire included socio-demographic items on study variables, such as gender, age, work experience, occupation/position, work sector (private or governmental), and the type of work schedule used by the respondent (shift, night, or 24 hours).

Statistical analysis. Statistical analysis was performed with the SPSS programme. Factor analysis was applied by the method of Principal Components Analysis (PCA) with VARIMAX rotation. Reliability of the scale for factor analysis was assessed by the Kaiser-Meyer-Olkin (KMO) coefficient. Both the total Cronbach’s alpha of the scale and the Cronbach alpha coefficients of the single obtained factors were calculated. The high internal consistency of the tested instrument was indicated. Chi-square (χ^2) test was used to search for statistically significant associations. Spearman’s correlation analysis was also used during the statistical data analysis; occurrence of <0.02 indicated there was an absence of correlation between the variables, 0.2–0.4 meant that the correlation between the variables was weak; 0.4–0.6 – moderate, 0.6–0.8 – strong, and 0.8–1 – very strong. A p-value lower than 0.05 was considered statistically significant.

Ethical considerations. The study was approved by the Bioethics Committee at Klaipėda University (Protocol No. 46Sv-VS-03), which also took into account the purpose and feasibility of the study.

RESULTS

While analyzing the occupational stress experienced by healthcare professionals, the authors first of all attempted to define the expression of the dimension of occupational stress, by the using HSE Management Standards Indicator Tool. For the evaluation of the psychometric validity of the used scale, and for construction of subscales, factor analysis and PCA with VARIMAX rotation was used. 35 items on occupational stress were adjusted to a 6-factor model. The correlation coefficient of the statements with the factors was obtained ($0.79 \leq r \leq 0.46$), and showed a strong relationship between them. Kaiser-Meyer-Olkin coefficient, which was comparatively high in this scale (0.93), explained that the extent the matrix is applicable for factor analysis. The average of inner consistency of factors expressed by the Cronbach alpha coefficient (seeking 0.78), showed, that all six factors are quite homogeneous. Factor analysis revealed a significant correlation of the majority of the items with the factors. Their inside grouping was theoretically significant (Tab. 1).

Factor 1 – ‘*Good relationships with authorities*’, consists of eight statements. This factor explains 14.59% of the variance of all the variables, and reflects relationships with the authorities in: conversation, support, encouragement, feedback about changes, and listening to opinions.

Table 1. Factor analysis of stress at work statements according to the HSE Management Standards Indicator Tool.

Factor	Statements	Factor loading	Cronbach alfa
Factor 1: Good relationships with authorities	I can talk to the line manager about what has upset or annoyed me	0.79	0.91
	I can expect manager's help in case of a problem	0.76	
	Line manager encourages me at work	0.75	
	I have enough possibilities to ask managers about changes at work	0.74	
	Employees are consulted regarding changes at work	0.68	
	In case of changes, I know how they will work in reality	0.61	
	I receive supportive feedback about my work	0.47	
Factor 2: Big workload	I have to work a lot	0.74	0.83
	My work load is big, and it is difficult to meet the deadlines	0.74	
	I experience a great shortage of time at work	0.70	
	I have to work quickly	0.64	
	I feel pressure to work overtime	0.60	
Factor 3: Clear work roles	I do not have enough breaks	0.59	0.79
	I have to skip some tasks as I have too much work	0.51	
	My duties and responsibilities are clear	0.75	
	The objectives and tasks of my unit are clear to me	0.69	
	I understand how my work meets the aim of the organization	0.69	
Factor 4: Good relationships with colleagues	I know what is expected of me at work	0.67	0.88
	I know how to do my work	0.65	
	If the work is too hard, colleagues will help me	0.75	
	Colleagues willingly listen to my work-related problems	0.75	
	Colleagues support and help me	0.66	
Factor 5: Tense relationships with colleagues	I am supported when work is emotionally stressful	0.60	0.81
	I feel I deserve colleagues' respect at work	0.54	
	My working hours can be flexible	0.49	
	There is anger and tension between colleagues	0.73	
Factor 6: Possibilities of job options	I am harassed at work with words and unpleasant behaviour	0.73	0.36
	Relationships at work are stressful	0.67	
	I am harassed at work	0.65	
	Different groups of people require incompatible things from me	0.54	
Factor 6: Possibilities of job options	I can choose what to do at work	0.71	0.36
	I can choose how to do my work	0.59	
	I can decide how to do my work	0.57	
	I can decide when to take a break.	0.54	

Factor 2 – ‘Big workload’, consists of seven statements. This factor explains 10.77% of the variance of all the variables and distinguishes work intensity, big workloads and short

deadlines, shortage of time, quick pace, overtime, and shortage of breaks.

Factor 3 – ‘Clear role at work’, consists of five statements and explains 10.12% of the variance. This factor reflects clear duties and responsibilities, and specific objectives of the unit.

Factor 4 ‘Good relationships with colleagues’ consists of six statements and explains 10.01% of the variance. The statements that best reflect this factor concern help, listening, emotional support and respect.

Factor 5 – ‘Tense relationships with colleagues’. This factor was best described by the following statements: anger and tension with colleagues, pressure, harassment at work, claim of incompatible things. This factor explains 8.70% of the variance of all the variables.

Factor 6 – ‘Possibilities of job options’, consists of six statements and explains 6.44% of the variance. Due to low variance, it was not meaningful to expand this factor. Using Spearman's Correlation, the statistical correlation between extracted factors were described (Tab. 2).

Table 2. Correlation between extracted factors, using the HSE Management Standards Indicator Tool

Correlation	Big workload	Clear role at work	Good relationships with colleagues	Tense relationships with colleagues	Possibilities of job options
Good relationships with authorities	-0.511**	0.417**	0.767**	-0.492**	0.607**
Big workload		-0.282**	-0.434**	0.585**	-0.386**
Clear role at work			0.451	-0.362**	0.426**
Good relationships with colleagues				-0.531**	0.565**
Tense relationships with colleagues					-0.396**

** Correlation is significant at the 0.01 level (2-tailed)

The study revealed that the strongest statistically significant correlation was found between the factors ‘Good relationships with colleagues’ and ‘Good relationships with authorities’ ($r=0.77$; $p<0.01$). Analysis showed that individuals who have good relationships with their colleagues also get along better with their managers, and *vice versa*. High correlation between the factors ‘Good relationships with authorities’ and ‘Possibilities of job options’ ($r=0.6$; $p<0.01$) allows the assumption that in a working environment where there is a mutual understanding between manager and employee, the healthcare workers have more flexible working conditions, and can choose how to perform their tasks, and what is the length of working time. In addition, the results revealed that those workers who work extensively, work overtime, and complain about the lack of time, get along worse with the management of their institution. This means a negative correlation between ‘Good relationships with authorities’ and ‘Big workload’ ($r=-0.51$; $p<0.01$).

While analyzing the most important causes of occupational stress, healthcare professionals responded that the causes of stress were the reactions, emotions, and demands of patients' relatives (59.6%): always – 16.9%, usually – 20.6%, often – 22.1% (Tab. 3). The study results additionally showed that stress was usually the result of a large amount of work and high work span (55.8%): always – 14.7%, usually – 22.4%, often – 18.7%. Stress was often caused by rash decisions and

Table 3. Occupational stress factors

Factors	Frequency, %					
	Always	Usually	Often	Sometimes	Rarely	Never
Infectious diseases	8.0	15.0	13.8	31.9	20.6	10.7
Strained relations with colleagues	7.4	10.7	15.3	32.2	23.6	10.7
Heavy workload and long working hours	14.7	22.4	18.7	23.6	15.0	6.1
Illnesses or even deaths of patients	7.7	13.5	16.9	28.5	17.5	16.0
Emotional or physical violence in the workplace	6.4	10.7	9.8	20.2	24.2	28.5
New job or new responsibilities	10.1	12.0	13.2	26.1	21.8	16.9
Poor working conditions	8.3	11.0	15.3	26.1	19.6	19.6
Professional career development	4.9	6.4	18.1	30.1	21.2	19.3
Injuries at work	6.1	8.9	11.7	19.6	27.6	26.1
Patient turnover	7.1	7.7	14.4	21.5	19.0	30.4
Emotions of patients' relatives and their demands	16.9	20.6	22.1	21.2	11.3	8.0
Mistakes at work	13.5	16.3	16.0	29.1	20.2	4.9
Quick decision making	10.7	21.5	22.1	23.0	19.9	5.8

mobbing. Healthcare professionals reported that strained relations with management and colleagues also caused stress. Occupational injuries rarely cause stress at work.

Analysis of how often and at what level respondent experienced work-related stress, showed statistically significant results (Tab. 4). Healthcare professionals, who rated their work as extremely tense, always experienced stress at work (46.3%), and those whose work is tense often feel stressed at work (75.0%). Healthcare professionals with no tension at work never feel stressed in the workplace (41.2%).

Table 4. The associations between the evaluation of work-related stress level and frequency of stress at work

Work evaluation	Frequency of stress at work, %					Significance
	Always	Often	Rarely	Sometimes	Never	
Unstressed	0	0	17.6	41.2	41.2	$\chi^2 = 301.9;$ $p \leq 0.001$
Moderately stressed	1.6	33.3	26.0	39.0	0	
Stressed	4.5	75.0	3.8	16.7	0	
Extremely stressed	46.3	50.0	0	3.7	0	

The study revealed how the frequency of stress at work depends on socio-demographic parameters, and also revealed that no significant associations were observed between the frequency of work-related stress and gender ($p > 0.05$). Nor significant associations observed between the frequency of stress at work and the length of service in the healthcare sector (by working years) ($p > 0.05$). On examining the frequency of stress at work according to the age of respondents, it was observed that the frequency depended on the age of healthcare workers ($p \leq 0.001$): younger health care professionals were most often stressed, and respondents who are older than 55 years were least likely to be stressed. In addition, significant associations were found between the occupation/job duties and the frequency of stress experienced ($p < 0.05$). One quarter (25%) of physicians stated that they always felt stressed at work, 60% of other health care professionals were often stressed. Nursing assistants were sometimes stressed, and radiologic technologists were rarely or never stressed. Healthcare professionals in the government sector (54.1%)

were significantly more stressed at work than that of the professionals in the private sector ($p < 0.01$).

Analysis of the health status of the respondents by using the SF-36 questionnaire, and the results of the study, showed that the more often individuals felt stressed at work, the more their physical and emotional health disturbed their usual social life ($\chi^2 = 106.2$; $p \leq 0.001$). It was also statistically significant that healthcare professionals who stated that they sometimes or never experienced stress at work were less likely to complain of body aches in the last four weeks ($\chi^2 = 44.0$; $p \leq 0.001$). In addition, data analysis revealed, that respondents, who experienced stress at work more often, felt aches that interfered with their normal work routine. Statistically significant associations were obtained between these two statements ($\chi^2 = 37.7$; $p < 0.01$) (Tab. 5). Excess stress led to stress-related consequences, such as burnout, decreased job satisfaction, and sleep disorder.

The results of the additional items of the survey revealed how healthcare professionals value the stress management methods and preventive measures applied in their institutions. According to the results, additional financial reward in a complex healthcare professionals' payment system (54.0% of healthcare professionals) and emotional support (44.2% of respondents) are important factors in increasing positive feelings and reducing stress at work. 22.4% of the respondents were not sure if relaxation meditation lounges would help in coping with stress at work. 14.1% of the healthcare professionals stated that parties and excursions would not help in most cases, but 9.2% stated that parties and excursions would definitely not help to cope with the stress at work. Healthcare professionals stated that the most helpful way to avoid stress is extra payment or other forms of recognition for work performed, whereas parties and excursions were the least useful ways for reducing stress at work.

In order to identify preventive factors that would best help healthcare professionals to cope with stress at work, they were asked to rate the importance of preventive factors from one to five. The healthcare professionals rated quite highly almost all the factors; however, communication, good relationship with authorities and other managerial staff were considered as the most important measures ($M = 4.55$). In addition, assurance of a safe working environment ($M = 4.52$) and

Table 5. The associations between the frequency of stress and health assessment

		Frequency, %					Significance
		Always	Often	Rarely	Sometimes	Never	
To what extent your physical and emotional health interfered with your normal social activities during the last 4 weeks?	Did not interfere at all	1.3	28.0	21.3	41.3	8.0	$\chi^2 = 106.2;$ $p \leq 0.001$
	Slightly	6.4	54.5	10.9	28.2	0	
	Moderate	12.1	63.7	9.9	14.3	0	
	Quite a lot	14.3	71.4	5.7	8.6	0	
	Very disturbing	60.0	20.0	6.7	6.7	6.7	
How intense were your body aches during the last 4 weeks?	None	7.9	38.1	14.3	33.3	6.3	$\chi^2 = 44.0;$ $p \leq 0.001$
	Very weak	3.5	45.6	15.8	35.1	0.0	
	Weak	7.1	54.8	10.7	26.2	1.2	
	Medium intensity	14.4	60.8	11.3	12.4	1.0	
	Strong	25.0	50.0	5.0	20.0	0	
How much, in the last 4 weeks, did the pain interfere with your usual work	Very strong	20.0	40.0	20.0	0.0	20.0	$\chi^2 = 37.7;$ $p \leq 0.001$
	Did not interfere at all	7.0	40.0	16.0	33.0	4.0	
	Slightly	6.3	57.0	12.5	22.7	1.6	
	Moderate	16.4	56.2	6.8	20.5	0.0	
	Quite a lot	23.8	52.4	14.3	9.5	0.0	
	Very disturbing	25.0	50.0	0.0	0.0	25.0	

elimination of mobbing at work ($M=4.46$) were considered as important factors. The following factors were considered of less importance: adapting a working area for relaxation, recovery, and recreation ($M=3.94$).

During the survey, the healthcare professionals identified stress management priorities, such as: workers' participation in decision-making, ensuring a staff-friendly organizational environment, discussing and approving stress management strategy, creation of a safe environment, implementation of measures to combat mobbing, and organization of an ethical culture.

DISCUSSION

Professionals in healthcare sector are among the most stressed at work. The study has revealed that these professionals self-reported that the main factors of work-related stress are the emotions of patients' relatives, family members, and their demands. According to a study from the USA by Andela et al. (2016), among the main stress risk factors for healthcare professionals were workload, the patient and his family needs, patient suffering, and lack of teamwork [41]. Montgomery et al. (2019) concluded that long-term professional stress was caused by the following factors: lack of rest, mistakes at work, or poor health care services provided to patients, and patient dissatisfaction [42].

Professionals from the healthcare sector face stress on a daily basis, which negatively influences not only the quality of their work, but also to their health. Results of our study have shown that occupational stress in the working environment of healthcare professionals is related with increased aches, adverse effects of physical and psycho-emotional health, and disturbed social life of the respondents. Other studies have also observed the negative effects of stress on health. For professionals working in the healthcare sector, stress is associated with obesity, cardiovascular diseases, and type 2 diabetes. Chronic stress can also contribute to the memory disturbances and employee burnout [3, 8, 11, 13, 24, 43].

Stress prevention and control at work bear a significant portion of occupational stress management. The current study has confirmed the results of previous studies by Havermans et al. (2018) and Cordioli et al. (2019) [4, 44]. Stress management in the workplace is a topic of interest for both science and in practice.

During the study it was revealed that healthcare professionals strongly believe in the benefits of rewards, acknowledgment, and promotions (54.3%), and emotional support (44.2%) for stress management. They identified relationships with managers or other managerial personnel as the most important tool. Ensuring a safe working environment and eliminating the manifestations of mobbing were also stated as an important preventive factor. According to Stoewen, (2016), good interpersonal relations at work are distinguished as a significant contributor for minimizing stress at work [45]. Brazilian researchers Cordioli et al. (2019) maintain that the role of the manager is especially important in preventing stress at work. According to the authors, it is important to improve the support of managers, pay attention to working relations, and allow employees to feel more valued for their efforts [44].

For several decades, various scientists have been studying the impact of stress at work on the individual, and developing models for managing stress at work. There are two main models of occupational stress management that explore the links between psychological and social pressures, and poor health and well-being in healthcare professionals. One of them – Karasek's (1979) *The Demand-Control-Support Model* is the most common model for occupational stress. The model reveals that when employees are subjected to excessive demands at work, it causes stress. Stress can be reduced by gaining greater control over work and having better relationships and support from colleagues and management. If specialists have the opportunity to control their work, their motivation increases. The model advocates work factors (load, physical demand, working hours, breaks), work control (freedom to decide how to work) and social support (managers, colleagues). According to this

model, inadequate working environmental conditions (e.g. excessive requirements, insufficient control, and lack of social assistance) influence poor work results as well as stress at work. Thus, according to Karasek, when the requirements for work, as well as control in the work environment increase, there are more opportunities for reducing stress at work [46].

Effort-Reward Imbalance Model by J. Siegrist describes work-related stress with the interaction between efforts and reward; if the rewards, including the intrinsic and extrinsic rewards, do not correspond with the duties and responsibilities, then poor psychological and physical consequences are inevitable [47, 48]. Eslami Akbar et al. (2015), stated that there are six main stress management strategies used in the work of healthcare professionals: situation control, search for help, preventive monitoring of situation, self-control, danger avoidance, and spiritual coping [49].

In the scientific literature there are other work-related stress models: *Transactional Theoretical Model of Work-Related Stress Theoretical Person-Environment Model*, *Professional Stress Model*, *Job Demands-Resources Model*, *Emotional Reset Model*, *Model of Justice Theory*, *Cognitive Behavioural Theory Model*, among others. To-date, the main work-related models remain the *Job Demand-Control-Support Model* and *Effort-Reward Model*.

Strengths and limitations of the study. The strengths of the study are shown in the working environment of healthcare professionals, and occupational stress in the healthcare sector. The study also offers suggestions and recommendations which could possibly be used in the healthcare sector to ensure a safer working environment, and to prevent stress at work. The findings showed that the perceived stress factors and management possibilities should not be interpreted as causal relationships. The study showed the attitude of health care workers to stress at work, and their approach to the ways, methods, and measures of stress management and prevention in the healthcare sector.

The limited number of healthcare institutions was a limitation and possible weakness of the study. The institutions investigated differed in type and size, comprised only five participating institutions. More participating institutions could provide wider results and a wider picture of occupational stress factors, and possible interventions.

The reduction of occupational stress and safety promotion is an important part of good management in institutions. Constant evaluation in terms of employee's stress levels and prevention of mobbing should be specific actions in the institutions of the healthcare sector. The responsibility of managers is to develop a strong culture of continuous trainings and workshops that improve the competence of employees in communication with superiors, and solving work-related problems. Healthcare managers need to deal with occupational stress, and tackle this issue by implementing all possible measures and procedures. Establishment of an Employee Ombudsman to monitor relations between employees and management would be a helpful tool in this case.

Creating a healthy and safe working environment for healthcare professionals, occupational stress management and prevention, remain important topics for environmental and public health. This area of research needs further exploration and is in need of increased attention and further investigations.

CONCLUSIONS

Healthcare professionals experience stress due to organizational, inappropriate relations with superiors and colleagues, weak communication, work overload, mobbing, and fast decisions, as well as individual factors, such as dealing with patients and their families. Stress in the healthcare sector causes health problems, disturbs normal work and social life. For the management of stress and its prevention, healthcare professionals should prioritize participation in decision-making, annual interviews with superiors, education, creation of a safe and friendly environment in the institution, and prevention of mobbing, together with financial and emotional support.

More attention should be paid to occupational stress management. Institutions are unaware of the stress management models and internal stress management policy within the organization. This encourages the search for possibilities and opportunities that could improve the working environment in the future.

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