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ASSOCIATIONS BETWEEN PSYCHOSOCIAL FACTORS AT WORK AND HEALTH COMPLAINTS AMONG EMPLOYEES OF VARIOUS OCCUPATIONS

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CONTENT

ABBREVIATIONS

CFA	– Criteria of factorial analysis
CFI	– Comparative Fit Index
CI	– Confidence Interval
DSM	– Diagnostic and Statistical Manual of Mental Disorders
ESEM	– Exploratory structural modelling
EU	– European Union
EU-OSHA	– European Agency for Safety and Health at Work
EWCS	– European Working Conditions Survey
GHQ-12	– Goldberg Health Questionnaire
IES-R	– Impact of Events Scale-Revised
MDS	– Musculoskeletal disorders
NA	– Negative act
NAQ	– Negative Acts Questionnaire
OR	– Odds ratio
p	– p-value
PTSD	– Post-traumatic stress disorder
PTSS	– Post-traumatic stress symptoms
RMSEA	– Root mean square error of approximation
SD	– Standard deviation
SE	– Standardized estimate
SEM	– Structural equation modelling
TLI	– Tucker-Lewis Index
UK	– United Kingdom
US	– United Stated
WHO	– World Health Organization
χ^2	– Chi-square

INTRODUCTION

Relevance of the topic

Workers represent half of the world's population and are the major contributors to economic and social development [268]. Many full-time workers in the industrialized countries spend over half of their waking time at work [79]. It is a quite considerable part of time, hence the organizational climate and working conditions play an important role in one's life and it is critical to contribute to development of a healthy workplace.

Over the past several decades the definition of a healthy workplace has significantly evolved from being almost exclusively focused on a physical work environment (dealing with physical, chemical, biological, mechanical and ergonomical hazards) to a broadened understanding which also includes psychosocial factors, such as organizational culture and work organization [40].

Psychosocial hazards that include, but are not limited to poor work organization (high demands, time pressure, low job control, limited social support, poor communication etc.) and organizational culture (social relationships, harassment, bullying, discrimination etc.) affect the mental and physical well-being of employees. The aforementioned psychosocial factors cause mental or emotional stress and are often called workplace "stressors" [264]. Approximately a quarter of workers in Europe experience work-related stress for all or most of their working time [64], over 40 million suffer from consequences of work-related stress which turns into over 20 billion euros of health and absenteeism costs [85].

Recent changes in the labour market conditions, such an increased competitiveness and workload and decreased job security contribute to the increased prevalence of adverse psychosocial factors.

Findings of recently concluded 6th European Working Conditions Survey alert that 17.0% of women and 15.0% of men reported having been exposed to adverse social behaviours at workplace (this included verbal abuse, physical violence, sexual harassment and bullying over the previous 12 months) [65].

Research has shown that workplace bullying is a severe social stressor and reduces the psychological and physical health of victims [220]. The prolonged exposure to bullying behaviour is a predictor of psychological distress [187] and is even related to symptomatology that is specific for post-traumatic stress disorder (PTSD) (hyperarousal, avoiding situations that remind the experienced trauma, repeated and intrusive memories related to experienced trauma) [164]. The study on exposure to psychosocial work

factors conducted in 31 European country excluded Lithuania as one of the countries with high prevalence of exposure to psychosocial work factors, compared to the Northern Europe. The assessed psychosocial work factors also included workplace violence [184]. In addition, it has been found that employees in Eastern European countries were more likely to report poor psychological well-being [227].

Workplace bullying has been a subject of research for already a few decades. Nevertheless, it still maintains the scientific focus on the diversity of its causes and outcomes in the community of researchers worldwide, especially in the Western countries. The scientific investigations in this field are rather scarce in the Eastern European countries (including Lithuania) that have passed the transition from centrally planned economy to a market economy. The public awareness of this phenomenon in these countries is also rather low. Several studies had been concluded in the Lithuanian workforce before; however, they rather involved isolated occupational sectors – nursing, educational sector or distinct organizations [17, 158, 198, 199, 250]. Following the EU Framework Directive on Safety and Health at Work (Directive 89/391/EEC) and its individual directives, the Law on Safety and Health at Work of the Republic of Lithuania was established. It obliges employers to ensure safety and health of workers at work in all aspects related to work, including psychosocial work environment [140–142]. Nevertheless, the results of the Second European Survey of Enterprises on New and Emerging Risks (ESENER-2) conducted by European Agency for Safety and Health at Work in 2014 and focusing on psychosocial risks, such as harassment violence and work-related stress, revealed that the majority of Lithuanian organizations, that participated in the survey, do not consider workplace bullying a problem to be concerned about [224]. This confirms the fact that the public awareness of adverse working conditions in Lithuania is not sufficient and further investigations are needed.

Scientific novelty and value of this study

As already mentioned, public awareness of adverse working conditions, especially of workplace bullying, in Lithuania is limited. The articles escalating bullying and harassment at workplace show up in mass media in particularly rare occasions, while bullying among adolescents is widely recognized and discussed. In the community of researchers, this topic also lacks attention and interest. So far, only several studies had been concluded in the Lithuanian workforce, and they rather involved either isolated sectors or distinct organizations only.

To the best of our knowledge, the current study is the first epidemiological complex research in the country investigating the associations between

the variety of psychosocial risk factors at work, such as workplace bullying (assessing negative acts at workplace most frequently identified with bullying and victimization from bullying), high job demands, low job control and low social support and health complaints – both mental and physical, in different occupations. The employees in the majority of occupations investigated in the present research have an intense interaction with external customers and present highly female and highly male-dominated fields. In addition, this is the first study investigating psychosocial work environment using structural equation modelling (SEM) which allowed the investigation of direct and indirect paths between numerous variables.

Following the evaluation of research results that demonstrated not only individual but also organizational effects of exposure to bullying, many Western countries established preventive measures. To be able to develop preventive strategies that would improve working conditions in terms of workplace bullying and would contribute to promoting employee's health and well-being, it is important to know how particular sectors are affected by this phenomenon, which employees are most vulnerable and fall into the high-risk groups. Knowledge of the most prevalent behaviours should inform the development of interventions targeted at the most problematic negative behaviours.

It is the hope that the results of this study shall contribute to a better acknowledgment of the existing problem and the development and implementation of measures to prevent workplace bullying in Lithuania. It is also expected that the results of this dissertation shall engage future scientists to broaden the research in the field of workplace bullying. Changing conditions in the labour market, increasing competitiveness, lack of specialists in certain fields, new generations coming into the workforce and having high expectations for the working environment, are the reasons why more attention should be paid for the development of "healthy" workplaces. Therefore, the results of the present study might be also interesting and useful for the specialists outside public health sector.

Personal contribution

In order to achieve the set objective, the author of this dissertation in collaboration with the scientific supervisor developed the dissertation plan and prepared the documentation required to obtain the approval from Kaunas Regional Biomedical Research Ethics Committee to conduct the study. The author contributed to the expansion of the database by visiting 13 secondary education institutions in Kaunas city and surveying 517 employees. She also participated in the compilation of the database, which consisted of data collected in the aforementioned secondary education institutions and

data collected during the earlier studies. In 2014, she attended the PhD seminar on workplace bullying and harassment in Milan, Italy, led by leading professionals in this field and broadened her knowledge in the area. The author of the dissertation performed a comprehensive analysis of the scientific literature, searched for more advanced statistical solutions and gained knowledge in structural equation modelling that was applied in the current study. She interpreted the study results, published them in peer-reviewed national and international journals, and presented them at the national and international conferences.

1. STUDY AIM AND OBJECTIVES OF THIS WORK

Aim of the study

The aim of this study was to evaluate the psychosocial factors at work in various occupations in Lithuania and their associations with health complaints.

Objectives of the study

1. To investigate the prevalence of adverse psychosocial factors at work (workplace bullying, job demands, job control, social support) and several health complaints – psychological distress, post-traumatic stress symptoms, muscular pain in neck and shoulders among employees of various occupations.
2. To evaluate associations between psychosocial factors at work and several health complaints – psychological distress, post-traumatic stress symptoms, muscular pain in neck and shoulders among employees of various occupations.
3. To assess the associations between psychosocial factors at work (workplace bullying, job demands, job control, social support) and self-rated health.

2. LITERATURE REVIEW

2.1. Psychosocial work environment

The nature of work has significantly changed in recent decades due to developing globalization, technological changes, and enhancing competition for manufacturing, increasing mobility between nations and new management ideologies. All those alterations caused considerable changes in the organization and management of work, which in turn have demanded employees to work faster, harder and more productively [25], that is to say affected the incidence of psychosocial risks at work [64]. As reported by the 5th European Work Conditions Survey (EWCS), approximately 25.0% of employees in Europe claimed that they have faced the organizational changes in their workplaces; additional 17.0% reported the introduction of new technologies or processes, 9.0% – reorganization/restructuring [204].

Workers make up nearly half the global population; hence it is widely agreed by global agencies, such as the World Health Organization (WHO) and the International Labour Organization (ILO) that health, safety and well-being of workers is of paramount importance and it is critical to contribute to development of a healthy workplace. Psychosocial work environment, which includes organization of work and workplace culture, is one of the cornerstones of a healthy workplace [264].

An unhealthy and unsafe workplace induces occupational stress to its employees. When persisted, it can result in many different outcomes, such as work-related illness, injuries, job dissatisfaction, burnout, workplace violence and increased costs as the final outcome due to absenteeism, turnover, short or long-term disability [40, 264]. Psychosocial risks linked to the way the work is organized and managed (high job demands, time pressure, low job control, poor communication and limited social support), as well as organizational culture (social contact with co-workers and supervisors, harassment, discrimination, bullying) result in an increased level of stress and can lead to serious deterioration of mental and physical health [204].

The European Agency for Safety and Health at Work (EU-OSHA) provides the following taxonomy of psychosocial hazards:

- Related to the *Content of Work*:
  - Job content: Lack of variety, fragmented or meaningless work, under use of skills;
  - Workload and work pace: Work overload or under load, machine pacing, high levels of time pressure, continually subject to deadlines;

- Work schedule: Shift working, night shifts, inflexible work schedules, unpredictable hours, long or unsociable hours;
- Environment and equipment: Inadequate equipment availability, suitability or maintenance, poor environmental conditions such as lack of space, poor lighting, excessive noise;

➢ Related to the *Context of Work*:

- Control: Low participation in decision-making, lack of control over overload, pacing, shift working, etc.;
- Organisational culture and function: Poor communication, lack of definition of, or agreement on, organisational objectives;
- Interpersonal relationships at work: Social or physical isolation, poor relationships with superiors, interpersonal conflict, lack of social support, bullying/harassment/violence;
- Role in the organisation: Role ambiguity, role conflict and responsibility for people;
- Career development: Career stagnation and uncertainty, under promotion or over promotion, poor pay, job insecurity, low social value to work;
- Home – work interface: Conflicting demands of work and home, low support at home, dual career problems [135].

Eurofound accomplished the survey on the working conditions in Europe in 2015 and defined seven indices of job quality which reflect the multidimensional nature of the concept of job quality where each dimension has an independent influence (positive or negative) on the health and well-being of workers. The job quality indices that in fact corresponds the aforementioned taxonomy of psychosocial hazards are:

- Physical environment (posture-related (ergonomic), ambient (noise, temperature, vibration), biological and chemical);
- Work intensity (quantitative demands, pace determinants and interdependency, emotional demands);
- Working time quality (duration; atypical working time, flexibility, working time arrangements);
- Social environment (adverse social behaviour, social support, management quality);
- Skills and discretion (decision latitude, cognitive dimension, organizational participation, training);
- Prospects (employment status, job security, career prospect, downsizing);
- Earnings.

The measurement of work demands that included working fast, having tight deadlines or insufficient time to do the job, pace determinants and interdependency and emotional demands suggest that intensive work is quite prevalent in Europe with having 37.0% of employees working to tight deadlines, 34.0% working at high speed around three-quarters of the time, a third of workers exposed to ≥3 pace determinants. The greatest work intensity has been reported by employees of health sector, which is then followed by construction, financial services and commerce and hospitality sectors. In Lithuania, the work intensity is somewhat lower than the EU average. Emotional demands are more frequent in jobs where dealing with people and giving them support is involved. The sectors of health and hospitality were found to be the leaders in terms of presenting high level of emotional demands. The survey also revealed that the proportion of workers handling angry clients, customers, patients, pupils all or almost of all the time doubled between 2010 and 2015 most notably in the education sector, followed by the health sector and commerce and hospitality sectors. On average 17.0% of respondents reported facing this situation.

Being in emotionally disturbing situations has been reported by 60.0% of Lithuanian respondents and this is the highest rate across EU countries where the rate fluctuates between 20.0% in Portugal and 45.0% in Serbia. In general, female tended to report experiencing emotional demands more frequently than male: 35.0% of women reported having to hide their feelings always or most of the time, 36.0% of women report being in emotionally disturbing situations and 19.0% of women report having to deal with angry clients three-quarters or more of the time. The rates reported by men were 28.0%, 27.0% and 15.0%, respectively.

Decision latitude, or job control, allows employees to choose the best way suits them to deal with the demands of their job in terms of choosing working hours, setting up the working plan and strategy and developing a feeling of control over their job [114]. The results of the 6th EWCS showed that the proportion of employees having the ability to choose or change the speed or rate of work as well as the ability to change or choose methods of work has increased by two points during last decade from 69.0% to 71.0% and 67.0% to 69.0%, respectively. The highest rates have been reported among self-employed respondents, particularly those with employees and in terms of occupations – among managers, professionals, the lowest – among plant and machine operators and representative of elementary occupations.

Nearly three thirds of respondents reported having received social support from colleagues and two thirds – from their managers. The highest social support from colleagues was in health (80.0%), education, construction and public administration (around 75.0% in all 3 sectors), from managers –

in education, public administration and financial services. The workers from transport and agriculture sectors reported the lowest social support from both – colleagues and managers.

Adverse social behaviour, such as verbal abuse (11.0% reporting this), unwanted sexual attention (2.0%), humiliating behaviour (6.0%), or threats (4.0%); or within 12 months prior to the study: physical violence (2.0%), sexual harassment (1.0%) and bullying/harassment (5.0%).

The rate of reported adverse social behaviours by Lithuanian respondents is very similar to the EU average (approximately 16.0%). The prevalence of workplace bullying and more detailed explanation of the phenomenon is provided in a separate chapter further.

Psychosocial work factors have been evaluated using various theoretical models that appeared in the literature within the last few decades [184]. Two most popular, well-defined and internationally recognized theoretical models have been used to assess the adverse effects of psychosocial work factors are: the "demand–control model" of occupational stress [113, 114], the "effort–reward imbalance model" [228]. Both models have been well acknowledged as predictors of development of various diseases, such as cardiovascular diseases [87, 118, 120], hypertension [80, 130], metabolic syndrome [81, 147, 152], lipid profiles [174], depression [236, 241, 246], musculoskeletal disorders [41].

The original "demand–control" or job strain model introduced by Karasek and Theorell contains two dimensions. It is based on the assumption that a mismatch between high demands in terms of workload (work pace, intensity, skills required to be able to do the work and the ability to keep up with colleagues) and low control (decision latitude) over working conditions in terms of creativity, repetitivity as well as freedom and responsibility to decide what to do and when to do it is particularly hazardous to health [113].

Four categories can be derived from this model by cross-tabulating the scales of job demand and decision latitude, both divided at their median:

- active jobs (high demands, high control);
- passive jobs (low demands, low control);
- high strain (high demands, low control);
- low strain (low demands, high control).

This model was later expanded by the inclusion of social support into the so-called isostrain model. The combination of high demand, low control and lack of social support at the workplace has the highest health risk [20, 144].

The Effort–reward imbalance model developed by Siegrist demonstrated that an imbalance between the mental effort expended for work and the rewards received (in terms of recognition, appreciation, job promotion, job

security, as well as financial) was linked to a variety of mental and physical problems [228].

Job strain, low decision latitude, effort-reward imbalance, and low reward (especially job instability) were found to be associated with depressive symptoms and/or psychiatric disorders among men. Overcommitment at work was a risk factor for both men and women. Social support at work played a role to reduce depressive symptoms for women [181]. Occupational stress can be measured by qualitative constructs such as job control, job demands and worksite social support [105]. Psychosocial work stress, denoted by job strain, is associated with an elevated risk of coronary artery disease [119, 120, 242].

2.2. Workplace bullying

2.2.1. Some historical data

The phenomenon of workplace bullying has become the object of scientific research approximately forty years ago in the US when the psychiatrist C.M. Brodsky issued the pioneer book providing stories of people suffering from systematic and long lasting harassment at work [36]. The awareness of the phenomenon has started growing and the wave of interest has reached Europe in 1980s with the first investigations by the Swedish researcher Leymann H. [137]. Inspired by Leymann's studies, the research on bullying commenced in other Scandinavian countries, especially in Norway and Finland in early 1990s and shortly after that spread in the UK, Germany and other Western European countries. During the past decade, the public and scientific awareness have rapidly extended in Europe and all over the world [249]. In Lithuania, the breakthrough in the acknowledgment of the issue and the scientific research started in 2005. That year after having joined the European Union in 2004, the country for the first time participated in the European Working Condition Survey (EWCS) and could evaluate the prevalence of workplace bullying in the light of the European rates. The law obliging the employees to identify and investigate the psychosocial risks at work, including workplace bullying and to apply interventions for the prevention and management, came into force also in 2005 [142, 200]. Vilija Malinauskiene published the first scientific article on the subject in 2007 [158].

2.2.2. Defining workplace bullying

Even though the research on workplace bullying has been lasting for nearly four decades now, the consensus neither on the concept, nor on the definition or research methodology exists worldwide [15]. In the scientific literature, one can find the variety of terms to describe bullying behaviour – intimidation, harassment, victimization, aggression, emotional abuse, psychological harassment or mistreatment at workplace [10, 16].

Bullying and *mobbing* are the most commonly used terms in Europe. *Bullying* is the label that is preferably used in English-speaking countries, including Ireland, UK and Australia, while term *mobbing* which has derived from an English word "mob", originally used to describe animal aggression and herd behaviour, is mostly used in German-speaking countries, Scandinavia and Central Europe. Usually these 2 terms are used interchangeably and the investigators who would normally use the term *mobbing* in their native language, still apply the term *bullying* in the English publications. Despite this overlapping terminology, significant differences have been also recognized between both terms and their practical application as they can also be used to differentiate the focus of research. The investigators focusing on bully or the behaviour of bullies prefer the term *bullying* whereas the *mobbing* research is putting emphasis to the experience of the targets and the victimisation process. In Southern European countries such as France and Spain the term *moral harassment* is used, while in the US bullying behaviour at work is most often referred as *workplace harassment* [163]. This term is also generally used by the European Agency for Safety and Health at work (EU-OSHA) as well as some other European institutions, though in some countries, the term harassment refers particularly to sexual harassment [249]. In the nursing literature workplace bullying is also often named as lateral or horizontal violence [176].

Perhaps due to the complexity of the phenomenon, there is no uniform agreement on the definition of workplace bullying either and some researchers even question whether a uniform definition is possible [35], e.g. UK researchers identified a "constant tension" in locating a definition that appropriately reflects the nature of the phenomenon across a range of cultural contexts and also retains acknowledgement of the original academic work in the area [68]. *Table 2.2.2.1* provides a few examples of how researchers worldwide describe workplace bullying.

Table 2.2.2.1. *Terms and definitions for workplace bullying used by various authors*

Country	Author	Term	Definition
USA	Brodsky (1976)	Harassment	Repeated and persistent attempts by one person to torment, wear down, frustrate, or get a reaction from another. It is treatment that persistently provokes pressures, frightens, intimidates, or otherwise discomforts another people.
Sweden	Leymann (1990)	Mobbing/ psychological terror	Psychological terror or mobbing in working life involves hostile and unethical communication, which is directed in a systematic way by one or a few individuals mainly towards one individual who, due to mobbing, is pushed into a helpless and defenceless position, being held by means of continuing mobbing activities. These actions occur on a very frequent basis (statistical definition: at least once a week) and over a long period of time (statistical definition: at least six months).
Germany	Zapf (1999)	Mobbing	Mobbing at work means harassing, bullying, offending, socially excluding someone or assigning offending work tasks to someone in the course of which the person confronted ends up in an inferior position.
Sweden	Salin (2001)	Bullying	Repeated and persistent negative acts that are directed towards one or several individuals and which create a hostile work environment. In bullying the targeted person has difficulties defending himself; it is therefore not a conflict between parties of equal strength.
Norway	Einarsen (2011)	Bullying	Bullying at work means harassing, offending, socially excluding someone or negatively affecting someone's work tasks behaviour that occurs repeatedly and regularly, e.g. weekly and lasts for a period of time, e.g., about six months. Bullying is an escalating process in the course of which the person confronted end up in an inferior position and becomes the target of systematic negative social acts.

In spite of a lack of a single and worldwide acceptable definition, there is an agreement in the academic community as to the essential characteristics and a general framework that determine the phenomenon of bullying. These include:

- a wide range of negative acts that may cause severe, social, psychological and psychosomatic problems in the target;
- direct and indirect bullying behaviours;
- work-related, person- related and social exclusion;
- persistent and long-lasting;
- power imbalance: making it difficult to defend oneself [27, 58, 249].

In the present study, the comprehensive definition provided by Ståle Einarsen, et al. was adopted.

2.2.3. Forms of bullying and measuring methods

Bullying may manifest in numerous different ways, but in the research literature, it is usually categorized into:

- *Work-related bullying vs. person-related bullying*. Work-related bullying includes behaviours such as allocating work that is beneath the person's level of competence, excessive monitoring of work, giving unreasonable deadlines or unmanageable workloads or withholding information necessary to perform assigned work. Whereas person-related bullying manifests through behaviours that impinge on an employee's personal integrity, such as spreading gossip or rumours, making insulting remarks, playing practical jokes etc.
- *Direct (active) bullying vs. indirect (passive) bullying*. Direct bullying includes openly aggressive behaviours, such as verbal abuse and threats, inappropriate remarks, whereas gossiping and spreading rumours or social isolation (e.g. not communicating with somebody, excluding from social events) denote indirect bullying [58, 188].

In the scientific literature, two different methods to assess the prevalence of bullying when using questionnaires are employed by the researchers:

1. The *self-labelling (self-evaluation, self-judgement) approach.* In this method, the respondent is requested by a single-item question to indicate whether s/he felt being exposed to bullying at work within a specific time period on the basis of the provided definition of workplace bullying. In some studies the question about bullying is being asked without a preceding definition;
2. The *"operational" approach*, also named as behavioural experience method or exposure method. In this method the respondent is asked to indicate how frequently s/he has been subjected to various types of bullying behaviours presented in the inventory within a given time period without having referred them to the concept of bullying.

Exposure to bullying is then assessed by defining a criterion whether the respondent is regarded as bullied or not, e.g. at least one [138] or two [169] negative acts per week during the last 6 months.

The "operational" method provides a more "objective" estimate of the bullying prevalence, while the self-labelling approach focuses on a subjective evaluation, respondent's vulnerability and may cause some biases. In countries where the awareness of the phenomenon of workplace bullying is not high, the self-labelling method might be insufficient [82, 189, 190, 245].

By means of a meta-analysis, 102 estimates of prevalence of workplace bullying from 86 different samples from Scandinavia, other European countries and non-European countries were accumulated and compared. A rate of 11.3% was found for studies investigating self-labelled victimization from bullying based on a given definition of bullying, a rate of 14.8% was found for behavioural measure studies and 18.1% for self-labelling studies without a given definition [189].

2.3. Prevalence of workplace bullying

The comparison of the statistics and study results about the prevalence of workplace bullying worldwide is quite complicated due a number of reasons, such as:

- the use of different definitions to describe the phenomenon across the countries;
- the use of different methods for collecting and processing data (qualitative, quantitative, case report studies);
- different time limits and criteria used to assess workplace bullying;
- different scope of research, ranging from national or sector specific studies to solitary organizations;
- the cultural differences, the level of awareness, etc.

The European Working Condition Surveys (EWCS) developed by the European Foundation for the Improvement of Living and Working Conditions systematically measure prevalence of workplace bullying across EU countries at different time points [67]. Even though the method to estimate the prevalence of workplace bullying is the same across the participating countries, the results should be interpreted with caution, since the level of awareness of the phenomenon in general population and cultural differences may lead to underestimating workplace bullying or to tolerance of unacceptable behaviour. The awareness of workplace bullying issue in the Scandinavian and the Western European countries, pioneering in workplace bullying research, is higher than in the Eastern European countries where

this phenomenon is just starting to be considered a social problem [9]. In some countries the concept of bullying commonly implies weakness on the part of the target and may lead to reluctance to reveal the problem [66], in some jobs (e.g. in nursing or restaurant sector) bullying may be considered or even expected as a part of a job that needs to be tolerated [8, 162] or in the masculine cultures bullying may be considered a reasonable managerial practice [9].

The results of the 6th EWCS carried out in 2015 in 34 European countries alert that almost one in six workers (16.0%) reported having been exposed to adverse social behaviours at workplace, such as verbal abuse (11.0% reporting this), unwanted sexual attention (2.0%), humiliating behaviour (6.0%) within a month prior to the survey and physical violence (2.0%), sexual harassment (1.0) and bullying/harassment (5.0%) over the last 12 months before the survey [202]. The breakdown per country is not available. According to the results of the 5th EWCS concluded five years ago, the prevalence of bullying in general population oscillated between 0.6% and 9.5% across the EU Member States. The exposure to workplace harassment or bullying was higher in France and the Benelux countries while in Bulgaria, Poland or Italy the reported level was below 1.0% [204].

In the scientific literature, the fluctuation of the prevalence rates is considerable across and even within the countries. This variety is determined by the reasons already mentioned above.

Table 2.3.1. summarizes the results of some studies on the prevalence of bullying conduced worldwide.

Lithuania started to participate in the EWCS in 2005 and the results demonstrated that harassment at work in Lithuanian organizations was approximately twice higher as compared to the EU average (women – approximately 12.0% and men – approximately 8.0% vs. EU average of 6.0% and 4.0%, respectively) [198, 203].

The study on exposure to psychosocial work factors carried out on the basis of the 4th EWCS excluded Lithuania as one of the countries with higher prevalence of exposure to psychosocial work factors, which also included workplace violence compared to the Northern Europe [184]. A representative study carried out in two metropolitan cities in Lithuania indicated a prevalence rate of 25.4% in general population [199].

Table 2.3.1. *Studies of the prevalence of workplace bullying*

Country	Author/s	Sample	N	Period	Prevalence
Australia	Way KA et al., 2013 [261]	Multi-occupational	6406	Unknown	2.9%[1]/ 4.0% [2]
Estonia	Tambur M & Vadi M, 2012 [239]	Multi-occupational	1941	6 months	0.87% occasional[1] 8.0% severe[1] 23.4%[2]
Denmark	Ortega A, et al., 2009 [195]	Multi-occupational	3429	12 months	8.3% occasional[3] 1.6% severe[3]
Finland	Salin D, 2015 [220]	Multi-occupational	4392	Unknown	4.4% [1]
France	Niedhammer I, et al., 2009 [184]	Multi-occupational	7694	12 months	10.0%[1]/ 12.0%[2]
Italy	Arenas A, et al., 2015 [9]	Multi-occupational	1151	6 months	14.9%[2]
Japan	Takaki J et al., 2010 [238]	Manufacturing, healthcare sector	1500	6 months	81.2%[2]
	Tsuno K et al., 2010 [245]	Civil servants	2194	6 months (NAQ-R) 12 months (LIPT)	5.9%[1]/ 9.0%[2] (NAQ-R) 6.5%[1]/ 4.0%[2] (LIPT)
Pakistan	Anjum A & Shoukat A, 2013 [6]	Health, education, finance, law	450	6 months	78.0%[2]
Spain	González Trijueque D & Graña Gómez JL, 2009 [90]	Multi-occupational	2861	6 months	8.2% occasional[2] 5.8% severe[2]
	Arenas A et al., 2015 [9]	Multi-occupational	705	6 months	15.0%[2]
Turkey	Bilgel, Aytac&Bayram, 2006 [30]	Health, education and security sectors	944	12 months	55.0%[2]
UK	Carter M et al., 2013 [44]	Healthcare sector	2950	6 months	2.7%[1] 18.3%[2]
USA	Chadaga AR et al., 2016 [46]	Healthcare sector (residents and fellows)	1791	12 months	48.0%[1]

[1]Self-labelling;
[2]Operational criterion based on list of bullying behaviors;
[3]Method unknown.

2.3.1. Occupation and organizational level as risk factors

The scientific literature is expanding with an abundant number of studies concerning working sectors and particular occupations as the risk factors for bullying. The type of the organization – private or public is an important factor to bear in mind while estimating bullying prevalence, though the results of the studies are contradictory [15]. After having summarized the results of a number of studies, Dieter Zapf claimed that employees in the public sector, which embraces the healthcare and social, education and public administration sectors, have been found to be more at risk than their counterparts in the private sector [272]. This conclusion does not contradict to the findings of the 5th EWCS, which show that workplace violence is more frequent in the sectors where employees are exposed to a high level of contact with external clients or customers. The employees in the healthcare sector are clearly and consistently most likely to report mistreatment, being almost twice as likely to experience verbal abuse, bullying and threats and almost six times more likely to experience physical violence as compared to all other sectors. Other sectors reporting high levels of workplace violence are transport sector, public administration and defence [66, 102]. The results of the recent EWCS show that service and sales workers most commonly report almost all adverse social behaviours.

Other investigated occupations where high prevalence was found include restaurant employees [162], police officers [10], off-shore industry employees [192].

In 2005, the Centre for Business Ethics of Vilnius University carried out a study to assess the extent of bullying and factors particular to Lithuanian organizations. The results showed that workplace bullying was prevalent and was more frequent and intensive in the public sector, such as healthcare and education [63]. Niedhammer I. et al. found that high-risk groups for workplace bullying included jobs related to services for men, also various categories of associate professionals and low-level white and blue-collar workers for male and government associate professionals for female [183]. Danish researchers found that unskilled workers reported the highest prevalence of bullying in comparison with managers/supervisors, also the higher prevalence was found among employees working with things (male-dominates occupations) and clients/ patients (female-dominated occupations) [195]. Notelaers G. et al. found that the highest levels of workplace bullying in Belgium were among employees in public service as well as blue-collar, food and manufacturing jobs [193].

Empirical studies reporting organisational status as a risk factor for bullying are scarce and inconsistent in their findings.

2.3.2. Gender and age as risk factors

Over the years, the European Union policies have carefully taken into account the female gender factor in terms of health and safety at work. A special survey of 2004 organized by the European Commission shows that 10.2% of women and 7.3% of men have been subject to intimidation in the workplace in the previous 12 months. The most affected fields are health and social services (15.7%), followed by public administration, hotels, restaurants and transport. Women suffer greater discrimination (3.1% versus 0.8% for men) in all considered areas of work [244].

The study based on the results of the Fifth EWCS revealed that female respondents were slightly but significantly more likely to experience mistreatment in the form of bullying and harassment (OR=1.71, CI=1.05–1.3) [102]. Many studies conducted worldwide; also the results of the 6th EWCS support these findings [56, 65, 90, 193, 220, 244].

The retrospective analysis of data collected by general practitioners in Germany showed that even two-thirds of workplace bullying victims were female [124]. On the other hand, there are quite a large number of studies, in which significant gender related differences were not found [27, 195, 247]. Some researchers claim that working in an occupations which are typically associated with the opposite gender (e.g. being a man in the female-dominated and female gender-typed profession, such as nursing, or being a woman in the male-dominated and male gender-typed occupation, such as police force) has been associated with an increased risk of bullying. Yet, these findings had been usually supported by research in the specific occupations dominated by one gender. Salin D. in her study revealed that even though women experienced more bullying in general, women doing male-dominated work tasks were not necessarily at more risk than other women do. In order to truly control for the effect of gender ratio of employees doing a specific task it is necessary to control for occupation [220].

With respect to age, conflicting results have also been obtained. Some researchers did not find significant differences [27] while others revealed that certain age groups are at higher risk to be bullied. After having explored a representative and heterogeneous sample containing 8985 respondents working in the main sectors in Belgium, Notalaers G. found that the youngest (<25 yrs. of age) and the eldest employees (>54 yrs. of age) are least likely to be bullied at work. Respondents between 35 and 44 yrs. of age have the highest risk and the employees between the ages of 35 and 54 are at least 1.7 times more likely to be a victim of bullying compared to the respondents above the age of 54 [193]. Some studies propose that women of the age 31-50 are the most vulnerable as in most cases bullying behaviour

begins after the women is back to work after maternity leave and/ or she needs to often leave the work to take care of her family [90, 244].

2.4. Psychosocial work environment at the investigated occupational fields

Studies suggest that stressful and poorly organized work environment often leads to a workplace bullying due to worsened interpersonal relationships caused by strained working conditions [238] and that employees exposed to workplace bullying as well as bystanders describe their job characteristics and psychosocial work environment as more stressful and negative than then other employees [95, 248].

The description of the working environment and the challenges the employees working in the sectors analysed in the current study confront with is provided in the below chapter.

Family physicians

There is an increasing shortage of general practitioners in many countries and it threatens the effective functioning of primary healthcare system [53, 99, 129]. It is not surprising as physicians face a range of work-related stressors, such as long working hours, coping with life-threatening situations, time pressure and a diversity of demands [155]. The study performed by Swiss investigators propose that physicians reported strong work-life conflicts more frequently than the general working population and university graduates. Also significantly, more physicians reported their health as "moderate" or "very poor" than other 2 samples [122]. A study conducted in a sample of Brazilian primary health care professionals revealed that 62.0% presented high levels of perceived stress (psychological symptoms in 48.0%, physical in 39.3% and both symptoms in 13.0%) [18]. As already mentioned earlier, health sector reports the greatest prevalence of adverse social behaviour. Physicians start confronting with abusive behaviour during their training. In Ireland, even 30.0% of surveyed junior doctors reported to be subjected to one or more bullying behaviour [48]. The results of a study conducted in the sample of medicine students in the US noted that the students particularly embarking on careers in family medicine claimed higher levels of harassment [75]. Canadian investigators revealed that even though the data of the survey they have conducted reported that most perpetrators were patients or their family members, nevertheless the interviewed respondents spoke at much greater length about colleague-related (including supervisor and administrator) abuse which made the investigators reflect on how the medical culture may contribute to abusive behaviour

among co-workers [167]. The research conducted in the samples of the emergency department physicians, medicine students alert that workplace violence in the healthcare field is a widespread problem [127, 267]. Physicians who were bullied were more likely to commit one or more serious, or potentially serious, medical errors [197]. 80.0% of healthcare staff believes that the state of their health affects patient care [32].

Nurses

Nursing body is the fundamental patient-oriented and care-giving entity [115] and the shortage in nurses observed worldwide has increased the interest in their working environment [52, 271]. Nursing occupation demands emotional and physical efforts and has been considered as one of the top 40 high-stress jobs by the US National Council for Occupational Safety and Health [55]. The research has revealed that stress experienced by nurses, throughout the course of the career, may have implications for their physical and mental health status [83, 207, 208]. A considerable number of studies have revealed that bullying has higher prevalence in nursing body than in other professionals [44, 82, 90, 210, 271].Work environment affects job satisfaction and intentions to leave [1]. Work related musculoskeletal disorders constitute a serious occupational health problem among nurses all around the world [215].

Teachers

The results of a number of studies assent that schoolteachers fall into the category of professionals who experience a huge amount of work – related stress, which may lead to sustained physical and mental health problems [60, 74, 125, 179, 259]. The survey conducted in the UK revealed that out of 27 occupations teaching was associated with the largest proportion of reported “high stress” [172]. Other researchers claim that approximately 70.0% of teachers are under frequent stress [60]. It is also confirmed that teachers have the highest burnout levels compared to other professionals in social services [171]. Some researchers propose that in the public view as well as amongst teachers burnout is commonly regarded as an innate problem of this particular profession [101].

Various factors have been identified linked with occupational stress, such as high workload, large classes, many different activities within the school environment, frequent changes in the education system, discipline problem in the classrooms, lack of benefits and professional recognition, lack of support from colleagues and school heads [7, 26].

German investigators found that the rates of premature retirement caused by serious health disorders (predominantly psychiatric and/ or psychoso-

matic) among teachers are consistently higher comparing to other employees in public services [26]. The rates of absenteeism within education sector are also higher than in other sectors [172]. According to the data on absenteeism collected in 2013 in the UK, approximately 10.2 days per person were lost through sickness compared to 7.6 days in other industries. Moreover, 66.0% of teachers left the job for reasons other than retirement and 40.0% left within the first five years [47].

Waiters

In the public view and among restaurant employees, restaurants have been portrayed as aggressive and hectic workplaces where prevailing mistreatment – psychological and physical abuse is considered to be a natural part of the work environment that needs to be accepted and is even expected as inevitable. Moreover, the work in this sector is reported as physically demanding, repetitive and fast-paced. The waiters often face with uncomfortable physical conditions, such as heat and noise, irregular working hours and often high and extremely varied workload depending on the number of guests. The conflicting interests also often exist, especially between cooks and waiters. Even though cooks who are product oriented have high public status, waiters possessing lower public status and mainly service focused, may earn substantially more than cooks due to the tips. Another source for possible conflicts is the interaction with customers. The relationship with the client is often considered as "personal" and any lack of commitment to the service, may be perceived as a personal offence and lead to aggressive behaviour. Bar staff was found particularly exposed to assaults by public. Waiters are also exposed to the risk of sexual harassment. The survey conducted by the UK researchers in 2000 showed that 57.0% of the surveyed students on a hospitality and catering course in a British higher education institution reported having experienced unwanted sexual attention during periods of supervised work experience [269]. The US researchers found that waiters experience a high prevalence of musculoskeletal and traumatic injuries despite their young age [108]. The turnover also seems to be a widespread phenomenon in the restaurant industry [162].

A survey on bullying conducted in 2002 in the hospitality sector in Spain concluded that 16.0% of employees had been exposed to bullying behaviours on a weekly or more frequent basis during the past six months., 45.0% of respondents had witnessed bullying taking place. 82.0% of bullies were primarily bosses or managers, colleagues accounted for 16.0% of the incidents. Violence had lasted more than one year in 47.0% of cases and in 30.0% of cases, two years or more. Most commonly reported bullying behaviours were "giving meaningless work", "giving work below one's

professional competencies", "putting under undue pressure" and "systematically devaluing the effort of the person" [206].

Seafarers

Generally, seafaring has been acknowledged as one of the most physically demanding and high-risk occupations [104, 110]. It is a male-dominated profession, where females comprise only around 4.0% of all employees [109] and includes a range of stressors – psychological, such as long working days, night shifts, difficult working and living conditions as well as physical, such as noise, extreme weather conditions, ergonomic and chemical hazards. Although offshore workers operate in a physically challenging context, their mental health is mainly influenced by stressors in the psychosocial work environment [117, 191]. Intentions to leave and job satisfaction strongly correlate with safety perceptions, job demands and team cohesion as the strongest and most consistent factors [185]. It is also a very specific occupation characterized by small groups of employees working together closely in a restricted area for a prolonged shifts [191]. Moreover, working offshore means a long-term isolation from the society and the families [156]. Also bullying in offshore working environment could be experienced more intensively as the victim cannot literally escape from negative acts [185]. Among seafarers, bullying has been found to be associated with musculoskeletal disorders, perceived stress and posttraumatic stress disorder. The prevalence of musculoskeletal disorders of the upper limb among the regularly bullied seafarers was 21.4%, among non-bullied – 4.1% ($p=0.012$) [156].

Police officers

Working in the police forces has been recognized as one of the most tiring and stressful occupations in the world in comparison to the general population due to confrontational interaction with the public, the shift works and dealing with bureaucratic organizational structure [149]. Police officers are at a higher risk to experience physical violence, verbal assaults, to be injured or to witness injury of the colleagues and communicable diseases. In addition to mentioned operational work related challenges, the police officers are at risk to experience organizational problems that are common in male-dominated, militaristic and hierarchical structures. Several studies have shown that adverse working conditions in this occupation are related to poor mental health [76]. Indian investigators found that even 35.0% of police officers we identified to be having psychological distress [116]. Similar results were reported by other investigators in the country [205, 214]. In Sweden 17.0% of surveyed police officers suffered from psychological

distress [134]. Police officers as the first responders to arrive at the scenes of various crimes, such as murder, robbery, sexual abuse, suicide carry a high risk of experiencing PTSD. The study conducted in South Korea identified that 41.1% of all police officers who had experienced a traumatic event were classified as having a high risk of PTSD [132, 233]. This occupation is also characterized by a high rate of suicide [233].

The study carried out in Lithuania back in 2003 revealed that the greatest stressors were administrative problems, ineffective criminal justice system and family problems and the consequences of experienced stress included depression, physical illness (more frequent in female police officers), higher alcohol consumption in male police officers and suicide [276].

2.5. Consequences of bullying

2.5.1. At organizational level

Intensions to leave, sick leave

Workplace bullying has been figuratively compared to a cancer in the workplace, as it becomes increasingly unhealthy for both the individual and the company if no cure is applied. Moreover, workplace bullies cost organizations billions of dollars each year [78]. A considerable number of studies have investigated and proved that workplace bullying increases costs for organizations due to employee sickness absenteeism, turnover and replacement costs, decreased productivity and performance [96]. The results of a survey conducted in the United States revealed that workplace mistreatment was associated to a 42.0% increase in the expected number of missed workdays [13]. A study carried out in a sample of 1100 health service employees in England showed that exposure to bullying during the preceding year was associated with significantly higher rates of intention to leave [212]. The results of the study in the Norwegian workforce also suggest that victims of bullying considered leaving their work more often than the individuals who were not exposed to bullying. Moreover, it has been found that victims have changed employer more often than non-victims have [29]. A couple more studies carried out by the Norwegian scientists in the samples of offshore workers and the employees of the restaurant sector echoed that bullied employees feel insecure about the permanence of their job and they may be at risk of turnover and exclusion from working life has demonstrated that exposure to workplace bullying behaviour may lead to elevated levels of job insecurity as well as intention to leave the organisation [86, 162, 237]. Italian researchers conducted a study in a sample of 71 patients with a diagnosis of work-related psychological

disorder and found that 59.1% had changed workplace after experiencing bullying Workplace bullying was found to significantly increase odds of long-term sick leave [31, 177].

2.5.2. At individual level

Anxiety and depression

Workplace bullying is a more crippling stressor for employees than all other work-related stressors taken together [164]. The seriousness of the phenomenon may be supported by the fact that workplace bullying was identified as the strongest predictor of anxiety and depression when compared to other job-related stressors [92, 96]. German investigators found that sleep disorders in addition to anxiety and depression were significantly more prevalent among employees who experienced bullying [124]. In a study conducted by Swedish researchers it was determined that bullying was associated with awakening problems and lack of restful sleep [93].

A link between workplace bullying and depression has been also established in a longitudinal research carried out in a sample of Spanish employees [70]. Bonde JP et al. discovered that depressive disorder not only were strongly associated with bullying but also persisted over several years regardless of whether bullying is discontinued or not [31].

Suicidal ideation

Some cross-sectional studies suggest a positive association between workplace bullying and suicidal ideation [131]. It has been found that exposure to workplace bullying, especially of physically intimidating nature, is more strongly associated with suicidal ideation than well-known risk factors such as gender, anxiety, s neuroticism and somatic complaints [186].

Effects on bystanders

It has been published by Vartia M. et al. back in 2001 that bullying bystanders reported more general stress and mental stress reactions than respondents did from the workplaces with no bullying [248]. The study carried out in Sweden revealed that being a bystander to bullying increased the risk of future symptoms of depression by 1.69-fold (95% CI (1.13–2.53) [62].

Post-traumatic stress disorder

Bullying, although not considered a form of acute trauma, has been shown to be related to symptomatology that is specific for PTSD [22, 164].

Exposure to traumatic mental and physical experiences during one's lifetime is almost inevitable. According to the scientific literature, approximately 61.0% of males and 51.0% of females would experience at least one potentially-traumatic event in their lifetime and the lifetime rate of PTSD ranges between 5.0% and 10.0% in the general population. In addition, a number of PTSD symptoms below the diagnostic threshold are common in the population, when the impairment is somewhat less as compared to the symptomatology of a full PTSD [107, 136]. PTSD is classified as an anxiety disorder according to the Diagnostic and Statistical Manual of Mental Disorders (DSM) and as a neurotic stress-related and somatoform disorder according to the International Classification of Diseases, Injuries and Causes of Death (ICD-10) [107] and is characterized by a triad of symptommology:

- *hyper-arousal* (anxiety and insomnia). The victims suffer from at least two symptoms of increased arousal, such as difficult falling or staying asleep, impaired concentration, hypervigilance and irritability;
- *re-experiencing traumatic events* through nightmares and flashbacks. The victims suffer from at least one symptom of re-experiencing – reliving the trauma in the dream or thoughts or experiencing psychological distress and/or physiological reactivity when exposed to cues symbolizing or resembling the stressful event;
- *avoidance* of trauma related stimuli and *denial* that manifest through at least three symptoms, such as avoidance of stimuli associated with the trauma, inability to recall important aspects of it, the lack of interest in important activities and feelings of detachment from others or emotional numbness.

Moreover, the symptoms must have lasted for at least a month, causing significant impairment in functioning in various spheres of the victims' lives [168, 232].

Another study that attempted to assess prevalence and intensity of PTSD symptomatology among victims of bullying at work demonstrated that more than 70.0% of bully victims developed symptoms of PTSD and displayed a moderate or severe impairment in social functioning [168].

The exposure to traumatic events directly and indirectly, via the amplification of perceived stress, influences the development of PTSD symptoms [133]. As reported in scientific literature, there are some risk factors for work-related PTSD, such as female gender, the nature of the traumatic event and the degree of exposure, lack of social support and previous psychiatric problems. Working with severely or terminally ill patients may arouse feelings of grief, anger, and hopelessness, which in some cases may eventually lead to PTSD [107].

Post-traumatic stress symptoms (PTSS) refer to depressive and posttraumatic symptoms measured by self-administered instruments. Research suggests that violence is associated with higher risk of PTSS than are other types of traumatic events such as natural disasters or accidents. PTSS is diagnosed approximately twice more often in women than in men [143].

The study in a sample of Canadian nurses showed that greater exposure to workplace bullying was significantly related to higher levels of PTSD symptomology [232].

Musculoskeletal disorders

Musculoskeletal disorders are the most often reported health problem affecting millions of workers in the European Union workforce – approximately 25.0% of workers report back pain, 23.0% – muscular pain in shoulders, neck, upper or lower limbs or combination of any of them [112, 255]. Even though biomechanical factors, such as awkward postures, excessive force or prolonged sitting (or standing) are considered the most common causes of musculoskeletal disorders, it is believed that psychosocial factors play also an important role in the initial development of the disorders and the long-term disability that may develop later [51]. It has been found that musculoskeletal pain co-occurs with psychosocial job stress [100]. The precise mechanisms (e.g., neuroendocrine, cognitive, musculoskeletal) through which psychosocial factors may have impact on musculoskeletal disorders development has not been fully determined, however there is an accepted hypothesis that psychosocial factors may act indirectly (e.g., they may influence muscle tension, decrease micro pauses in muscle activity and affect the perception of pain.). It is plausible that such indirect effect is exerted through the experience of work-related stress [229].

In terms of bullying, most studies investigate psychological health complaints of being exposed to workplace bullying, however the reported effects are found to be not restricted to the victim's mental well-being. Some researchers investigated and found associations between bullying and musculoskeletal disorders [156, 170, 223, 254].

2.6. Summary of review of literature

Changing conditions in the labour market, increasing competitiveness, developing globalization, technological changes etc. caused considerable changes in the organization and management of work. This in turn affected the incidence of psychosocial risks at work. Globally recognized psychosocial hazards, such as poor work organization (high demands, time pressure, low job control, limited social support, poor communication etc.) and

organizational culture (social relationships, harassment, bullying, discrimination etc.) induce occupational stress to employees. When persisted, it can result in many different outcomes, such as work-related illness, injuries, job dissatisfaction, burnout, workplace violence and increased costs as the outcome due to absenteeism, turnover, short or long-term disability. Studies suggest that stressful and poorly organized work environment often leads to a workplace bullying due to worsened interpersonal relationships caused by strained working conditions. Research conducted worldwide recognized that workplace bullying is a severe and more crippling stressor for employees than all other work-related stressors taken together. It reduces the psychological and physical health of victims. The prevalence of workplace bullying differs across the globe. The results presented by researchers fluctuate from 0.6% to even 81.2%. This difference is mainly caused by different research methods, different definitions to describe the phenomenon across the countries, cultural differences, the level of awareness etc.

Workplace bullying is more frequent in the sectors where employees are exposed to a high level of contact with external clients or customers, e.g., healthcare sector, restaurant sector, public administration, police officers etc.

Workplace bullying has tremendous negative effect at the organizational and individual levels. It increases costs for organizations due to employee sickness absenteeism, turnover and replacement costs, decreased productivity and performance. For the victim, the prolonged exposure to bullying behaviour is a predictor of psychological distress, anxiety, sleeping disorders and is even related to symptomatology that is specific for post-traumatic stress disorder. Some studies suggested a positive association between workplace bullying and suicidal ideation. A number of investigators have also proposed associations between bullying and musculoskeletal disorders.

3. RESEARCH DESIGN, MATERIAL AND METHODS

3.1. Research sample

This cross-sectional study was approved by Kaunas Regional Biomedical Research Ethics Committee at the Lithuanian University of Health Sciences in Kaunas, Lithuania (No. BE-2-12) (see Supplement 1) and was carried out in 2013–2015 in a representative sample of employees representing six various occupations in Kaunas city and on a country level. The study participants were informed about the purpose of the study and that their participation is voluntary. Written consent was obtained from the participants.

Sample size calculation

The sample size was calculated using the formula for finite populations:

$$n = \frac{z_{1-\alpha/2}^2 \times s^2}{d^2 + \frac{z_{1-\alpha/2}^2 \times s^2}{N}}$$

Where:

n – sample size,
z – z-value (1.96 for 95% confidence level),
s – response distribution,
d – margin of error (5%),
N – population size.

The calculated sample size within separate occupations is indicated in the *Table 3.1.1.* below.

Table 3.1.1. *Calculation of a sample size per occupation and response rate*

Population	Population size	Recommended sample size when margin of error is 5.0%	Number of distributed questionnaires	Sample size in the current study (number of returned questionnaires)	Response rate (%)
Lithuanian family physicians	1792	317	464	323	69.6
Lithuanian nurses	2457	333	1082	748	69.1
Kaunas city secondary education teachers	3023	341	725	517	71.3
Kaunas city waiters	3200	344	500	349	69.8
Lithuanian seafarers	11025	372	520	370	71.2
Kaunas city police officers	1085	284	457	290	63.5
Total	*22582*	*1991*	*3748*	*2597*	*69.3*

Below is the more detailed description of a study sample by occupation:

Family physicians

According to Lithuania Official Statistics Portal and Institute of Hygiene data, 1792 family physicians were registered in the Republic of Lithuania in 2012. The list of primary healthcare services providing healthcare institutions received from the State Health Care Accreditation Agency under the Ministry of Health was used to randomly select the institutions for participation in the research. Public and private outpatient clinics located in 9 Lithuanian counties – Vilnius, Kaunas, Klaipėda, Šiauliai, Panevėžys, Utena, Tauragė, Alytus and Telšiai were targeted. In total 34 (19 public and 15 private) randomly selected outpatient clinics were visited during the routine staff meetings and questionnaires were distributed to all family physicians working in the selected clinics.

Nurses

According to Lithuania Official Statistics Portal and Institute of Hygiene data, 2457 nurses were employed in the general internal medicine departments in the country in 2012. The aim was to survey nurses employed in the

internal medicine departments in the hospitals located at 9 counties – Vilnius, Kaunas, Klaipėda, Šiauliai, Panevėžys, Utena, Tauragė, Alytus and Telšiai.

Randomly selected hospitals (15 in total) were visited during routine staff meetings and questionnaires were distributed to all nurses working at the internal medicine departments in the selected hospitals.

Teachers

In 2014–2015 there were 32 institutions pursuing secondary education program in Kaunas city and employed approximately 3023 teachers as per data provided in Lithuania Official Statistics Portal. For the participation in the research, 13 secondary education institutions (3 secondary schools, 7 gymnasiums and 3 pro-gymnasiums) were randomly selected based on the localization in order to represent various districts of the city. Participating institutions represented 8 out of 11 city neighbourhoods. Selected schools were visited during the routine staff meetings and questionnaires were distributed to all employees attending the meeting.

The mean age of participants was 49.92 years (standard deviation (SD): 9.11). 419 (91.1%) were female and 41 (8.9%) were male. 57 respondents did not declare their gender, 42 respondents did not declare their age.

Waiters

According to State Food and Veterinary Service data, 542 cafes/ restaurants were registered in Kaunas in 2012 and every cafe/ restaurant employed approximately 5–7 waiters, which resulted approximately 3200 persons working in Kaunas restaurant industry. Having the list of Kaunas cafes and restaurants 100 institutions were randomly selected by choosing every fifth from the list. Only 72 targeted cafes/ restaurants agreed to participate in the study.

Seafarers

11025 seafarers were registered at the Maritime Medicine Centre at Klaipėda Seamen's Hospital where routine health checks of seafarers are being performed. The seafarers were first stratified by age into groups (18–24 yrs.; 25–34 yrs.; 35–44 yrs.; 45–54 yrs. and ≥55 yrs.). Once stratified, 730 employees were randomly selected by choosing every fifteenth from the list. During the three-year period, 520 seafarers addressed the Maritime Medicine Centre and were invited to participate in the study. 120 (23.1%) of seafarers refused to participate in the study and 30 (5.7%) did not complete the questionnaire properly. 370 subjects with completed questionnaires were included into the study (response rate 71.2%).

Police officers

Three out of five police stations located in Kaunas city were randomly selected for participation in the study. According to the data provided in Lithuania Official Statistics Portal, 1085 police officers were employed in Kaunas police forces in 2012.

3.2. Research instruments

The survey was based on a self-administered anonymous questionnaire (see Supplement 2), which consisted of:

- Questions to collect:
  - socio-demographic information (age, gender, marital status, a number of children living at home, work experience, life-threatening events);
  - lifestyle information (smoking, alcohol consumption, physical activity);
  - medical history (respondents were asked to indicate which of listed 17 diseases/ conditions (such as hypertension, diabetes, *pain in neck and shoulders*) were diagnosed and treated during the last year);
- Globally used questionnaires, translated and validated for applying in Lithuania to measure workplace bullying, to evaluate psychosocial job characteristics, psychological distress, PTSS and self-rated health:
  - The **Negative Acts Questionnaire** (NAQ) (Einarsen S. & Hoel H.) ® (COPYRIGHT) was used to assess the variety of negative behaviour forms from colleagues, superiors, subordinates, external clients (patients, students, customers, etc.). The Negative Acts Questionnaire is the most widely used instrument to measure exposure to workplace bullying and it is proven that its psychometric quality is good [57]. The inventory contains 22 items that represent various negative acts with no reference to bullying. The examples of behavioural terms are: “Spreading of gossip and rumours about you”, “Being ordered to do work below your level of competence” and “Threats of violence or physical abuse or actual abuse”. The respondents were asked to indicate how often they have experienced each behaviour during the last six months, using a five-point Likert-type scale (where 5 = daily, 4 = weekly, 3 = monthly, 2 = now and then and 1 = never). The cultural adaptation of Negative Acts Questionnaire was performed previously [251].

The *operational approach* was applied and 2 exposure criterions were used: 1. proposed by Leymann, which considers a person to be a victim of bullying if s/he has been exposed to at least 1 negative act a week for a period of at least 6 months [137]; 2. Mikkelsen and Einarsen's criterion, which requires at least two negative, acts a week for a period of at least 6 months to enable [169]. *Victimization from workplace bullying* was measured using the single-item measure. The respondents were asked to indicate whether or not they had been exposed to bullying during the previous 6 months based on the provided definition of bullying: "A situation where one or several individuals persistently over a period of time perceived themselves to be on the receiving end of negative actions from one or several persons, in a situation where the target of the bullying has difficulty in defending him/herself against these actions. A one-off incident is not bullying." The response categories were: "No", "Yes, very rarely", "Yes, now and then", "Yes, several times per week" and "Yes, almost daily". Victimization from workplace bullying was then classified into two categories - occasional ("Yes, very rarely") and severe ("Yes, now and then", "Yes, several times per week" and "Yes, almost daily") [57]. The respondents were also asked to indicate whether the superiors, the colleagues, the subordinates or the external customers (e.g. patients for physicians/ nurses, students for teachers, customers for waiting staff etc.) were bullying perpetrators at their workplace. The permission to use Negative Acts Questionnaire was obtained from the Bergen Bullying research group and is confirmed by common publication of the scientific supervisor with the author Einarsen S. in a Lithuanian sample [155].

– **Goldberg 12-item General Health Questionnaire (GHQ-12)**, created in 1970 [89], was used to assess p*sychological distress.* It is a well-established self-administered screening scale for the evaluation of psychological distress in non-clinical population samples, valued for its excellent screening performances and good clinical validity in terms of diagnosing mental disorders and measureing general psychological well-being [84, 157] and used in a number of WHO studies and in the primary care sector [24, 26]. The short GHQ version consists of 12 questions, covering feelings of strain, anxiety-based insomnia, depression, inability to cope, lack of self-confidence and other symptoms of psychological distress. The scale asks whether the respondent has experienced a particular behaviour or symptom recently where response categories in a five-

point Likert-type scale are: “Much less than usual” = 1, “Less than usual” = 2, “No more than usual” = 3, “Rather more than usual” = 4 and “Much more than usual” = 5. The customary type of scores used is a bimodal scale (0-0-0-1-1). Three and more positive answers were assessed as psychological distress. The cultural adaptation of GHQ-12 was performed previously [251].

– *Post-traumatic stress symptoms.* Current subjective distress for any specific life event was assessed using the **Impact of Event Scale-Revised (IES-R) inventory** [263]. It is a self-report measure scale adapted and translated for usage in Lithuania that contains 22 items and assesses 3 categories of PTSS: hyperarousal, avoidance behaviour and intrusive thoughts and/or feelings with reference to the past 7 days [155]. Scoring over 33 was considered as a cut off for a “probable PTSD case” [50]. The cultural adaptation of the IES-R is described in [154].
– *Psychosocial job characteristics* were measured with the **Job Demand-Control Questionnaire** (DCQ) (Theorell T. & Karasek R.) ® (COPYRIGHT) This is a shortened version of the original job content questionnaire developed by Karasek [113], proposed by Theorell in 1998 which is comprised of 17 items in three dimensions-psychological demands, decision latitude and social support at work and is mostly used in the Scandinavian countries [243]. The questionnaire consists of 6 items for the assessment of job control, psychological demands (5 items), supervisor support and co-worker support (6 items). Job strain has been calculated by dividing job demands by job control. High and low categories for job demands, job control, job strain and social support were determined by a cut-off point corresponding to the median of the total score for each of these constrains. Scores below the median were assessed as “low.” Cultural adaptation of the Theorell & Karasek Job Demand-Control questionnaire has been performed previously and is confirmed for usage by common publications of the scientific supervisor with the author Tores Theorell in a Lithuanian sample [160, 161].
– *Self-rated health* was assessed using the first and the second questions from the **SF-36 Health Survey** – a self-report questionnaire in which a generic outcome measure is designed to examine a self-perceived health status [260]. The first questions aims to investigate how the respondent perceives his current health status (“In general, would you say your health is: Excellent, Very good, Good,

Fair, Poor") and the second one asks to compare it with the health a year ago ("Compared to one year ago, how would you rate your health in general now? ("Much better now than one year ago", "Somewhat better now than one year ago", "About the same", "Somewhat worse now than one year ago", "Much worse now than one year ago").

One secondary education school in Kaunas was randomly selected for a pilot study and 41 employees agreed to collaborate. The aim of the pilot study was to verify whether the questions and possible responses in the study questionnaire are comprehensible for the respondents. The results of the pilot study confirmed the suitability of the instrument.

In total 2579 completed questionnaires were collected, however there were questions/ scales missed to complete by respondents in some occupational groups. For example, the executives at police stations did not agree to allow their employees the completion of Job content questionnaire, or disclosure of experienced threatening life events, marital status, a number of children or diseases. In order not to lose other data by dismissing the entire questionnaires, it has been decided to use all collected questionnaires in the study and to perform selective analysis with the available data, e.g., the data collected from police officers was not used in SEM (Path analysis), but it was used for examining the prevalence of workplace bullying. The completion of the study questionnaire per occupational group is provided in the *Table 3.2.1.*

Table 3.2.1. *Rate of fully completed scales/ questions per occupational group*

Scales/questions	All respondents N=2597 (100.0%)					
	Family physicians n=323 (100.0%)	**Nurses n=748 (100.0%)**	**Teachers n=517 (100.0%)**	**Seafarers n=370 (100.0%)**	**Police officers n=290 (100.0%)**	**Waiters n=349 (100.0%)**
	Rate of fully completed scales/ questions per occupational group					
Age	323	722	475	299	289	347
Gender	323	722	460	370	290	349
Negative Acts Questionnaire-22	323	748	517	370	290	349
Questions about bullying perpetrators	318	748	514	367	0	147
Self-rated health	323	748	517	369	290	149
Job Content Questionnaire	323	745	517	0	0	149
GHQ-12	323	736	512	370	290	149
Pain of neck and shoulders diagnosed or treated within recent 12 months	323	728	517	370	0	149
Physical activity	319	745	509	338	290	148
Smoking habits	318	745	509	344	290	147
Alcohol consumption	319	745	512	340	288	148
Threatening life events	317	745	508	0	0	147
Impact of Events Scale-Revised	320	748	407	341	0	147
Marital status	310	744	510	0	0	142
Number of children	313	745	511	0	0	143

3.3. Statistical analysis

The study data were first analysed using the IBM SPSS Statistics (Statistical Package for the Social Sciences) version 20.0. Descriptive statistics were performed by calculating mean values of variables (± standard deviation, SD) and frequencies. The following *p* values were used: less than 0.05 was considered statistically significant, less than 0.01 and 0.001 – statistically highly significant. For the comparison of variables, Pearson Chi-Square Test was used.

Categorical variables were expressed as percentages and tested by the chi-square test and Z test with Bonferroni correction. Pearson correlation coefficients were calculated to determine the associations between adverse psychosocial job characteristics and mental health complaints.

The stepwise logistic regression analysis was carried out to evaluate the association between psychosocial work factors and subjective health evaluation. Self-rated health was the dependent variable, while the independent variables were – occupation, bullying assessed by self-labelling and operational methods (applying both – Mikkelsen&Einarsen and Leymann criterions), job demands, job control and social support at work. The stepwise logistic regression model assessed the odds ratio for evaluating health as poor depending on aforementioned independent variables.

In order to evaluate the relationship of such health disorders, as psychological distress, PTSS and pain in the neck and shoulders with the predisposing socio-demographic and psychosocial work factors, the method of structural modelling was used [45, 121]. A professional statistician at Vytautas Magnus University performed this part of the statistical analysis.

SEM has its own requirements for the data. One of the important requirements is a method of a large take on. SEM on the whole is a method of large samples. In the present study, the sample is 2597. Such large sample lets successfully analyse even the most complicated models. When each occupation is analysed separately, the take on is usually much smaller, some are just around 300. There can be more than one dependent variable in the model. The dependent variables of some regression analyses can be independent variables (predictors) in some other analyses. Latent variables (i.e. the ones that are not directly found in the data but manifest themselves through other variables, so called predictors) can be used in models. Variable measurement errors can also be introduced and evaluated in models.

An important peculiarity of SEM is that its primary objective is to check the validity of all models, while the hypotheses about the specific relationships among variables are checked later. Another peculiarity is that the regressive relationships in the model are understood as causative relation-

ships. Though SEM alone cannot “prove” that a certain variable in a certain relationship is a cause and another variable is a consequence, it allows checking how well a certain model of causative factors matches the available empirical data.

SEM models may have and may not have latent variables. In such case, they are called path models or path analysis models. Overall, models with latent variables are superior to others, because they let evaluate the measurement errors of constructs (scales, factors) in the model, but the use of latent variables also introduces additional requirements for the investigation, measurement scales and the data themselves.

When the strategy of creating and checking SEM models was chosen, firstly the possibilities of using the latent variables were investigated. The obtained data and the measurement scales used indicate the possibility to use latent variables, which evaluate the psychological distress and PTSS, reported by the respondents, workplace bullying and job content characteristics. The NAQ-22 questionnaire was more widely investigated. For structural equation modelling Mplus programme, version 7.4, was used [175]. The confirming factorial analysis [37] rejected “standard „one general factor model according to precise chi square criterion: $x2(209)= 1555.1$, $p<0.0001$, but approximate meanings of the relevance of indices were good: RMSEA = 0.05, 90% of its reliable interval is from 0.047 to 0.052; CFI =0.97, TLI = 0.97. According to Browne M.W.&Cudeck R. [38] RMSEA<0.08 shows a well applicable model. According to [37] CFI (and TLI) for a well applicable model it was close to 0.95 and very close to 1. RMSEA, CFI and TLI indices are well known and described in many books and articles, e.g. [121].

The results of factorial analyses of other investigators show that this scale of workplace bullying is separated into two factors. The factorial analysis of the described survey data was done using Mplus programme. It showed that no digit smaller than 6 meets the exact chi square criterion, beginning with 7 the results of counting are unreliable, 10 factors solution on the whole does not converge (mathematically the solution cannot be found using the existing algorithms). Only two eigenvalues of correlation matrix are greater than 1: the first is 12.8, the second 1.03. The solution of just one factor shows good RMSEA, CFI and TLI (digits are the same as in above passage). The solution of two factors shows RMSEA = 0.045, the 90% of reliability interval is from 0.043 to 0.047, CFI + 0.98, TLI = 0.98. By this, it can be judged that there is one primary factor of workplace bullying and one secondary. The analysis of factorial coefficients (loadings) after the Geomin turning shows, that the primary factor reflects different communication aspects at workplace, while the secondary factor is related with work

assignments and the load of responsibility. The correlation between the factors is strong, the coefficient is 0.834. Therefore, the solution of one workplace bullying factor looks not bad, though chi square criterion does not confirm it, most probably due to additional relations among questions, which can arise due to supplementary secondary factors. Such situation is very common in psychometric scales, which consist of many questions. In the article [103], 8 personality tests, popular and acknowledged in the world, were investigated. The structure of none of them was confirmed by chi square criteria of factorial analysis CFA). RMSEA, CFI and TLI indices were also bad. However, CFA is not the only one and not necessarily the best way to check the validity of measurement instrument, therefore it is not recommended to rely only on CFA results.

Using workplace bullying as a latent variable, several strategies were possible: 1) one latent variable and 22 indicators; 2) one latent variable with some "best" indicators; c) two latent variables with all indicators (according to the results of the investigated factorial analysis) or with the selected "best" indicators; d) ESEM (Exploratory structural modelling usage, Asparouhv&Muthen, 2009) usage. All these versions increase the complexity of variable numbers in the models and the general complexity of the models. Having in mind, that analyses of the respondents of different occupations are important for the present research and, that samples of some occupations are not large enough for analysis of complicated models, it was decided to use workplace bullying not as a latent variable, but as an observable variable, i.e. the total of questions in workplace bullying scale. For similar reasons, psychological distress, job strain and support at work and PTSD were used as observable variables.

In that case, no latent variables are left in the models. In creating and analysing such models it is important whether the model has all structural (regressive) relations or not all. Some relations can be preliminary taken out from the models on the basis of existing theories or investigations done earlier. In that case model df>0 and the relevance of model for the data can be checked by using chi square criterion and other indices of relevance. For the analyses given below another strategy was chosen. Since there were many models and they could differ depending on occupation, it was too complicated to substantiate the rejection of some relations from models beforehand. All theoretically possible variable relations were included into models. While counting, some of these relations were statistically significant, others not. Such models have df = 0 and they are called saturated. Those models are precisely identified and their generated covariance matrix is compatible with data covariance matrix, therefore their checking with chi

square criterion is senseless. By the same token, all other suitability indices, based on chi square: RMSEA, CFI, TLI and others become senseless.

The coefficients of dependable variables R^2 become the main indices of the quality of models, which show what part of dependent variable dispersion can be explained by independent variables (predictors). The sense and acceptability of statistically significant relations are also important.

Furthermore, the bootstrapping using 5000 samples was applied to compute formal statistical tests of the specific indirect effects. This method can produce an estimate of the indirect effect, including a 95% confidence interval. When 95% confidence interval does not include zero, the indirect effect is significantly different between the level of zero and 0.05.

Structural models, in which estimates of detection method [121] are used, are described further. This method is Mplus standard, where categorical indicators or dependable variables are used.

Internal consistency of scales comprising the study questionnaire was measured by Cronbach‘s α for a total study sample and for each occupational group separately. The results are provided in *Table 3.3.1.* Acceptable values of Cronbach’s alpha are higher than 0.7 [145].

Table 3.3.1. *Internal consistency of scales*

Scale	Sub-scale	Number of questions	Cronbach's α per total sample	Cronbach's α per occupation					
				Family physicians	Nurses	Teachers	Waiters	Seafarers	Police officers
22 Negative acts questionnaire		22	0.94	0.93	0.93	0.91	0.92	0.90	0.97
Job Content Questionnaire	**Job demands**	5	0.69	0.67	0.72	0.62	0.71	–	–
	Job control	6	0.67	0.57	0.60	0.53	0.57	–	–
	Social support	6	0.69	0.69	0.68	0.66	0.69	–	–
Goldberg General Health Questionnaire-12		12	0.83	0.81	0.86	0.84	0.80	0.68	0.81
Impact of Event Scale-Revised		22	0.96	0.96	0.96	0.96	0.95	0.96	–

4. RESULTS

4.1. Prevalence of psychosocial factors at work and investigated health complaints

4.1.1. Baseline socio-demographic characteristics of respondents

The baseline socio-demographic characteristics of respondents are provided in *Table 4.1.1.1.* It has been found that the waiters were the youngest (mean age 24.1±4.19) and the family physicians – the eldest (mean age 53.5±8.67) among all 6 investigated occupational groups. Masculine prevailed among seafarers and police officers.

Evaluation of prevalence of risk factors among different occupational groups revealed that the major proportion of smokers was among seafarers and police officers, alcohol consumption (≥1 time/month) was the greatest in the group of physicians and waiters, significantly more physically active individuals (4–7 times per week) were among family physicians, teachers, waiters and seafarers. Marital status, number of children and experienced threatening life events were evaluated only in four occupational groups. The majority of respondents were married (or partnered), approximately two thirds of family physicians, nurses and teachers had two, or more children, one third of respondents reported having experience threatening life events.

Table 4.1.1.1. *Baseline socio-demographic characteristics of respondents*

Means (±SD) or frequency (%) of factors	Occupations					
	Family physicians	**Nurses**	**Teachers**	**Waiters**	**Seafarers**	**Police officers**
Age, years	53.5±8.67	46.3±8.92	48.9±9.11	24.1±4.19	37.5±10.92	34.5±6.8
Gender, n (%):						
Men	58 (18.0)	3 (0.4)	41 (8.9)	67 (19.2)	359 (97.0)	290 (100.0)
Women	265 (82.0)	745 (99.6)	419 (91.1)	282 (80.8)	11 (3.0)	–
Age group, years:	n (%)	n (%)	n (%)	n (%)	n (%)	n (%)
<25	0 (0.0)	4 (0.6)	3 (0.6)	219 (63.1)	46 (15.4)	29 (10.0)
25-34	5 (1.5)	65 (9.0)	24 (5.1)	117 (33.7)	77 (25.7)	110 (38.1)
35-44	42 (13.0)	237 (32.8)	122 (25.7)	11 (3.2)	95 (31.8)	130 (45.0)
45-54	124 (38.4)	281 (38.9)	181 (38.1)	0 (0.0)	64 (21.4)	20 (6.9)
55-64	122 (37.8)	117 (16.2)	134 (28.2)	0 (0.0)	15 (5.0)	0 (0.0)
>64	30 (9.3)	18 (2.5)	11 (2.3)	0 (0.0)	2 (0.7)	0 (0.0)
Total, N (%)	*323 (100.0)*	*722 (100.0)*	*475 (100.0)*	*347 (100.0)*	*299 (100.0)*	*289 (100.0)*
Smoking, n (%):						
Never	263 (82.7)	587 (78.8)	415 (81.5)	123 (83.7)	130 (37.8)	92 (31.7)
Smoker	45 (14.2)	137 (18.4)	84 (16.5)	20 (13.6)	194 (56.4)	182 (62.8)
Ex-smoker	10 (3.1)	21 (2.8)	10 (2.0)	4 (2.7)	20 (5.8)	16 (5.5)
Alcohol consumption, n (%):						
Non-drinker	37 (11.6)	105 (14.0)	84 (16.4)	17 (11.5)	38 (11.2)	23 (8.0)
Occasionally	239 (74.9)	619 (83.1)	412 (80.5)	113 (76.4)	271 (79.7)	244 (84.7)
≥1 time/month	43 (13.5)	21 (2.9)	16 (3.1)	18 (12.1)	31 (9.1)	21 (7.3)
Physical activity, n (%):						
4–7 times/week	50 (15.6)	73 (9.8)	74 (14.5)	23 (15.5)	70 (20.7)	23 (7.9)
1–3 times/week	108 (33.9)	225 (30.2)	190 (37.3)	49 (33.1)	169 (50.0)	110 (37.9)
Less than once a week	161 (50.5)	447 (60.0)	245 (48.2)	76 (51.4)	99 (29.3)	157 (54.2)
Marital status, n (%):						
Single	15 (4.8)	68 (9.1)	53 (10.4)	15 (10.6)	–	–
Married	249 (80.3)	532 (71.5)	355 (69.6)	122 (85.9)	–	–
Divorced	25 (8.1)	101 (13.6)	75 (14.7)	5 (3.5)	–	–
Widow/-er	21 (6.8)	43 (5.8)	27 (5.3)	–	–	–
Number of children, n (%):						
No	23 (7.3)	111 (14.9)	80 (15.7)	111 (77.6)	–	–
1	70 (22.4)	189 (25.4)	138 (27.0)	22 (15.4)	–	–
≥2	220 (70.3)	445 (59.7)	293 (57.3)	10 (7.0)	–	–
Experienced threatening life events, n (%):						
No	225 (71.0)	421 (56.5)	370 (72.8)	106 (72.1)	–	–
Yes	92 (29.0)	324 (43.5)	138 (27.2)	41 (27.9)	–	–

4.1.2. Job characteristics among investigated occupations

The frequencies of psychosocial job characteristics were investigated only in the groups of family physicians, nurses, teachers and waiters (*Table 4.1.2.1.*). The comparison of the frequencies shows that nurses and teachers experienced high job demands significantly less frequent than family physicians. Nevertheless, nurses had high control over their job also less frequently than family physicians and this difference is statistically significant. From this table it can be seen that teachers reported most favourable psychosocial job characteristics, where the rates of high job control and high social support were significantly higher and the rate of experienced high job strain was significantly lower as compared to the group of family physiccians.

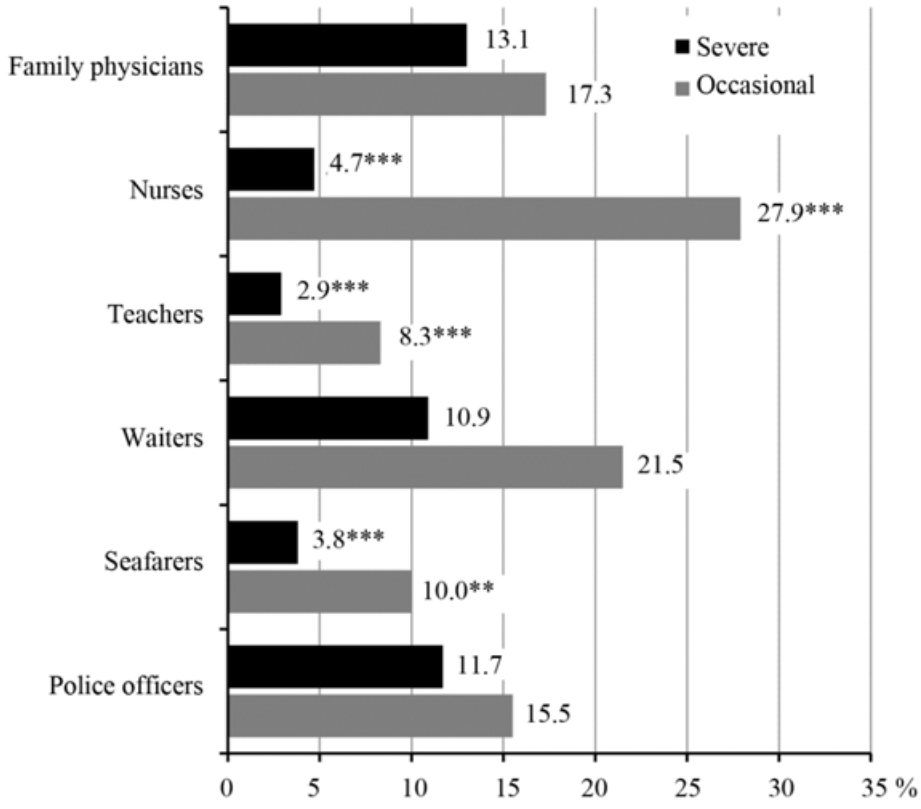
Table 4.1.2.1. *Frequencies of job content characteristics among investigated occupational groups*

Occupation	Job demands		Job control		Job strain		Social support	
	High %	Low %	High %	Low %	High %	Low %	High %	Low %
Family Physicians (N=323)	72.4	27.6	52.9	47.1	65.0	35.0	38.4	61.6
Nurses (N=748)	40.6 *	59.4	32.5 *	67.5	59.8	40.2	54.9 *	45.1
Teachers (N=517)	41.0 *	59.0	85.9 *	14.1	23.6 *	76.4	60.6 *	39.4
Waiters (N=149)	70.5	29.5	56.4	43.6	61.1	38.9	40.9	59.1

*p<0.05, compared with family physicians data.

4.1.3. Prevalence of workplace bullying among investigated occupational groups

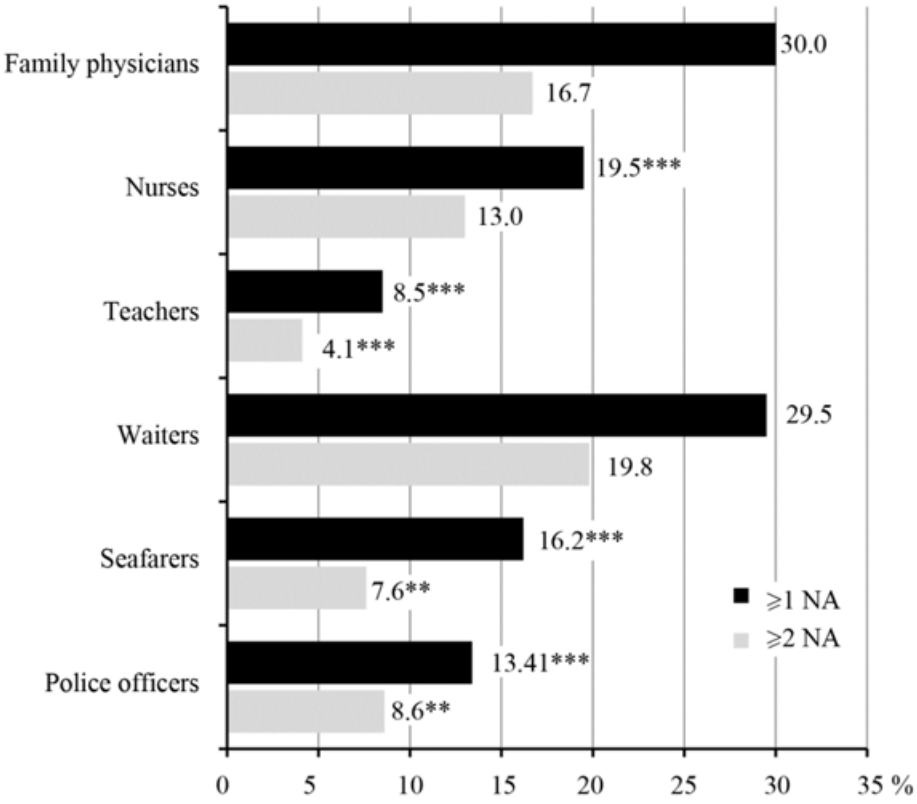
In this chapter, the data of experienced workplace bullying prevalence is provided. Study results revealed that family physicians, police officers and waiters (13.0, 11.7 and 10.9%, respectively) reported the highest prevalence of victimization from severe workplace bullying (at least weekly) as measured using the single-item measure. Meanwhile the prevalence of severe bullying among the employees of the remaining three occupations was 3 to 5-fold lower (*Fig. 4.1.3.1.*). The largest proportions of respondents who claimed have never been bullied were found among teachers and seafarers (88.8 and 86.2%, respectively) (*data is not shown*).



**p<0.01; ***p<0.001, comparing with family physicians data.

Fig. 4.1.3.1. *Prevalence of workplace bullying in all investigated occupational groups (self-labelling method)*

The highest prevalence of bullying as assessed using the operational approach and applying the Mikkelsen&Einarsen criterion was found among family physicians and waiters – 16.7% and 19.8% respectively. The lowest rates were found among teachers (4.1%), seafarers (7.6%) and police officers (8.6%). The prevalence of workplace bullying was also assessed using operational method and applying Leymann criterion. This assessment also demonstrated that family physicians and waiters were most exposed to negative acts associated with bullying – 30.0% and 29.5%, respectively. Every fifth nurse (19.5%) reported exposure to bullying behaviour, while prevalence rates among teachers, seafarers and police officers were lower – 8.5%, 16.2% and 13.4%, respectively (*Fig. 4.1.3.2.*).



NA – negative act.
**p<0.01; *** p<0.001, comparing with family physicians data.

Fig. 4.1.3.2. *Prevalence of workplace bullying in all investigated occupational groups (operational method/ Mikkelsen&Einarsen and Leymann criterions)*

4.1.4. Prevalence of negative acts (bullying behaviours) experienced by investigated occupational groups

In this chapter, the results of frequencies of experienced negative acts and comparisons in the groups of different occupations are shown. The numbers given in brackets following the behavioural catch phrases refer to the item numbers in *Tables 4.1.4.1.–4.1.4.3.*

Table 4.1.4.1. shows percentages of family physicians and nurses who endorsed each item on the Negative Acts Questionnaire. The most frequent bullying behaviours reported by family physicians were – „withholding information" (1), "unmanageable workload" (21) and "excessive monitoring of work" (18). Nurses suffered from "gossiping and rumours" (5) and "being ordered to do work below your level of competence" (3) most frequently.

The comparison of the frequencies between both occupational groups shows that family physicians experienced „withholding information" (1), „being humiliated or ridiculed" (2), "unmanageable workload" (21), "excessive monitoring of work (18), "excessive teasing and sarcasm (20), also undesired behaviours of ignorance nature, such as "being ignored or excluded" (6) and "opinions and views ignored" (14) on a daily/weekly basis significantly more often than nurses.

The results provided in *Table 4.1.4.2.* show that the most frequent negative behaviour experienced by teachers on a daily/ weekly basis was „withholding information" (1) – 7.0%. The waiters claimed suffering from "being ordered to do work below your level of competence", "gossiping and rumours" (5) and "excessive monitoring of work" (18) most frequently – 12.1%, 11.5% and 8.9%, respectively. The comparison of frequencies of negative acts reported by teachers and waiters revealed that waiters suffered from all but two negative behaviours ("hinting at quitting" (10) and „practical jokes" (15)) on a weekly/ daily basis significantly more often than teachers did.

The frequencies of experienced bullying behaviours by seafarers and police officers as well as the comparison of frequencies between both occupational groups are provided in *Table 4.1.4.3.* The results show that the most frequent negative behaviour experienced by seafarers on a weekly/ daily basis was „withholding information" (1) – 7.0%. The most often reported negative acts among police officers were „being shouted and spontaneous anger"(8) and „gossiping and rumours" (5), 5.5% and 5.2%, respectively.

The comparison of the frequencies between both groups shows that police officers experienced „gossip and rumours" (5), "being ignored or excluded" (6), "insulting or offensive remarks" (7), "intimidating behaviour" (9), "hinting at quitting" (10), "opinions and views ignored" (14) and "threats of violence or physical abuse " (22) significantly more often than seafarers. "Withholding information" (1) was significantly more often negative act endorsed by seafarers.

Table 4.1.4.1. *Prevalence of negative acts (bullying behaviours) among family physicians and nurses*

	Family physiscians			Nurses			
	Never (%)	**Yes, now and then/ monthly (%)**	**Weekly/ daily (%)**	**Never (%)**	**Yes, now and then/ monthly (%)**	**Weekly / daily (%)**	χ^2; p
1	**2**	**3**	**4**	**5**	**6**	**7**	**8**
Someone withholding information which affects your performance (1)	**31.6** *	**56.0** #	**12.4** ♦	53.5	40.5	6.0	χ^2=46.64; p=0.0001
Being humiliated or ridiculed in connection with your work (2)	**57.3** *	**36.5** #	**6.2** ♦	74.1	25.0	0.9	χ^2=44.472 ; p=0.0001
Being ordered to do work below your level of competence (3)	61.6	30.3	8.1	56.8	35.7	7.5	χ^2=2.88; p=0.24
Having key areas of responsibility removed or replaced with more trivial or unpleasant tasks (4)	**71.2** *	**25.7** #	3.1	82.4	13.8	3.8	χ^2=22.402 ; p=0.0001
Spreading of gossip and rumours about you (5)	**39.6** *	**51.4** #	9.0	55.5	36.1	8.4	χ^2=24.23; p=0.0001
Being ignored or excluded (6)	**66.3** *	**26.9** #	**6.8** ♦	88.0	10.8	1.2	χ^2=74.88; p=0.0001
Having insulting or offensive remarks made about your person (i.e. habits and background), your attitudes or your private life (7)	**57.0** *	38.1	4.9	63.4	34.0	2.6	χ^2=6.083; p=0.05
Being shouted at or being the target of spontaneous anger (or rage) (8)	42.7	52.3	5.0	47.6	48.4	4.0	χ^2=2.328; p=0.31
Intimidating behaviour such as finger-pointing, invasion of personal space, shoving, blocking/barring the way (9)	**75.9** *	**22.9** #	1.2	84.6	12.7	2.7	χ^2=19.095 ; p=0.0001
Hints or signals from others that you should quit your job (10)	81.4	**16.7** #	1.9	76.5	22.1	1.4	χ^2=4.069; p=0.13

Table 4.1.4.1. continued

1	2	3	4	5	6	7	8
Repeated reminders of your errors or mistakes (11)	62.8	34.1	3.1	63.0	35.2	1.8	χ^2=1.589; p=0.45
Being ignored or facing a hostile reaction when you approach (12)	**63.8** *	30.7	5.5	74.2	25.8	0.0	χ^2=47.077; p=0.0001
Persistent criticism of your work and effort (13)	**63.5** *	**34.4** #	2.1	74.1	23.4	2.5	χ^2=13.869; p=0.001
Having your opinions and views ignored (14)	**47.4** *	**46.1** #	**6.5** ♦	70.7	25.7	3.6	χ^2=53.194; p=0.0001
Practical jokes carried out by people you don't get on with (15)	81.4	16.4	2.2	82.9	14.4	2.7	χ^2=0.871; p=0.65
Being given tasks with unreasonable or impossible targets or deadlines (16)	**68.1** *	**28.5** #	3.4	78.1	19.9	2.0	χ^2=12.156; p=0.002
Having allegations made against you (17)	**62.2** *	**35.6** #	2.2	77.8	20.7	1.5	χ^2=27.957; p=0.0001
Excessive monitoring of your work (18)	**56.3** *	**36.2** #	**7.5** ♦	69.5	29.0	1.5	χ^2=34.252; p=0.0001
Pressure not to claim something which by right you are entitled to (19)	**59.8** *	**35.0** #	**5.3** ♦	81.7	16.2	2.1	χ^2=58.124; p=0.0001
Being the subject of excessive teasing and sarcasm (20)	**55.1** *	**39.3** #	**5.6** ♦	67.4	31.1	1.5	χ^2=23.833; p=0.0001
Being exposed to an unmanageable workload (21)	**58.5** *	**33.7** #	**7.8** ♦	74.9	21.9	3.2	χ^2=31.116; p=0.0001
Threats of violence or physical abuse or actual abuse (22)	**67.2** *	**31.0** #	1.8	77.9	20.6	1.5	χ^2=13.94; p=0.001

*p<0.05, comparing data of respondents who responded „**Never“**;
# p<0.05, comparing data of respondents who responded „**Yes, now and then/monthly“**;
♦p<0.05, comparing data of respondents who responded „**Weekly/daily“**.

Table 4.1.4.2. *Prevalence of negative acts (bullying behaviours) among teachers and waiters*

During the last 6 months, how often have you been subjected to the following negative acts in the workplace?	**Teachers**			**Waiters**			**χ^2; p**
	Never (%)	**Yes, now and then/ monthly (%)**	**Weekly/ daily (%)**	**Never (%)**	**Yes, now and then/ monthly (%)**	**Weekly/ daily (%)**	
1	**2**	**3**	**4**	**5**	**6**	**7**	**8**
Someone withholding information which affects your performance (1)	65.2	31.3	**3.5** ♦	60.7	32.1	7.2	χ^2=6.373; p=0.04
Being humiliated or ridiculed in connection with your work (2)	**82.0***	**17.6** #	**0.4** ♦	67.0	27.2	5.8	χ^2=38.536; p=0.0001
Being ordered to do work below your level of competence (3)	**77.4***	**21.9** #	**0.7** ♦	59.0	28.9	12.1	χ^2=63.987; p=0.0001
Having key areas of responsibility removed or replaced with more trivial or unpleasant tasks (4)	**88.0***	**11.0** #	**1.0** ♦	76.8	18.3	4.9	χ^2=23.614; p=0.0001
Spreading of gossip and rumours about you (5)	**64.8***	33.5	**1.7** ♦	50.4	38.1	11.5	χ^2=43.355; p=0.0001
Being ignored or excluded (6)	**85.9***	**13.7** #	**0.4** ♦	78.8	18.9	2.3	χ^2=11.341; p=0.003
Having insulting or offensive remarks made about your person (i.e. habits and background), your attitudes or your private life (7)	**77.0***	**22.6** #	**0.4** ♦	59.3	34.4	6.3	χ^2=46.149; p=0.0001
Being shouted at or being the target of spontaneous anger (or rage) (8)	**65.2***	**33.8** #	**1.0** ♦	48.1	43.6	8.3	χ^2=44.187; p=0.0001
Intimidating behaviour such as finger-pointing, invasion of personal space, shoving, blocking/barring the way (9)	**90.5***	**9.1** #	**0.4** ♦	80.2	16.6	3.2	χ^2=22.905; p=0.0001
Hints or signals from others that you should quit your job (10)	**83.6***	15.9	0.5	78.2	20.6	1.1	χ^2=4.219; p=0.12

Table 4.1.4.2. continued

1	2	3	4	5	6	7	8
Repeated reminders of your errors or mistakes (11)	**79.5***	**19.7** #	**0.8** ♦	63.3	31.5	5.2	χ^2=35.059; p=0.0001
Being ignored or facing a hostile reaction when you approach (12)	**82.2***	17.0	**0.8** ♦	74.5	20.9	4.6	χ^2=16.367; p=0.0001
Persistent criticism of your work and effort (13)	**81.6***	**17.6** #	**0.8** ♦	70.2	25.5	4.3	χ^2=21.582; p=0.0001
Having your opinions and views ignored (14)	**72.5***	26.9	**0.6** ♦	64.5	29.8	5.7	χ^2=23.396; p=0.0001
Practical jokes carried out by people you don't get on with (15)	**92.1***	7.9	0.0	86.5	11.7	1.8	χ^2=12.806; p=0.002
Being given tasks with unreasonable or impossible targets or deadlines (16)	75.2	23.8	**1.0** ♦	77.1	18.3	4.6	χ^2=14.205; p=0.001
Having allegations made against you (17)	**78.7***	21.1	**0.2** ♦	71.6	25.8	2.6	χ^2=13.654; p=0.001
Excessive monitoring of your work (18)	**81.8***	**17.4** #	**0.8** ♦	59.9	31.2	8.9	χ^2=64.958; p=0.0001
Pressure not to claim something which by right you are entitled to (19)	**87.0***	**12.6** #	**0.4** ♦	72.5	23.2	4.3	χ^2=35.65; p=0.0001
Being the subject of excessive teasing and sarcasm (20)	**76.2***	**23.0** #	**0.8** ♦	64.2	30.4	5.4	χ^2=25.672; p=0.0001
Being exposed to an unmanageable workload (21)	**85.9***	**13.7** #	**0.4** ♦	67.9	25.5	6.6	χ^2=51.95; p=0.0001
Threats of violence or physical abuse or actual abuse (22)	**90.5***	**9.1** #	**0.4** ♦	80.2	17.2	2.6	χ^2=21.503; p=0.0001

* $p<0.05$, comparing data of respondents who responded „**Never“**;
# $p<0.05$, comparing data of respondents who responded „**Yes, now and then/monthly“**;
♦ $p<0.05$, comparing data of respondents who responded „**Weekly/daily“**.

Table 4.1.4.3. *Prevalence of negative acts (bullying behaviours) among seafarers and police officers*

During the last 6 months, how often have you been subjected to the following negative acts in the workplace?	Seafarers			Policemen			χ^2; p
	Never (%)	Yes, now and then/ monthly (%)	Weekly/ daily (%)	Never (%)	Yes, now and then/ monthly (%)	Weekly/ daily (%)	
1	2	3	4	5	6	7	8
Someone withholding information which affects your performance (1)	**74.6** *	**18.4** *	**7.0** ♦	57.2	39.7	3.1	χ^2=38.574; p=0.0001
Being humiliated or ridiculed in connection with your work (2)	**89.5** *	**9.5** #	1.0	72.8	25.2	2.0	χ^2=31.099; p=0.0001
Being ordered to do work below your level of competence (3)	**77.0** *	**20.0** #	3.0	64.5	31.7	3.8	χ^2=12.79; p=0.002
Having key areas of responsibility removed or replaced with more trivial or unpleasant tasks (4)	**87.0** *	**11.6** #	1.4	65.2	32.4	2.4	χ^2=44.898; p=0.0001
Spreading of gossip and rumours about you (5)	**84.9** *	**13.0** #	**2.1** ♦	60.0	34.8	5.2	χ^2=52.217; p=0.0001
Being ignored or excluded (6)	**95.4** *	**4.1** #	**0.5** ♦	71.0	26.2	2.8	χ^2=74.545; p=0.0001
Having insulting or offensive remarks made about your person (i.e. habits and background), your attitudes or your private life (7)	**89.5** *	**10.0** #	**0.5** ♦	68.6	26.9	4.5	χ^2=46.546; p=0.0001
Being shouted at or being the target of spontaneous anger (or rage) (8)	**72.4** *	**24.1** #	3.5	62.8	31.7	5.5	χ^2=7.205; p=0.03
Intimidating behaviour such as finger-pointing, invasion of personal space, shoving, blocking/barring the way (9)	**90.8** *	**8.9** #	**0.3** ♦	71.0	25.5	3.5	χ^2=45.222; p=0.0001
Hints or signals from others that you should quit your job (10)	**91.6** *	**6.8** #	**1.6** ♦	70.7	25.2	4.1	χ^2=49.549; p=0.0001

Table 4.1.4.3. continued

1	2	3	4	5	6	7	8
Repeated reminders of your errors or mistakes (11)	**85.4** *	**13.0** #	1.6	63.8	33.1	3.1	χ^2=41.77; p=0.0001
Being ignored or facing a hostile reaction when you approach (12)	**93.5** *	**5.7** #	0.8	69.3	29.0	1.7	χ^2=68.04; p=0.0001
Persistent criticism of your work and effort (13)	**87.8** *	**10.8** #	1.4	66.9	29.7	3.4	χ^2=42.453; p=0.0001
Having your opinions and views ignored (14)	**82.2** *	**17.0** #	**0.8** ♦	65.9	30.7	3.4	χ^2=24.678; p=0.0001
Practical jokes carried out by people you don't get on with (15)	**93.8** *	**5.7** #	0.5	71.0	27.2	1.7	χ^2=62.092; p=0.0001
Being given tasks with unreasonable or impossible targets or deadlines (16)	**79.5** *	**18.1** #	2.4	66.2	32.1	1.7	χ^2=17.333; p=0.0001
Having allegations made against you (17)	**86.8** *	**11.1** #	2.1	68.6	28.3	3.1	χ^2=33.138; p=0.0001
Excessive monitoring of your work (18)	**75.9** *	**20.5** #	3.5	65.2	32.4	2.4	χ^2=12.197; p=0.002
Pressure not to claim something which by right you are entitled to (19)	**88.1** *	**10.8** #	1.1	70.3	26.6	3.1	χ^2=32.487; p=0.0001
Being the subject of excessive teasing and sarcasm (20)	**85.4** *	**12.4** #	2.2	71.0	25.2	3.8	χ^2=20.382; p=0.0001
Being exposed to an unmanageable workload (21)	**82.7** *	**15.1** #	2.2	73.1	23.8	3.1	χ^2=8.903; p=0.01
Threats of violence or physical abuse or actual abuse (22)	**95.9** *	**3.5** #	**0.6** ♦	73.1	23.8	3.1	χ^2=70.097; p=0.0001

*p<0.05, comparing data of respondents who responded „**Never“**;
#p<0.05, comparing data of respondents who responded „**Yes, now and then/monthly“**;
♦p<0.05, comparing data of respondents who responded „**Weekly/daily“**.

4.1.5. Organizational status of bullying perpetrators in the investigated occupational groups

The respondents who indicated having experienced workplace bullying were asked to also indicate who at their workplace the bullying perpetrators were. *Table 4.1.5.1.* shows the organizational status of bullies per occupation. Police officers did not complete this part of the questionnaire; hence, the analysed data includes information from five occupational groups. The results revealed that waiters and family physicians experienced bullying behaviour from their superiors most frequently, 28.2% and 26.6%, respectively, while in other occupational groups, the rates were lower – 15.1% of nurses, 6.6% of teachers and 6.8 of seafarers indicated superiors as their bullies. Every fifth nurse (17.5%) and 8.4% of family physicians experienced bullying by their colleagues. The rates were lower among teachers and seafarers (3.7%, 6.7 and 2.7%, respectively). Bullying by subordinates was rather scarce and the rate oscillated between 0.3 and 3.6%. Every twelfth family physician and teacher (11.8% and 11.5%, respectively), 13.4% of waiters and every tenth nurse (9.8%) suffered from bullying behaviours by the external customers (patients/ students/ clients). Only 0.5% of seafarers reported having been offended by external customers.

Table 4.1.5.1. *Organizational status of bullying perpetrators*

Bullying perpetrator	Family physicians n (%)	Nurses n (%)	Teachers n (%)	Waiters n (%)	Seafarers n (%)	Police officers n (%)
Superior	86 (26.6)	113 (15.1)	34 (6.6)	42 (28.2)	25 (6.8)	–
Colleague	27 (8.4)	131 (17.5)	19 (3.7)	10 (6.7)	10 (2.7)	–
Subordinate	9 (2.8)	27 (3.6)	2 (0.4)	4 (2.7)	1 (0.3)	–
External client (patient, student, client etc.)	38 (11.8)	73 (9.8)	59 (11.5)	20 (13.4)	2 (0.5)	–

The compared distribution of bullies per organizational status in the groups of family physicians and nurses is shown in *Table 4.1.5.2.* The results revealed that superiors were bullies significantly more often among family physicians (26.6% vs. 15.1%, $p<0.05$), while nurses experience bullying by colleagues significantly more often than family physicians, 17.5 and 8.4%, respectively ($p<0.05$).

Table 4.1.5.2. *Status of bullying perpetrators among family physicians and nurses*

Bullying perpetrator	Family physicians n (%)	Nurses n (%)	Significance level
Superior	86 (26.6)	113 (15.1)	**χ^2=19.784; p<0.001**
Colleague	27 (8.4)	131 (17.5)	**χ^2=15.032; p<0.001**
Subordinate	9 (2.8)	27 (3.6)	χ^2=0.471; p =0.493
External client (patient, student, client etc.)	38 (11.8)	73 (9.8)	χ^2=0.977; p =0.323

χ^2 – chi-square test; in Bold – significantly.

The compared distribution of bullies per organizational status in the groups of teachers and waiters is shown in *Table 4.1.5.3.* The results show that waiters were significantly more often bullied by superiors and subordinates, 28.2% and 2.7%, respectively, vs. 6.6% and 0.4%, respectively in the group of teachers (p<0.05).

Table 4.1.5.3. *Status of bullying perpetrators among teachers and waiters*

Bullying perpetrator	Teachers n (%)	Waiters n (%)	Significance level	
Superior	34 (6.6)	42 (28.2)	**χ^2=52.971;**	**p<0.001**
Colleague	19 (3.7)	10 (6.7)	χ^2=2.51;	p=0.113
Subordinate	2 (0.4)	4 (2.7)	**χ^2=6.77;**	**p=0.009**
External client (patient, student, client etc.)	59 (11.5)	20 (13.4)	χ^2=0.416;	p=0.519

χ^2 – chi-square test; in Bold – significantly.

4.1.6. Prevalence of investigated health complaints (psychological distress, post-traumatic stress symptoms and pain in neck and shoulders in the investigated occupational groups

One of the study objectives was to evaluate prevalence of certain health complaints – psychological distress, PTSS and pain in the neck and shoulders, among employees in different occupations. The obtained results are shown in *Table 4.1.6.1.*

As many as 4 out of 10 family physicians were found to have psychological distress, almost 16.0% – PTSS and more than a third (37.5%) com-

plained of muscular pain in neck and shoulders. The assessment of health complaints reported by nurses revealed that almost every fourth nurse (23.1%) experienced psychological distress, almost 13.0% of nurses had PTSS and almost one-third (30.2%) pointed out their neck and shoulder pain. Analysis of teachers' data showed that one in four (25.2%) suffered from psychological distress, 14.3% from PTSS and 28.2% from muscular pain in neck and shoulders. More than a third (35.6%) of waiters had psychological distress, PTSS and pain in the neck and shoulders were reported by 12.2% and 14.1% of waiters, respectively. The lowest reported prevalence rates of health complaints were found in the group of seafarers, where psychological distress was reported by 12.4%, PTSS by 4.1% and pain in neck and shoulders – 3.5% of respondents. Every fifth police officer (25.9%) suffered from psychological distress.

Table 4.1.6.1. *Prevalence of investigated health complaints in the investigated occupational groups*

Occupation	Psychological distress		Post-traumatic stress symptoms		Pain in neck and shoulders	
	Yes %	No %	Yes %	No %	Yes %	No %
Family Physicians (N=323)	40.2	59.8	15.9	84.1	37.5	62.5
Nurses (N=748)	23.1***	76.9	12.8	87.2	30.2*	69.8
Teachers (N=517)	25.2***	74.8	14.3	85.7	28.2**	71.8
Waiters (N=349)	35.6	64.4	12.2	87.8	14.1***	85.9
Seafarers (N=370)	12.4***	87.6	4.1***	95.9	3.5***	96.5
Police officers (N=290)	25.9***	74.1	–	–	–	–

*p<0.05; **p<0.01; ***p<0.001, compared with family physicians data.

4.2. Associations between psychosocial work factors and health complaints in the investigated occupational groups

4.2.1. Correlations among adverse psychosocial job characteristics and health complaints in the investigated samples

Before applying structural equation modelling, the Pearson correlations between psychosocial job characteristics and health complaints were calculated within every investigated occupation. The results are provided in the Supplement 3 (*Tables 1–4*).

In the sample of family physicians it has been detected, that age had no significant correlations with psychological distress and PTSS. Negative acts among family physicians had direct significant moderate correlations with psychological distress and PTSS (R=0.215 and R=0.33, p<0.05, respectively). Job demands had direct significant moderate correlations with psychological distress and PTSS (R=0.32 and R=0.196, p<0.05, respectively). Job control had inverse significant weak correlations with psychological distress and PTSS (R=-0.178 and R=-0.174, p<0.05 respectively) in the family physicians. Social support had inverse significant weak correlations with psychological distress and PTSS (R=-0.174 and R=-0.274, p<0.05, respectively). In this occupational group job strain had direct significant moderate correlations with psychological distress and PTSS (R=0.343 and R=0.253, p<0.05, respectively).

Correlations between psychosocial job characteristics and health complaints in a sample of nurses suggested that age had no significant correlations with psychological distress and PTSS. Negative acts among nurses had direct significant weak correlations with psychological distress and PTSS (R=0.219 and R=0.184, p<0.05, respectively). Job demands had direct significant moderate correlations with psychological distress and PTSS (R=0.301 and R=0.331, p<0.05, respectively). Job control had inverse significant weak correlations with PTSS (R= -0.107, p<0.05), but no significant correlations with psychological distress in the nurses were identified. It has been detected, that in this occupational group social support had inverse signifycant moderate correlations with psychological distress and PTSS (R= -0.379 and R= -0.37, p<0.05, respectively). Job strain had direct significant moderate correlations with psychological distress and PTSS (R=0.244 and R=0.316, p<0.05 respectively).

The results obtained in a sample of teachers showed that age had direct significant weak correlations with PTSS (R=0.117, p<0.05), but no signifycant correlations with psychological distress were determined. Negative acts had direct significant weak correlations with psychological distress and PTSS (R=0.194 and R=0.269, p<0.05, respectively). Job demands had direct significant moderate correlations with psychological distress and PTSS (R=0.349 and R=0.339, p<0.05, respectively). Job control had inverse significant weak correlations with psychological distress and PTSS (R= –0.148 and R= -0.249, p<0.05, respectively). It has been found, that in the sample of teachers social support had inverse significant moderate correlations with psychological distress and PTSS (R= -0.342 and R= -0.42, p<0.05, respectively). Job strain had direct significant moderate correlations with psychological distress and PTSS (R=0.348 and R=0.404, p<0.05, respectively).

In the sample of waiters the results of analysis showed, that age had direct significant weak correlations with psychological distress and PTSS (R=0.181 and R=0.17, p<0.05, respectively). Negative acts had direct significant moderate correlations with psychological distress and PTSS (R=0.278 and R=0.384, p<0.05, respectively). In this occupational group job demands had direct significant moderate correlations with psychological distress and PTSS (R=0.282 and R=0.237, p<0.05, respectively). It has been observed, that job control had inverse significant moderate correlations with psychological distress and PTSS (R= -0.308 and R= -0.232, p<0.05, respectively). Social support had inverse significant weak correlations with psychological distress and PTSS (R= -0.215 and R= -0.199, p<0.05, respectively. Job strain had direct significant moderate correlations with psychological distress and PTSS (R=0.393 and R=0.327, p<0.05, respectively).

4.2.2. Associations between psychosocial work factors, psychological distress and pain of neck and shoulders in the investigated occupational groups

In this paragraph, the SEM (Path analysis) models showing the associations between psychosocial work factors, such as job demands, job control, also their interaction known as job strain, social support, negative acts at work, psychological distress and pain in neck and shoulders in the samples of family physicians, nurses, teachers and waiters are represented. The models also include one socio-demographic variable – age. As females mainly comprised the investigated samples, the gender was not included. The seafarers and police officers did not complete Job content questionnaire, hence the analysis could not be conducted in those two samples. In the diagrams only significant relation, marked by single-headed arrows and the standardized estimates are shown. Insignificant relations are not represented to avoid busy figures. The full results of the analysis are provided in the Supplement 3, *tables 5-8*. Indirect effects between aforementioned variables are presented in the tables separately.

Fig. 4.2.2.1 represents the path analysis model demonstrating the relations between psychosocial work factors, age, psychological distress and pain in neck and shoulders in a sample of ***family physicians***. The R-squared for pain of neck and shoulders is 0.16 and for psychological distress – 0.18, which means that this model can explain 16.0% of pain and 18.0% of psychological distress reported by family physicians. The analysis showed that younger respondents reported higher job demands (SE: -0.23, p<0.001) and more negative acts experienced at work (SE: -0.1, p<0.05). It had been also revealed that high job demands had positive association with pain of

neck and shoulders (SE: 0.18, p<0.05), psychological distress (SE: 0.24, p<0.05) and greater exposure to negative acts (SE: 0.24, p<0.001). Higher social support at work was negatively related to the experience of negative acts (SE: -0.45, p<0.001). Exposure to negative acts had significant positive association with psychological distress (SE: 0.22, p>0.05), which in turn had a positive relation with the pain of neck and shoulders (SE: 0.21, p<0.05).

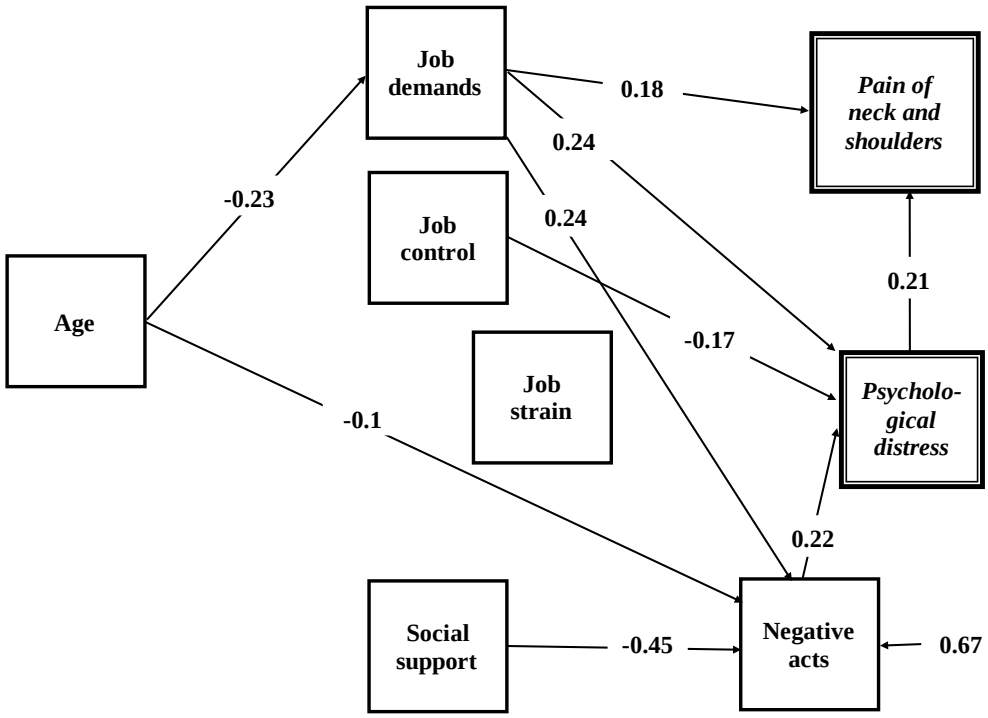


Fig. 4.2.2.1. *Model representing direct associations between psychosocial work factors, psychological distress and pain of neck and shoulders in a sample of family physicians*

The analysis of indirect effects between the variables in the sample of ***family physicians*** presented in *Table 4.2.2.1.* revealed significant indirect paths between high job demands and psychological distress, which in turn was associated with pain in neck and shoulders (SE: 0.05, 95% CI: 0.005–0.143). The other identified significant indirect path between job demands and pain in neck and shoulders was mediated by psychological distress and

experienced negative acts (SE: 0.086, 95% CI: 0.001–0.038). Total indirect effect of three indirect paths between job demands and pain in neck and shoulders through negative acts and psychological distress was significant (SE: 0.086, 95% CI: 0.014–0.203). In addition, inverse indirect paths mediated by psychological distress were found between job control and pain in neck and shoulders (SE: -0.037, 95% CI: -0.116 – -0.001) and social support and pain in neck and shoulders (SE: -0.021, 95% CI: -0.024 – -0.001).

Table 4.2.2.1. *Indirect effects between psychosocial work factors, psychological distress and pain of neck and shoulders in a sample of family physicians*

Indirect effects	Estimate	Standardized estimate	Indirect effect CI	
			Lower 2.5%	Upper 2.5%
Job demands → PD → PNSh	**0.054**	**0.05**	**0.005**	**0.143**
Job demands → NA → PNSh	0.028	0.025	-0.02	0.078
Job demands → NA → PD → PNSh	**0.012**	**0.011**	**0.001**	**0.038**
Total indirect effect	***0.094***	***0.086***	***0.014***	***0.203***
Job control → PD → PNSh	**-0.04**	**-0.037**	**-0.116**	**-0.001**
Job control → NA → PNSh	0.003	-0.003	-0.006	0.033
Job control → NA → PD → PNSh	0.002	0.001	-0.003	0.013
Total indirect effect	*-0.035*	*-0.032*	*-0.213*	*0.012*
Job strain → PD → PNSh	0.007	0.006	-0.025	0.054
Job strain → NA → PNSh	0.001	0.001	-0.013	0.021
Job strain → NA → PD → PNSh	0.0	0.0	-0.006	0.008
Total indirect effect	*0.008*	*0.007*	*-0.032*	*0.055*
Social support → PD → PNSh	0.006	0.016	-0.006	0.031
Social support → NA → PNSh	-0.018	-0.048	-0.051	0.015
Social support → NA → PD → PNSh	**-0.008**	**-0.021**	**-0.024**	**-0.001**
Total indirect effect	*-0.02*	*-0.054*	*-0.055*	*0.015*

NA – negative acts; PD – psychological distress; PNSh – pain of neck and shoulders;
CI – 95% confidence interval; in Bold – significantly.

The relations between psychosocial work factors, psychological distress and pain in neck and shoulders in a sample of ***nurses*** are shown in the path analysis diagram below (*Fig. 4.2.2.2.*). The R-squared for psychological distress is 0.32 and for pain in neck and shoulders – 0.12, that is to say

32.0% of psychological distress and 12% of pain reported by nurses can be explained by the variables included in this path model. High job demands and suffering from psychological distress were positively and significantly related with pain of neck and shoulders, standardized estimates were 0.16 ($p<0.05$) and 0.22 ($p<0.05$), respectively. The path analysis results showed that younger age was significantly associated with high job demands, job strain, occurrence of negative acts, the standardized estimates were -0.08 ($p<0.05$); -0.13 ($p<0.001$) and -0.08 ($p<0.05$), respectively. Elder nurses reported higher social support (SE: 0.17, $p<0.001$). High job demands were significantly positively associated with being exposed to negative acts at work (SE: 0.36, $p<0.001$) and suffering from psychological distress (SE: 0.25, $p<0.001$). Low job control and low social support were significantly related to negative acts, -0.25 ($p<0.001$) and -0.29 ($p<0.001$), respectively. Low job support (SE: -0.32, $p<0.001$) and experiencing negative acts (SE: 0.16, $p<0.05$) were found for be positively related to suffering from psychological distress.

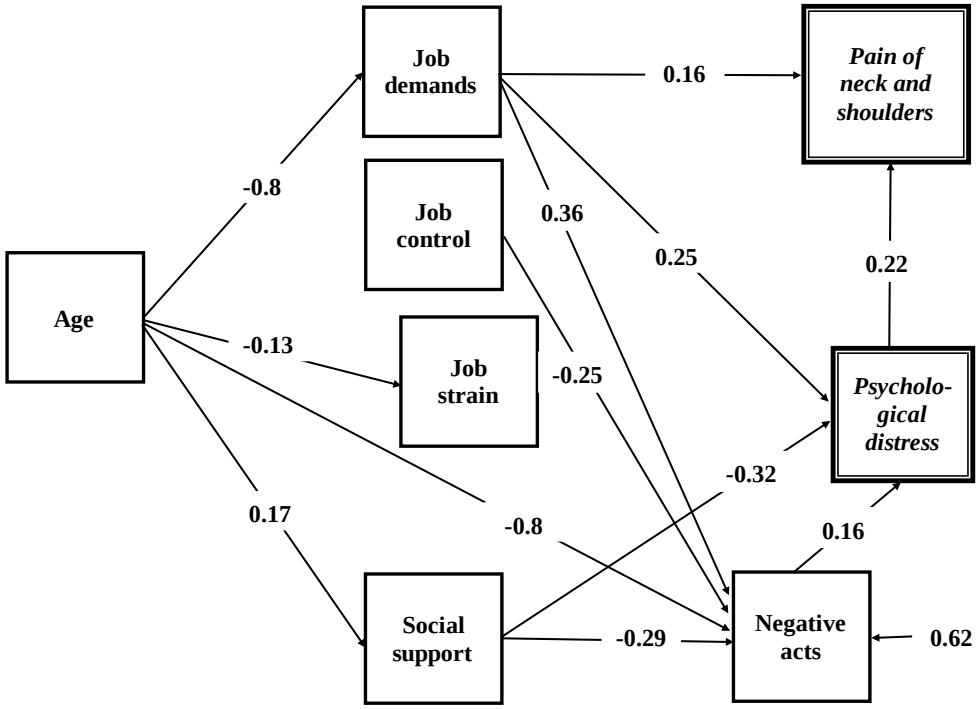


Fig. 4.2.2.2. *Model representing direct associations between psychosocial work factors, psychological distress and pain of neck and shoulders in a sample of nurses*

The analysis of indirect effects between the variables in the sample of ***nurses*** presented in *Table 4.2.2.2.* revealed significant indirect paths between high job demands and psychological distress, which in turn was associated with pain in neck and shoulders (SE: 0.056, 95% CI: 0.015–0.129). The other identified significant indirect path between job demands and pain in neck and shoulders was mediated by psychological distress and experienced negative acts (SE: 0.014, 95% CI: 0.002–0.038). Total indirect effect of three indirect paths between job demands and pain in neck and shoulders through negative acts and psychological distress was significant (SE: 0.082, 95% CI: 0.02–0.163). An inverse indirect paths mediated by psychological distress was found between job control and pain in neck and shoulders (SE: -0.009, 95% CI: -0.028 – -0.001). The investigation of

Table 4.2.2.2. *Indirect effects between psychosocial work factors, psychological distress and pain of neck and shoulders in a sample of nurses*

Indirect effects				Estimate	Standardized estimate	Indirect effect CI	
						Lower 2.5%	Upper 2.5%
Job demands	→ PD →	PNSh		**0.06**	**0.056**	**0.015**	**0.129**
Job demands	→ NA →	PNSh		0.014	0.013	-0.033	0.063
Job demands	→ NA →	PD →	PNSh	**0.014**	**0.013**	**0.002**	**0.038**
Total indirect effect				***0.087***	***0.082***	***0.02***	***0.163***
Job control	→ PD →	PNSh		0.012	0.011	-0.008	0.05
Job control	→ NA →	PNSh		-0.009	-0.009	-0.045	0.023
Job control	→ NA →	PD →	PNSh	**-0.01**	**-0.009**	**-0.028**	**-0.001**
Total indirect effect				*-0.008*	*-0.007*	*-0.044*	*0.03*
Job strain	→ PD →	PNSh		-0.011	-0.012	-0.042	0.003
Job strain	→ NA →	PNSh		0.0	0.0	-0.007	0.002
Job strain	→ NA →	PD →	PNSh	0.0	0.0	-0.004	0.001
Total indirect effect				*-0.012*	*-0.012*	*-0.044*	*0.004*
Social support	→ PD →	PNSh		**-0.032**	**-0.07**	**-0.062**	**-0.007**
Social support	→ NA →	PNSh		-0.005	-0.01	-0.021	0.012
Social support	→ NA →	PD →	PNSh	**-0.005**	**-0.011**	**-0.014**	**-0.001**
Total indirect effect				***-0.041***	***-0.091***	***-0.075***	***-0.01***

NA – negative acts; PD – psychological distress; PNSh – pain of neck and shoulders;
CI – 95% confidence interval; in Bold – significantly.

effects between social support and pain in neck and shoulders revealed two significant inverse relations – one mediated by psychological distress (SE: 0.07, 95% CI: -0.062 – -0.007), the other – mediated by experienced negative acts and psychological distress (SE: -0.011, 95% CI: -0.014 – -0.001). Total indirect effect of three indirect paths between social support and pain in neck and shoulders through negative acts and psychological distress was significant (SE: -0.091, 95% CI: -0.075 – -0.01).

The relations between psychosocial work factors and psychological distress in a sample of ***teachers*** are shown in the path analysis diagram below (*Fig. 4.2.2.3.*). The R-square for psychological distress is 0.24 and for pain in neck and shoulders – 0.14, that is to say 24.0% of psychological distress and 14.0% of pain reported by teachers can be explained by the variables included in this path model. The results of the model revealed that respondents who reported high job demands suffered more from pain in neck and shoulders (SE: 0.19, $p<0.05$), psychological distress (SE: 0.32, $p<0.001$) and were exposed to more negative acts (SE: 0.22, $p<0.001$). Higher job strain

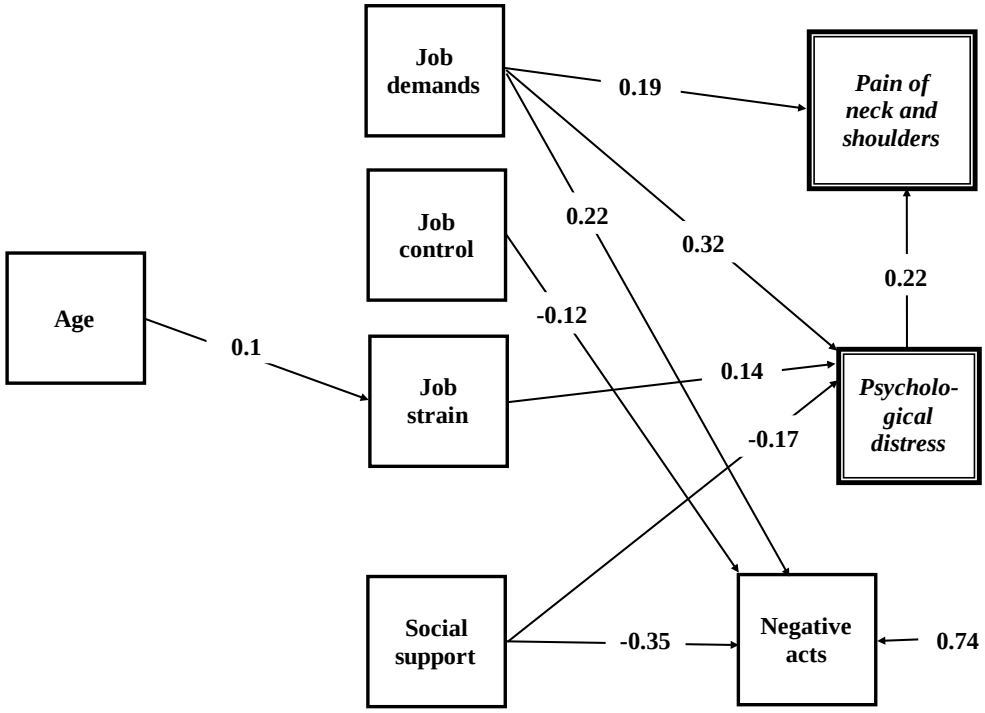


Fig. 4.2.2.3. *Model representing direct associations between psychosocial work factors, psychological distress and pain of neck and shoulders in a sample of teachers*

and lower social support were related to suffering from psychological distress, standardized estimates were 0.14 ($p<0.05$) and -0.17 ($p<0.05$), respecttively. There was no significant relation detected between exposure to negative acts and psychological distress. Psychological distress was however positively and significantly related to suffering from pain of neck and shoulders (SE: 0.22, $p<0.05$).

Table 4.2.2.3. presents the analysis of indirect effects between the variables in the sample of ***teachers***. It has been found that the indirect paths from higher were significant (SE: 0.072, 95% CI: 0.01–0.177 and SE: 0.03, 95% CI: 0.002–0.093, respectively). In addition, the significant indirect effect of lower social support to suffering from pain in neck and shoulders through psychological distress has been identified (SE: -0.018, 95% CI: -0.046 – -0.002).

Table 4.2.2.3. *Indirect effects between psychosocial work factors, psychological distress and pain of neck and shoulders in a sample of teachers*

Indirect effects				Estimate	Standardized estimate	Indirect effect CI	
						Lower 2.5%	Upper 2.5%
Job demands	→ PD →	PNSh		**0.077**	**0.072**	**0.01**	**0.177**
Job demands	→ NA →	PNSh		0.026	0.024	-0.006	0.067
Job demands	→ NA →	PD →	PNSh	0.005	0.005	-0.001	0.02
Total indirect effect				***0.109***	***0.101***	***0.033***	***0.208***
Job control	→ PD →	PNSh		-0.007	-0.006	-0.054	0.022
Job control	→ NA →	PNSh		-0.013	-0.012	-0.046	0.001
Job control	→ NA →	PD →	PNSh	-0.003	-0.003	-0.014	0.0
Total indirect effect				*-0.023*	*-0.021*	*-0.077*	*0.013*
Job strain	→ PD →	PNSh		**0.03**	**0.031**	**0.002**	**0.093**
Job strain	→ NA →	PNSh		-0.002	-0.003	-0.023	0.009
Job strain	→ NA →	PD →	PNSh	-0.001	-0.001	-0.006	0.001
Total indirect effect				*0.027*	*0.028*	*-0.007*	*0.087*
Social support	→ PD →	PNSh		**-0.018**	**-0.038**	**-0.046**	**-0.002**
Social support	→ NA →	PNSh		-0.017	-0.037	-0.041	0.004
Social support	→ NA →	PD →	PNSh	-0.004	-0.008	-0.012	0.0
Total indirect effect				***-0.038***	***-0.083***	***-0.071***	***-0.012***

NA – negative acts; PD – psychological distress; PNSh – pain of neck and shoulders;
CI – 95% confidence interval; in Bold – significantly.

Fig. 4.2.2.4. represents the path analysis model demonstrating the relations between psychosocial work factors, psychological distress and pain in neck and shoulders in a sample of ***waiters***. The R-squared for psychological distress is 0.29. The analysis however did not reveal significant relations between pain in neck and shoulder and other variables included in the model. In this model it can be seen that elder age was associated with high job demands (SE: 0.28, $p<0.05$), low job control (SE: -0.18, $p<0.05$) and low social support (SE: -0.31, $p<0.001$). High job demands and low social support had significant positive association with the occurrence of negative acts at work, standardized estimates are 0.23 ($p<0.001$) and -0.45 ($p<0.001$), which in turn increased the risk for suffering psychological distress (SE: 0.33, $p<0.05$). High control over work had reverse relation with psychological distress (SE: -0.34, $p<0.001$).

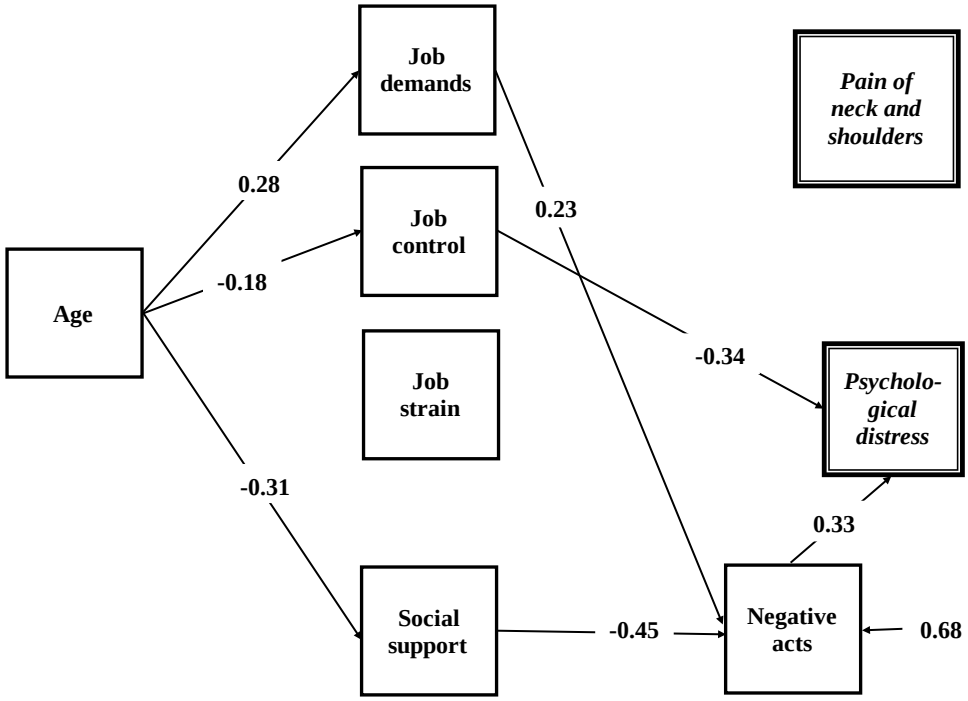


Fig. 4.2.2.4. *Model representing direct associations between psychosocial work factors, psychological distress and pain of neck and shoulders in a sample of waiters*

The analysis of indirect paths between the investigated variables in the sample of waiters did not reveal significant indirect effects. The results of the analysis are shown in *Table 4.2.2.4.*

Table 4.2.2.4. *Indirect effects between psychosocial work factors, psychological distress and pain of neck and shoulders in a sample of waiters*

Indirect effects				Estimate	Standardized estimate	Indirect effect CI	
						Lower 2.5%	Upper 2.5%
Job demands	→ PD →	PNSh		0.004	0.004	-0.047	0.141
Job demands	→ NA →	PNSh		-0.006	-0.006	-0.116	0.095
Job demands	→ NA →	PD →	PNSh	0.003	0.003	-0.033	0.063
Total indirect effect				*0.001*	*0.001*	*-0.13*	*0.161*
Job control	→ PD →	PNSh		-0.014	-0.014	-0.215	0.164
Job control	→ NA →	PNSh		-0.001	-0.001	-0.051	0.023
Job control	→ NA →	PD →	PNSh	0.0	0.0	-0.009	0.026
Total indirect effect				*-0.015*	*-0.014*	*-0.223*	*0.157*
Job strain	→ PD →	PNSh		-0.001	-0.001	-0.084	0.05
Job strain	→ NA →	PNSh		0.001	0.001	-0.027	0.055
Job strain	→ NA →	PD →	PNSh	0.0	0.0	-0.026	0.01
Total indirect effect				*-0.001*	*-0.001*	*-0.076*	*0.071*
Social support	→ PD →	PNSh		0.003	0.007	-0.031	0.052
Social support	→ NA →	PNSh		0.004	0.012	-0.066	0.064
Social support	→ NA →	PD →	PNSh	-0.002	-0.006	-0.035	0.027
Total indirect effect				*0.005*	*0.013*	*-0.072*	*0.071*

NA – negative acts; PD – psychological distress; PNSh – pain of neck and shoulders; CI – 95% confidence interval.

4.2.3. Associations between psychosocial work factors, post-traumatic stress symptoms and pain in neck and shoulders in the investigated occupational groups

This paragraph represents the SEM (Path analysis) models showing the associations between psychosocial work factors, such as job demands, job control, also their interaction known as job strain, social support, negative acts at work, PTSS and pain in neck and shoulders in the samples of family

physicians, nurses, teachers and waiters. The models also include one socio-demographic variable – age. As females mainly comprise the investigated samples, the gender was not included. The seafarers and police officers did not complete Job content questionnaire, hence the analysis could not be conducted in those two samples. In the diagrams only significant relations, marked by single-headed arrows and the standardized regression coefficients are shown. Insignificant relations are not represented to avoid busy figures. The full results of the analysis are provided in the Supplement 3 (*Tables 9-12).* Indirect effects between aforementioned variables are presented in the tables separately.

Fig. 4.2.3.1. represents the path analysis model demonstrating the relations between psychosocial work factors and PTSS in a sample of ***family physicians***. The R-squared for PTSS is 0.31 and for pain in neck and shoulders – 0.14%, which means that this model can explain 31.0% of PTSS cases and 14.0% of pain reported by respondents. It had been determined that younger family physicians had higher job demands (SE: -0.23, $p<0.001$) and experienced more negative acts (SE: -0.1, $p<0.05$). High job demands

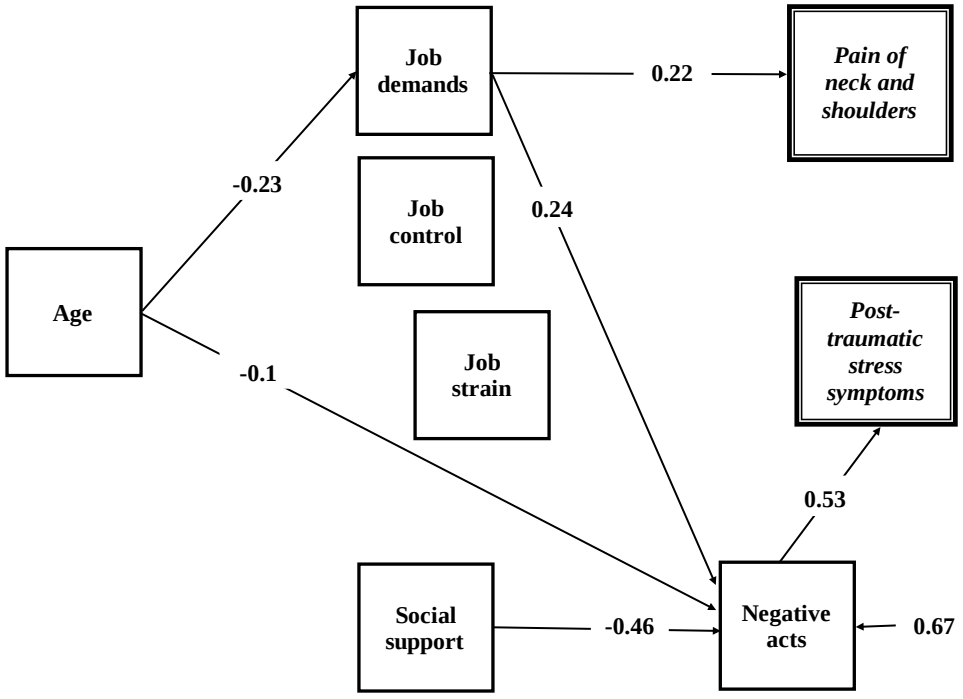


Fig. 4.2.3.1. *Model representing direct associations between psychosocial work factors, post-traumatic stress symptoms and pain of neck and shoulders in a sample of family physicians*

and low social support were positively associated with the occurrence of negative, standardized estimates were 0.24 (p<0.001) and -0.46 (p<0001), respectively. High job demands were also positively and significantly associated with pain of neck and shoulders (SE: 0.22, p<0.05). Experiencing negative acts was significantly associated with the risk to suffer from PTSS (SE: 0.53, p<0.001). There was however, no significant relation between PTSS and pain of neck and shoulders detected.

The analysis of indirect effects between the variables in the sample of family physicians presented in *Table 4.2.3.1.* did not reveal any significant indirect paths between psychosocial work factors and pain of neck and shoulders.

Table 4.2.3.1. *Indirect effects between psychosocial work factors, post-traumatic stress symptoms and pain of neck and shoulders in a sample of family physicians*

Indirect effects				Estimate	Standardized estimate	Indirect effect CI	
						Lower 2.5%	Upper 2.5%
Job demands	→PTSS→	PNSh		0.013	0.012	-0.018	0.122
Job demands	→NA →	PNSh		0.018	0.017	-0.054	0.084
Job demands	→NA →	PTSS→	PNSh	0.021	0.019	-0.018	0.08
Total indirect effect				*0.052*	*0.048*	*-0.009*	*0.143*
Job control	→PTSS→	PNSh		-0.011	-0.011	-0.09	0.013
Job control	→NA →	PNSh		0.003	0.002	-0.008	0.034
Job control	→NA →	PTSS→	PNSh	0.003	0.003	-0.005	0.036
Total indirect effect				*-0.006*	*-0.006*	*-0.075*	*0.03*
Job strain	→PTSS→	PNSh		0.01	0.009	-0.017	0.098
Job strain	→NA →	PNSh		0.0	0.0	-0.013	0.021
Job strain	→NA →	PTSS→	PNSh	0.001	0.0	-0.01	0.021
Total indirect effect				*0.011*	*0.01*	*-0.026*	*0.088*
Social support	→PTSS→	PNSh		0.003	0.008	-0.005	0.032
Social support	→NA →	PNSh		-0.012	-0.033	-0.055	0.035
Social support	→NA →	PTSS→	PNSh	-0.014	-0.038	-0.05	0.012
Total indirect effect				*-0.023*	*-0.062*	*-0.06*	*0.012*

NA – negative acts; PTSS – post-traumatic stress symptoms;
PNSh – pain of neck and shoulders; CI – 95% confidence interval.

Further investigation of indirect paths detected significant positive relation between job demands and PTSS (SE: 0.123, 95% CI: 0.068–0.268) and inverse association between social support and PTSS (SE: -0.24, 95% CI: -0.16 – -0.53). The results are provided in *Table 4.2.3.2.*

Table 4.2.3.2. *Indirect effects between psychosocial work factors and post-traumatic stress symptoms mediated by negative acts in a sample of family physicians*

Indirect effects			Estimate	Standardized estimate	Indirect effect CI	
					Lower 2.5%	Upper 2.5%
Job demands	→NA →	PTSS	**0.148**	**0.123**	**0.068**	**0.268**
Job control	→NA →	PTSS	0.021	0.017	-0.044	0.096
Job strain	→NA →	PTSS	0.004	0.003	-0.068	0.07
Social support	→NA →	PTSS	**-0.1**	**-0.24**	**-0.16**	**-0.53**
NA	→PTSS→	PNSh	0.096	0.083	-0.089	0.333

NA – negative acts; PTSS – post-traumatic stress symptoms;
PNSh – pain of neck and shoulders;
CI – 95% confidence interval;
In Bold – significantly.

Fig. 4.2.3.2. represents the path analysis model demonstrating the relations between psychosocial work factors and PTSS in a sample of ***nurses***. The model explains 35.0% of PTSS (R-squared 0.35) and 12.0% of pain in neck and shoulders reported by nurses (R-squared 0.12). The analysis revealed that younger age was significantly associated with higher job demands (-0.08, $p<0.05$), higher job strain (-0.13, $p<0.001$), higher exposure to negative acts (-0.08, $p<0.05$) and lower social support (0.17, $p<0.001$). Higher job demands, lower job control and lower social support were significantly related with the occurrence of negative acts, standardized estimates 0.36 ($p<0.001$), -0.25 ($p<0.001$) and -0.29 ($p<0.001$), respectively. High job demands were also positively related to suffering from PTSS (SE: 0.2, $p<0.05$) and pain of neck and shoulders (SE: 0.25, $p<0.001$). Surprisingly, high job control had a positive association with suffering from PTSS (SE: 0.12, $p<0.05$). Being exposed to negative acts at work was positively related with PTSS (SE: 0.47, $p<0.001$) and pain of neck and shoulders (SE: 0.18, $p<0.05$). Again, surprisingly, PTSS had a negative and significant relation with pain of neck and shoulders (-0.22, $p<0.05$).

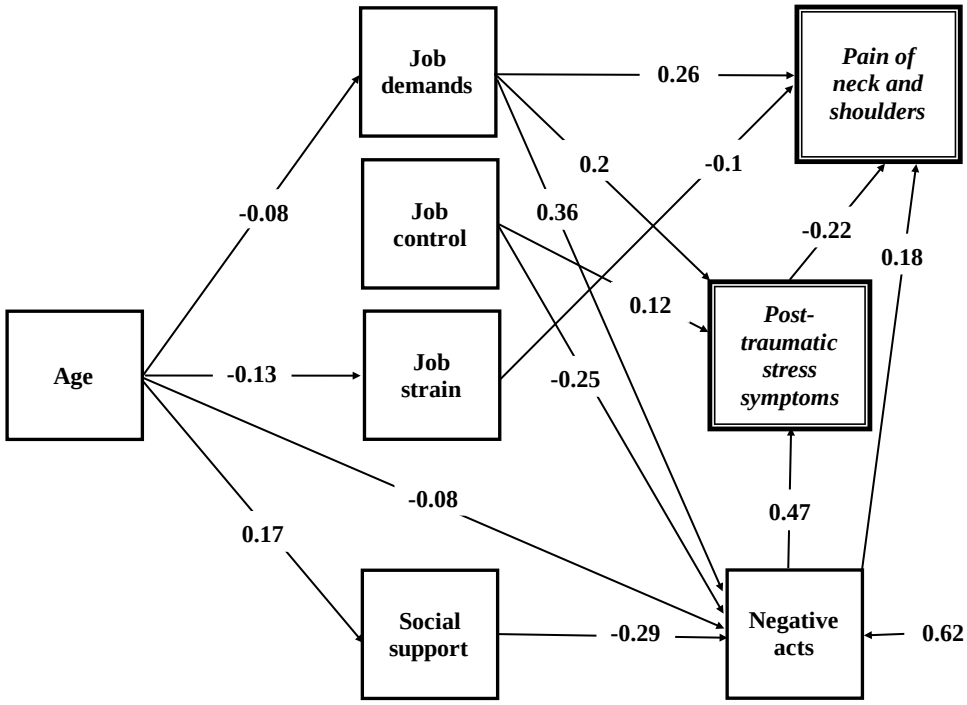


Fig. 4.2.3.2. *Model representing the associations between psychosocial work factors, post-traumatic stress symptoms and pain of neck and shoulders in a sample of nurses*

The results of indirect effects analysis between the variables in the sample of ***nurses*** are presented in *Table 4.2.3.3.* The contrary indirect paths were observed between job demands and pain in neck and shoulders. When mediated by PTSS, job demands had inverse association with pain in neck and shoulders (SE: -0.042, 95% CI: -0.146 – -0.001), while the mediation by experienced negative acts caused positive relation (SE: 0.063, 95% CI: 0.008–0.141). Similarly, two different indirect effects were observed between job control and pain in neck and shoulders, where medition by experienced negative acts caused inverse relation (SE: -0.044, 95% CI: -0.102 – -0.006) and involvement of PTSS in addition to negative acts, entailed positive association (SE: 0.025, 95% CI: 0.001–0.064). Social support, mediated by negative acts, had inverse association with pain in neck and shoulders (SE: -0.051, 95% CI: -0.05 – -0.003).

Table 4.2.3.3. *Indirect effects between psychosocial work factors, post-traumatic stress symptoms and pain in neck and shoulders in a sample of nurses*

Indirect effects				Estimate	Standardized estimate	Indirect effect CI	
						Lower 2.5%	Upper 2.5%
Job demands	→PTSS→	PNSh		**-0.045**	**-0.042**	**-0.146**	**-0.001**
Job demands	→NA →	PNSh		**0.067**	**0.063**	**0.008**	**0.141**
Job demands	→NA →	PTSS→	PNSh	-0.039	-0.037	-0.091	-0.002
Total indirect effect				*-0.017*	*-0.016*	*-0.129*	*0.057*
Job control	→PTSS→	PNSh		-0.027	-0.025	-0.089	0.0
Job control	→NA →	PNSh		**-0.047**	**-0.044**	**-0.102**	**-0.006**
Job control	→NA →	PTSS→	PNSh	**0.027**	**0.025**	**0.001**	**0.064**
Total indirect effect				***-0.47***	***-0.044***	***-0.118***	***-0.003***
Job strain	→PTSS→	PNSh		0.02	0.021	-0.001	0.071
Job strain	→NA →	PNSh		-0.002	-0.002	-0.015	0.006
Job strain	→NA →	PTSS→	PNSh	0.001	0.001	-0.003	0.01
Total indirect effect				*0.019*	*0.021*	*-0.003*	*0.072*
Social support	→PTSS→	PNSh		0.004	0.009	-0.007	0.027
Social support	→NA →	PNSh		**-0.023**	**-0.051**	**-0.05**	**-0.003**
Social support	→NA →	PTSS→	PNSh	0.013	0.029	0.001	0.032
Total indirect effect				*-0.005*	*-0.012*	*-0.028*	*0.02*

NA – negative acts; PTSS – post-traumatic stress symptoms;
PNSh – pain of neck and shoulders; CI – 95% confidence interval; in Bold – significantly.

The results of investigation of indirect effects between psychosocial job characteristics and PTSS are shown in *Table 4.2.3.4*. Job demands, mediated by negative acts, were positively associated with PTSS (SE: 0.168. 95% CI: 0.138–0.294), while job control and social support with PTSS had inverse relations – SE: -0.117, 95% CI: -0.217 – -0.09; and -0.135, 95% CI: -0.108 – -0.044, respectively.

Table 4.2.3.4. *Indirect effects between psychosocial work factors and post-traumatic stress symptoms mediated by negative acts in a sample of nurses*

Indirect effects			Estimate	Standardized estimate	Indirect effect CI	
					Lower 2.5%	Upper 2.5%
Job demands	→NA →	PTSS	**0.209**	**0.168**	**0.138**	**0.294**
Job control	→NA →	PTSS	**-0.145**	**-0.117**	**-0.217**	**-0.09**
Job strain	→NA →	PTSS	-0.006	-0.06	-0.034	0.02
Social support	→NA →	PTSS	**-0.071**	**-0.135**	**-0.108**	**-0.044**
NA	→PTSS→	PNSh	**-0.105**	**-0.101**	**-0.239**	**-0.005**

NA – negative acts; PTSS – post-traumatic stress symptoms;
PNSh – pain of neck and shoulders; CI – 95% confidence interval; in Bold – significantly.

The path analysis model demonstrating the associations between psychosocial work factors and PTSS in a sample of ***teachers*** is demonstrated in *Fig. 4.2.3.3.* This model explains 31.0% of PTSS reported by teachers (R-squared 0.31) and 21.0% of reported pain of neck and shoulders (R-squared 0.21). High job demands and suffering from PTSS were positively and significantly related with reported pain of neck and shoulders, standardized estimates were 0.16 ($p<0.05$) and 0.4 ($p<0.001$), respectively. It has been detected that high job demands, low job control and low social support were associated with occurrence of negative acts, standardized estimates were 0.23 ($p<0.001$), -0.12 ($p<0.05$) and -0.34 ($p<0.001$), respectively. There was no significant association between negative acts and PTSS detected. PTSS was however related with high job demands (SE: 0.24, $p<0.05$), low job control (SE: -0.18, $p<0.05$) and low social support (SE: -0.2, $p<0.05$).

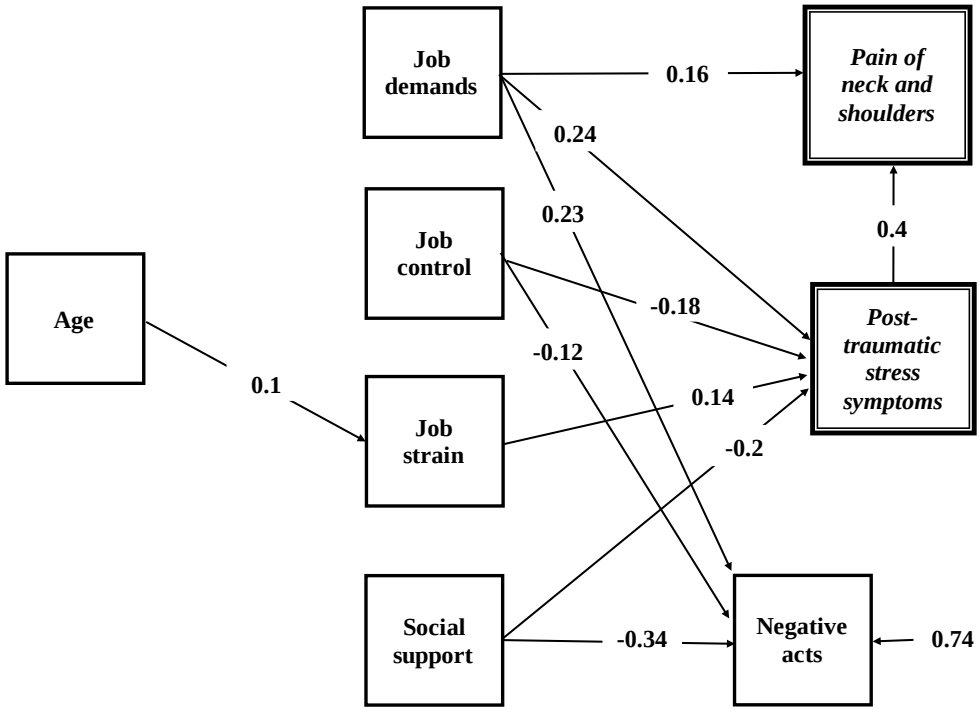


Fig. 4.2.3.3. *Model representing the associations between psychosocial work factors, post-traumatic stress symptoms and pain of neck and shoulders in a sample of teachers*

The investigation of indirect effects between the variables, shown in *Table 4.2.3.5.*, detected positive indirect path from job demands to pain in neck and shoulders (SE: 0.096, 95% CI: 0.015–0.322) and indirect paths between job control and pain (SE: -0.072, 95% CI: -0.207 – -0.016) and social support and pain (SE: -0.081, 95% CI: -0.093 – -0.007). All aforementioned paths were mediated by PTSS.

Table 4.2.3.5. *Indirect effects between psychosocial work factors, post-traumatic stress symptoms and pain in neck and shoulders in a sample of teachers*

Indirect effects				Estimate	Standardized estimate	Indirect effect CI	
						Lower 2.5%	Upper 2.5%
Job demands	→PTSS→	PNSh		**0.108**	**0.096**	**0.015**	**0.322**
Job demands	→NA →	PNSh		0.022	0.02	-0.012	0.065
Job demands	→NA →	PTSS→	PNSh	0.012	0.01	-0.005	0.044
Total indirect effect				***0.142***	***0.126***	***0.043***	***0.347***
Job control	→PTSS→	PNSh		**-0.081**	**-0.072**	**-0.207**	**-0.016**
Job control	→NA →	PNSh		-0.011	-0.01	-0.046	0.003
Job control	→NA →	PTSS→	PNSh	-0.006	-0.005	-0.03	0.001
Total indirect effect				***-0.098***	***-0.088***	***-0.228***	***-0.03***
Job strain	→PTSS→	PNSh		0.057	0.056	-0.01	0.224
Job strain	→NA →	PNSh		-0.002	-0.002	-0.024	0.006
Job strain	→NA →	PTSS→	PNSh	-0.001	-0.001	-0.015	0.003
Total indirect effect				*0.054*	*0.053*	*-0.014*	*0.217*
Social support	→PTSS→	PNSh		**-0.039**	**-0.081**	**-0.093**	**-0.007**
Social support	→NA →	PNSh		-0.014	-0.03	-0.04	0.009
Social support	→NA →	PTSS→	PNSh	-0.008	-0.016	-0.029	0.003
Total indirect effect				***-0.06***	***-0.126***	***-0.118***	***-0.021***

NA – negative acts; PTSS – post-traumatic stress symptoms;
PNSh – pain of neck and shoulders; CI – 95% confidence interval; in Bold – significantly.

The research of indirect paths between psychosocial work characteristics and PTSS mediated by experienced negative acts did not reveal any significant results as presented in *Table 4.2.3.6.*

Table 4.2.3.6. *Indirect effects between psychosocial work factors and post-traumatic stress symptoms mediated by negative acts in a sample of teachers*

Indirect effects			Estimate	Standardized estimate	Indirect effect CI	
					Lower 2.5%	Upper 2.5%
Job demands	→NA →	PTSS	0.031	0.026	-0.015	0.093
Job control	→NA →	PTSS	-0.016	-0.013	-0.061	0.003
Job strain	→NA →	PTSS	-0.003	-0.003	-0.033	0.01
Social support	→NA →	PTSS	-0.02	-0.039	-0.059	0.01
NA	→PTSS→	PNSh	0.05	0.046	-0.023	0.168

NA – negative acts; PTSS – post-traumatic stress symptoms; PNSh – pain of neck and shoulders; CI – 95% confidence interval.

Fig. 4.2.3.4. represents the path analysis model demonstrating the relations between psychosocial work factors and PTSS in a sample of ***waiters***. The R-squared for PTSS is 0.58, which means that 58.0% of PTSS reported by waiters could be explained by this model. It has been detected that younger age was significantly associated with higher job control (SE: -0.18, $p<0.05$) and higher social support (SE: -0.31, $p<0.001$). Elder waiters reported higher job demands (SE: 0.28, $p<0.05$) and more cases of PTSS (SE: 0.27, $p<0.05$). High job demands and low social support were significantly associated with the occurrence of negative acts, the standardized estimates are 0.23 ($p<0.05$) and -0.45 ($p<0.001$), respectively. The reported exposure to negative acts had significant relation with PTSS (SE: 0.73, $p<0.001$). Moreover higher social support was inversely associated with suffering from PTSS (SE: 0.32, $p<0.05$). The analysis did not reveal significant relations between pain of neck and shoulder and other variables included into the model.

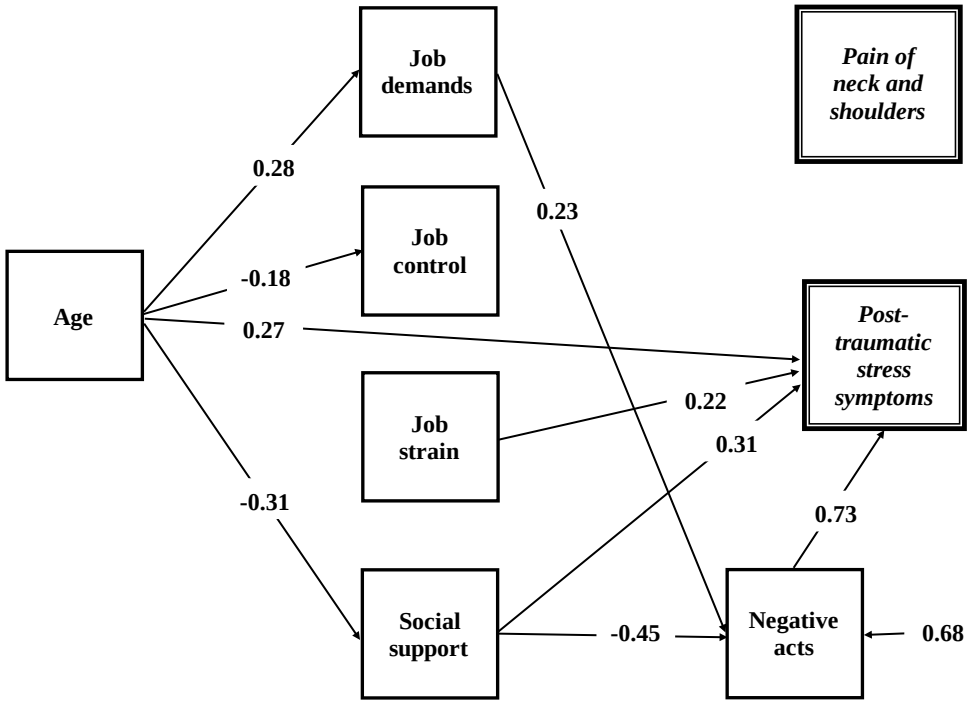


Fig. 4.2.3.4. *Model representing direct associations between psychosocial work factors, post-traumatic stress symptoms and pain of neck and shoulders in a sample of waiters*

The analysis of indirect effects between psychosocial work characteristics and pain in neck and shoulders in the sample of waiters did not reveal any significant indirect paths. The results of the analysis are presented in *Table 4.2.3.7.*

Table 4.2.3.7. *Indirect effects between psychosocial work factors, post-traumatic stress symptoms and pain in neck and shoulders in a sample of waiters*

Indirect effects				Estimate	Standardized estimate	Indirect effect CI	
						Lower 2.5%	Upper 2.5%
Job demands	→PTSS→	PNSh		0.0	0.0	-0.595	0.606
Job demands	→NA →	PNSh		-0.129	-0.111	-0.783	0.084
Job demands	→NA →	PTSS→	PNSh	0.127	0.11	-0.05	0.751
Total indirect effect				*-0.001*	*-0.001*	*-0.678*	*0.553*
Job control	→PTSS→	PNSh		-0.082	-0.07	-0.711	0.187
Job control	→NA →	PNSh		-0.016	-0.014	-0.357	0.119
Job control	→NA →	PTSS→	PNSh	0.016	0.014	-0.124	0.32
Total indirect effect				*-0.083*	*-0.071*	*-0.73*	*0.187*
Job strain	→PTSS→	PNSh		0.178	0.141	-0.154	1.153
Job strain	→NA →	PNSh		0.019	0.015	-0.08	0.464
Job strain	→NA →	PTSS→	PNSh	-0.019	-0.015	-0.418	0.081
Total indirect effect				*0.178*	*0.141*	*-0.154*	*1.155*
Social support	→PTSS→	PNSh		0.082	0.201	-0.063	0.431
Social support	→NA →	PNSh		0.087	0.215	-0.087	0.426
Social support	→NA →	PTSS→	PNSh	-0.086	-0.213	-0.428	0.059
Total indirect effect				*0.082*	*0.203*	*-0.104*	*0.43*

NA – negative acts; PTSS – post-traumatic stress symptoms;
PNSh – pain of neck and shoulders; CI – 95% confidence interval.

Further research of indirect effects between model variables presented in *Table 4.2.3.8.* detected two significant indirect paths – the positive between job demands and PTSS (SE: 0.168; 95% CI: 0.037–0.716) and the inverse path between social support and PTSS, both – mediated by experienced negative acts.

Table 4.2.3.8. *Indirect effects between psychosocial work factors and post-traumatic stress symptoms mediated by negative acts in a sample of waiters*

Indirect effects			Estimate	Standardized estimate	Indirect effect CI	
					Lower 2.5%	Upper 2.5%
Job demands	→NA →	PTSS	**0.254**	**0.168**	**0.037**	**0.716**
Job control	→NA →	PTSS	0.032	0.021	-0.195	0.303
Job strain	→NA →	PTSS	-0.038	-0.023	-0.379	0.133
Social support	→NA →	PTSS	**-0.172**	**-0.326**	**-0.395**	**-0.067**
NA	→PTSS→	PNSh	0.514	0.477	-0.355	2.488

NA – negative acts; PTSS – post-traumatic stress symptoms;
PNSh – pain of neck and shoulders; in Bold – significantly.

As there was no significant association detected between negative acts and psychological distress in a sample of teachers, the additional model that included workplace bullying as measured by a self-labelling method was constructed. In the diagrams only significant relations, marked by single-headed arrows and the standardized regression coefficients are shown. Insignificant relations are not represented to avoid busy figures. The full results of the analysis are provided in the Supplement 3, *tables 13-14.* Indirect effects between aforementioned variables are presented in the tables separately.

Fig. 4.2.3.5. represents the path analysis model demonstrating the relations between psychosocial work factors (job demands, job control (also their interaction known as job strain), social support), age, workplace bullying (self-labelling method) and psychological distress in a sample of teachers. The R-squared for the psychological distress is 0.29. The analysis showed that high job demands and low social support were positively associated with experienced workplace bullying, the standardized estimates were 0.25 ($p<0.001$) and -0.31 ($p<0.001$), respectively. The R-squared for bullying is 0.21. Experienced bullying on its turn was positively related with suffering from psychological distress (SE: 0.28, $p<0.05$). Elder teachers tended to report higher job strain (SE: 0. 1, $p<0.05$).

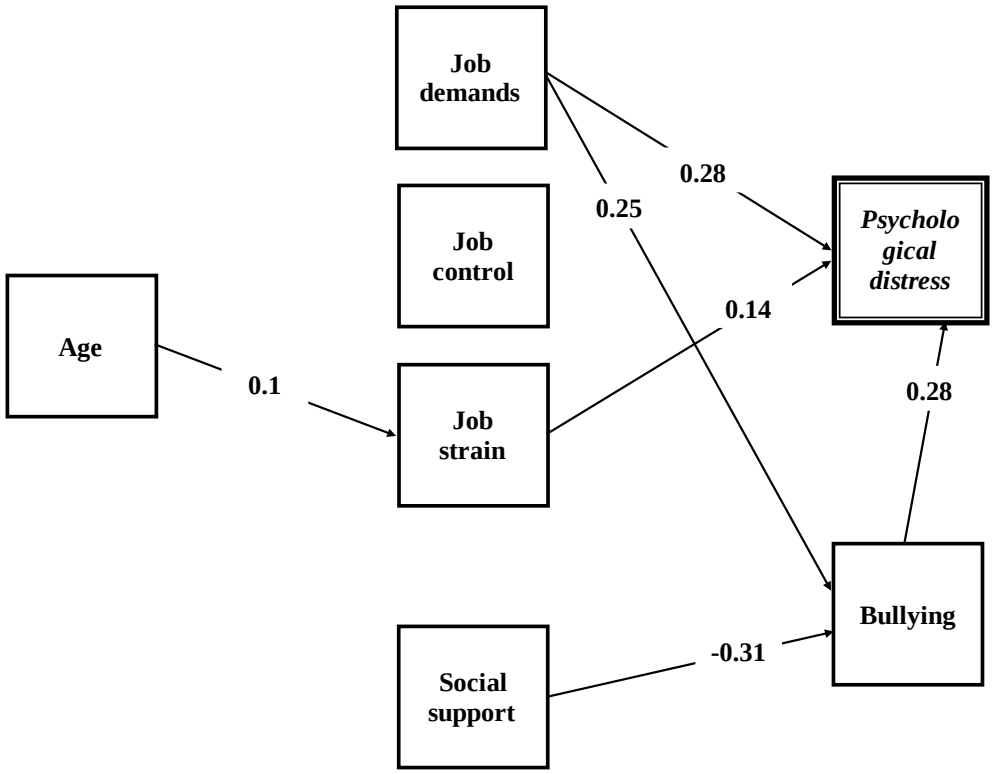


Fig. 4.2.3.5. *Model representing direct associations between psychosocial work factors (including workplace bullying as per self-labelling assessment) and psychological distress in a sample of teachers*

Table 4.2.3.9. demonstrates the results of indirect effects analysis between the variables included in the model. It has been found that job demands had positive association with psychological distress (SE: 0.068, 95% CI: 0.014–0.21) and social support – inverse relation with psychological distress (SE: -0.084; 95% CI: -0.09 – -0.011) when mediated by workplace bullying.

Table 4.2.3.9. *Indirect effects between psychosocial work factors and psychological distress mediated by workplace bullying as per self-labelling assessment in a sample of teachers*

Indirect effects			Estimate	Standardized estimate	Indirect effect CI	
					Lower 2.5%	Upper 2.5%
Job demands	→Bullying→	PD	**0.081**	**0.068**	**0.014**	**0.21**
Job control	→Bullying→	PD	-0.013	-0.011	-0.075	0.027
Job strain	→Bullying→	PD	0.0	0.0	-0.056	0.058
Social support	→Bullying→	PD	**-0.04**	**-0.084**	**-0.09**	**-0.011**

PD – psychological distress; CI – 95% confidence interval; in Bold – significantly.

Likewise, due to unidentified association between negative acts and PTSS in a sample of teachers, the additional model that included workplace bullying as measured by a self-labelling method had been constructed. *Fig. 4.2.3.6.* represents the path analysis model demonstrating the relations between psychosocial work factors (job demands, job control (also their interaction known as job strain), social support), age, workplace bullying (self-labelling method) and PTSS in a sample of teachers. The model explains 35.0% of PTSS reported by teachers (R-squared for PTSS is 0.35). The analysis shows that experienced bullying is significantly associated with PTSS (SE: 0.26, $p<0.05$). High job demands, low job control, high job strain and low social support were positively related to suffering from PTSS, the standardized estimates are 0.2 ($p<0.05$); -018 ($p<0.05$); 0.14 ($p<0.05$) and -0.16 ($p<0.05$), respectively. High job demands and low social support had positive association with being exposed to workplace bullying, the standardized estimates are 0.25 ($p<0.001$) and -0.31 ($p<0.05$), respectively. The R-squared for bullying is 0.21.

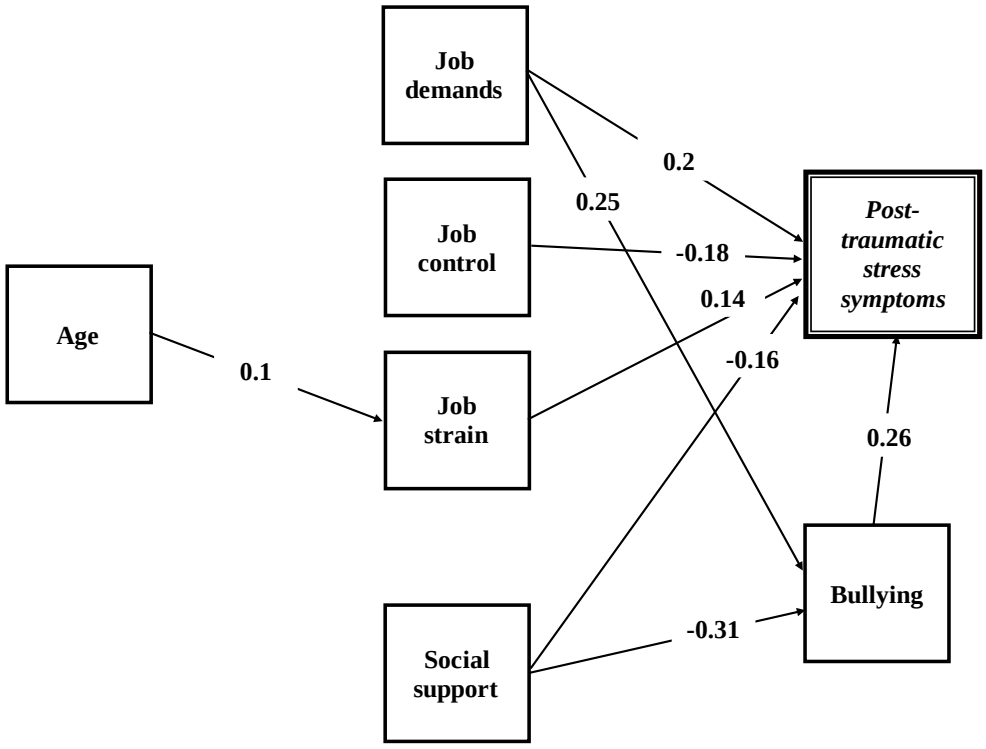


Figure 4.2.3.6. *Model representing direct associations between psychosocial work factors (including workplace bullying as per self-labelling assessment) and post-traumatic stress symptoms in a sample of teachers*

The results of indirect effects analysis between the variables included in the model are shown in *Table 4.2.3.10*. Job demands were found to have positive association with PTSS (SE: 0.065, 95% CI: 0.008–0.219) and social support – inverse relation with PTSS (SE: -0.08; 95% CI: -0.103 – -0.004) when mediated by workplace bullying.

Table 4.2.3.10. *Indirect effects between psychosocial work factors and psychological distress mediated by workplace bullying as per self-labelling assessment in a sample of teachers*

Indirect effects			Estimate	Standardized estimate	Indirect effect CI	
					Lower 2.5%	Upper 2.5%
Job demands	→Bullying→	PTSS	**0.081**	**0.065**	**0.008**	**0.219**
Job control	→Bullying→	PTSS	-0.013	-0.01	-0.085	0.027
Job strain	→Bullying→	PTSS	0.0	0.0	-0.06	0.06
Social support	→Bullying→	PTSS	**-0.043**	**-0.08**	**-0.103**	**-0.004**

PTSS – post-traumatic stress symptoms; CI – 95% confidence interval;
In Bold – significantly.

4.3. The association between psychosocial work factors and self-rated health

4.3.1. The association between psychosocial work factors (workplace bullying, job demands, job control, job support) and self-rated health at the time of surveying

Subjective health assessment due to psychosocial work factors, such as workplace bullying, assessed by self-labelling and operational methods (both – Mikkelsen&Einarsen and Leymann criterions), job demands, job control and social support in all occupational groups is shown in *Table 4.3.1.1.* It had been determined that significantly more respondents, who had labelled themselves as bullying victims, assessed their health as fair and poor in comparison with those, who had seldom or never experienced bullying, respectively 10.7%, 5.6% and 1.7% ($p<0.05$). It was also determined that the respondents who experienced negative acts at workplace (according to Mikkelsen&Einarsen and according to Leymann criterions), assessed their health as fair and poor significantly more often in comparison with those, who had not experienced negative acts at workplace, respectively 11.4% and 2.1%; 8.7% and 1.8% ($p<0.05$). While analysing the data, it was noted that high demands at work let the respondents evaluate their health as fair or poor in comparison with the respondents, who had low job demands, respectively 5.3% and 1.9% ($p<0.05$). Significantly more respondents evaluated their health as excellent or good, who had high control at work in comparison with those respondents, who had low control, respectively 49.6% and 40.1% ($p<0.05$). During investigation it was also determined that

significantly more respondents, who had reported low social support, rated their health as fair and poor, in comparison with respondents, who had high social support at work, respectively 6.7% and 0.7% ($p<0.05$).

Table 4.3.1.1. *Self-rated health frequency among all investigated occupational groups by psychosocial work factors*

	Self-rated health			**χ^2; df; p**
	Excellent or very good	**Good**	**Fair or poor**	
Bullying (self-labelling method) (N=2396)				
Severe	32.1 ♦	57.2 ♦	10.7 ♦ #	
Occasional	37.6 *	56.8 *	5.6 *	**82.66; 4; <0.001**
No	51.8	46.5	1.7	
Negative acts (operational method/Mikkelsen&Einarsen criterion) (N=2396)				
Yes	35.8 O	52.8	11.4 O	**73.46; 2; <0.001**
No	49.4	48.5	2.1	
Negative acts (operational method/Leymann criterion) (N=2396)				
Yes	38.5 O	52.8	8.7 O	**67.03; 2; <0.001**
No	50.1	48.1	1.8	
Job demands (N=1737)				
Low	52.7 ¤	45.4 ¤	1.9 ¤	**47.53; 2; <0.001**
High	37.5	57.2	5.3	
Job control (N=1737)				
Low	40.1 ¤	54.7 ¤	5.2 ¤	**22.45; 2; <0.001**
High	49.6	48.2	2.2	
Social support (N=1735)				
Low	38.3 ¤	55.0 ¤	6.7 ¤	**65.26; 2; <0.001**
High	51.5	47.8	0.7	

*p<0.05, comparing “occasional” and “no”;
♦p<0.05, comparing “often” and “no”;
#p<0.05, comparing “often” and “occasional”;
Op<0.05, comparing “yes” and “no”;
¤p<0.05, comparing “low” and “high”;
In Bold – significantly.

The data were also analysed in view of different occupations. The subjective assessment of health in view of such psychosocial factors as such as workplace bullying, assessed by self-labelling and operational methods (both – Mikkelsen&Einarsen and Leymann criterions), job demands, job

control and social support at work in the group of ***family physicians*** are shown in *Table 4.3.1.2.* It was determined that significantly more family physicians, who had reported being bullied as per self-labelling method, assessed their health as fair or poor in comparison with those family doctors, who had never experienced humiliation, respectively 14.2% and 4.0%. The respondents who reported having been exposed to negative acts at work rated their health as fair or poor significantly more often in comparison with those who did not, respectively 16.7% and 3.0% ($p<0.05$) (bullying assessed per Mikkelsen&Einarsen criterion) and 12.4% and 2.2% ($p<0.05$) (bullying assessed per Leymann criterion). When analysing data, it was determined that high job demands, low job control and low social support at work did not have significant relationship with the subjective assessment of health.

Table 4.3.1.2. *Self-rated health frequency among family physicians by psychosocial work factors*

	Self-rated health			**χ^2; df; p**
	Excellent or very good	**Good**	**Fair or poor**	
Bullying (self-labelling method) (n=323)				
Severe	31.0 ♦ #	54.8	14.2 ♦ #	
Occasional	57.1 *	39.3	3.6 *	**12.51; 4; 0.01**
No	45.8	50.2	4.0	
Negative acts (operational method/Mikkelsen&Einarsen criterion) (n=323)				
Yes	44.4	38.9	16.7 O	**17.38; 2; <0.001**
No	46.1	50.9	3.0	
Negative acts (operational method/Leymann criterion) (n=323)				
Yes	40.2	47.4	12.4 O	**14.33; 2; 0.001**
No	48.2	49.6	2.2	
Job demands (n=323)				
Low	51.7	46.1	2.2	3.25; 2; 0.2
High	43.6	50.0	6.4	
Job control (n=323)				
Low	40.1	52.6	7.2	*4.96; 2; 0.08*
High	50.9	45.6	3.5	
Social support (n=323)				
Low	42.2	50.8	7.0	*4.92; 2; 0.09*
High	51.6	46.0	2.4	

*p<0.05, comparing "occasional" and "no";
♦p<0.05, comparing "severe" and "no";
#p<0.05, comparing "severe" and "occasional";
Op<0.05, comparing "yes" and "no"; in Bold – significantly; in Italic – tendency.

As can be seen from data in the *Table 4.3.1.3.*, significantly more ***teachers,*** who had experienced workplace bullying, assessed their health as fair and poor in comparison with those, who had never been exposed to it, respectively 20.0% and 3.1% ($p<0.05$). It was determined that workplace bullying assessed by operational method (according to both – Mikkelsen& Einarsen and Leymann criterion) significantly more often let the teachers rate their health as fair or poor in comparison with those teachers, who did not experience negative acts at workplace, respectively 23.8% and 3.8% and 15.9% and 3.6% ($p<0.05$). While analysing data, it was determined that high job demands let the teachers significantly more often assess their health as fair and poor in comparison with those teachers, who had low demands at work, respectively 8.0% and 2.3% ($p<0.05$). Significantly more investigated teachers, who had high job control, assessed their health as excellent or good in comparison with those, who had low job control, respectively 58.6% and 34.2% ($p<0.05$). During the investigation it was also determined that significantly more teachers, who had low social support, assessed their health as fair and poor in comparison with the persons, who had high social support at work, respectively 9.9% and 1.0% ($p<0.05$).

While analysing data in *Table 4.3.1.4.* it was determined that significantly more ***nurses***, who had occasionally experienced workplace bullying in comparison with those, who had never experienced workplace bullying assessed their health as fair and poor, respectively 4.8% and 0.8% ($p<0.05$). It was also determined that bullying measured by operational methods significantly more often let assess their health as fair and poor in comparison with the nurses, who had never experienced negative actions at workplace, respectively 7.3% and 1.0%; 4.8% and 1.2% ($p<0.05$). While analysing the data, it was also determined that low demands at work let the nurses significantly more often assess their health as excellent and good in comparison with nurses, who had high demands at workplace, respectively 45.5% and 29.3% ($p<0.05$). Surprisingly more nurses, who had low job control, assessed their health as fair or poor in comparison with those, who had high control at work, respectively 2.8% and 0.0%. It was determined during the investigation, that significantly more nurses, who had low social support at work, assessed their health as satisfactory and bad, in comparison with those, who had high social support at work, respectively 4.25 and 0.0% ($p<0.05$).

Table 4.3.1.3. *Self-rated health frequency among teachers by occupational psychosocial factors*

	Self-rated health			χ^2; df; p
	Excellent or very good	**Good**	**Fair or poor**	
Bullying (self- labelling method) (n=517)				
Severe	40.0 ♦#	40.0 ♦#	20.0 ♦	
Occasional	20.9 *	62.8 *	16.3 *	**39.5; 4; <0.001**
No	58.8	38.1	3.1	
Negative acts (operational method/Mikkelsen&Einarsen criterion) (n=517)				
Yes	28.6 O	47.6	23.8 O	**20.42; 2; <0.001**
No	56.3	39.9	3.8	
Negative acts (operational method/Leymann criterion) (n=517)				
Yes	40.9 O	43.2	15.9 O	**15.02; 2; 0.001**
No	56.4	40.0	3.6	
Job demands (n=517)				
Low	65.2 ¤	32.5 ¤	2.3	**33.82; 2; <0.001**
High	40.6	51.4	8.0	
Job control (n=517)				
Low	34.2 ¤	50.7 ¤	15.1 ¤	**28.94; 2; <0.001**
High	58.6	38.5	2.9	
Social support (n=515)				
Low	41.9 ¤	48.3 ¤	9.9 ¤	**37.63; 2; <0.001**
High	63.8	35.3	1.0	

*p<0.05, comparing “occasional” and “no”;
♦p<0.05, comparing “severe” and “no”;
#p<0.05, comparing “severe” and “occasional”;
^{O}p<0.05, comparing “yes” and “no”;
¤p<0.05, comparing “low” and “high”;
In Bold – significantly.

Table 4.3.1.4. *Self-rated health frequency among nurses by occupational psychosocial factors*

	Self-rated health			χ^2; df; p
	Excellent or very good	**Good**	**Fair or poor**	
Bullying (self-labelling method) (n=748)				
Severe	22.9 ♦#	77.1 ♦#	0.0	
Occasional	35.4 *	59.8 *	4.8 *	**19.18; 4; 0.001**
No	41.5	57.7	0.8	
Negative acts (operational method/Mikkelsen&Einarsen criterion) (n=748)				
Yes	27.8 O	64.9	7.3 O	**21.14; 2; <0.001**
No	40.6	58.4	1.0	
Negative acts (operational method/Leymann criterion) (n=748)				
Yes	34.2	61.0	4.8 O	**9.38; 2; 0.01**
No	40.0	58.8	1.2	
Job demands (n=748)				
Low	45.5 ¤	52.9 ¤	1.6	**20.02; 2; <0.001**
High	29.3	68.4	2.3	
Job control (n=748)				
Low	41.2	56.0 ¤	2.8 ¤	**11.48; 2; 0.003**
High	34.2	65.8	0.0	
Social support (n=748)				
Low	33.5 ¤	62.3	4.2 ¤	**22.61; 2; <0.001**
High	43.3	56.7	0.0	

*p<0.05, comparing "occasional" and "no";
♦p<0.05, comparing "severe" and "no";
#p<0.05, comparing "severe" and "occasional";
Op<0.05, comparing "yes" and "no";
¤p<0.05, comparing "low" and "high";
In Bold – significantly.

The association of self-rated health by ***waiters*** and already mentioned psychosocial work factors is shown in *Table 4.3.1.5.* It was determined that significantly more waiters, who had often experienced workplace bullying, assessed their health as fair and poor, in comparison with those, who had never experienced workplace bullying, respectively 21.1% and 1.9% (p<0.05). It was also determined that waiters, who experienced negative acts at work (assessed according to both – Mikkelsen&Einarsen and Leymann criterion), significantly more often assessed their health as fair and poor in comparison with those, who had never experienced negative acts at work, respectively 19.0% and 2.3% (p<0.05); 15.0% and 0.9% (p<0.05). While analysing the data, it was determined, that demands, control and social support were not significantly related with health assessment of waiters.

Table 4.3.1.5. *Self-rated health frequency among waiters by occupational psychosocial factors*

	Self-rated health			χ^2; df; p
	Excellent or very good	**Good**	**Fair or poor**	
Bullying (self-labelling method) (n=149)				
Severe	15.8 ♦#	63.1	21.1 ♦#	
Occasional	54.5	40.9	4.6 *	**17.71; 4; 0.001**
No	43.5	54.6	1.9	
Negative acts (operational method/Mikkelsen&Einarsen criterion) (n=149)				
Yes	28.6	52.4	19.0 O	**11.72; 2; 0.003**
No	43.8	53.9	2.3	
Negative acts (operational method/Leymann criterion) (n=149)				
Yes	30.0	55.0	15.0 O	**14.14; 2; 0.001**
No	45.9	53.2	0.9	
Job demands (n=149)				
Low	40.9	56.8	2.3	0.9; 2; 0.64
High	41.9	52.4	5.7	
Job control (n=147)				
Low	38.5	53.8	7.7	2.48; 2; 0.29
High	44.0	53.6	2.4	
Social support (n=149)				
Low	39.8	52.3	8.0 ¤	*5.11; 2; 0.08*
High	44.3	55.7	0.0	

*p<0.05, comparing "occasional" and "no"; ♦p<0.05, comparing "severe" and "no";
#p<0.05, comparing "severe" and "occasional"; Op<0.05, comparing "yes" and "no";
¤p<0.05, comparing "low" and "high";
In Bold – significantly;
In Italic – tendency.

While analysing data in the *Table 4.3.1.6.* no significant relations were noticed among workplace bullying and subjective health assessment of ***seafarers***. Seafarers did not complete Job content questionnaire; hence, the association of self-rated health and job demands, control and social support could not be assessed.

As can be seen from the data given in the *Table 4.3.1.7.* significantly more ***police officers***, who had been exposed to severe workplace bullying, assessed their health as fair and poor in comparison with those, who had occasionally or never experienced bullying, respectively 11.7%, 6.6% and

Table 4.3.1.6. *Self-rated health frequency among seafarers by occupational psychosocial factors*

	Self-rated health			χ^2; df; p
	Excellent or very good	**Good**	**Fair or poor**	
Bullying (self-labelling method) (n=369)				
Severe	71.4	28.6	0.0	
Occasional	56.8	43.2	0.0	2.45; 4; 0.65
No	68.6	31.1	0.3	
Negative acts (operational method/Mikkelsen&Einarsen criterion) (n=369)				
Yes	67.9	32.1	0.0	0.08; 2; 0.96
No	67.4	32.3	0.3	
Negative acts (operational method/Leymann criterion) (n=369)				
Yes	60.0	40.0	0.0	2.12; 2; 0.35
No	68.9	30.7	0.4	

0.9% ($p<0.05$). Negative acts at work (assessed according to both – Mikkelsen&Einarsen and Leymann criterions) let the police officers assess their health as fair and poor in comparison with the colleagues, who had not experienced negative acts at work, respectively 12.0% and 2.3%; 12.8% and 1.6% ($p<0.05$).

Table 4.3.1.7. *Self-rated health frequency among police officer's psychosocial factors*

	Self-rated health			χ^2; df; p
	Excellent or very good	**Good**	**Fair or poor**	
Bullying (self-labelling method) (n=290)				
Severe	32.4 $^{\blacklozenge\ \#}$	55.9 $^{\#}$	11.7 $^{\blacklozenge}$	
Occasional	15.6 *	77.8 *	6.6 *	**26.77; 4; <0.001**
No	46.4	52.7	0.9	
Negative acts (operational method/Mikkelsen&Einarsen criterion) (n=290)				
Yes	24.0	64.0	12.0 ^{O}	**8.97; 2; 0.01**
No	41.5	56.2	2.3	
Negative acts (operational method/Leymann criterion) (n=290)				
Yes	23.1 ^{O}	64.1	12.8 ^{O}	
No	42.6	55.8	1.6	**17.35; 2; <0.001**

*$p<0.05$, comparing "occasional" and "no"; $^{\blacklozenge}p<0.05$, comparing "severe" and "no";
$^{\#}p<0.05$, comparing "severe" and "occasional"; $^{O}p<0.05$, comparing "yes" and "no";
In Bold – significantly.

4.3.2. The association between psychosocial work factors (workplace bullying, job demands, job control, job support) and self-rated health as compared to a self-rated health a year ago

The assessment of self-rated health changes of all investigated occupational groups in view of such psychosocial work factors as workplace bullying, negative acts, job demands, job control and social support at work, is shown in *Table 4.3.2.1.* It was determined that significantly more respondents, who reported being exposed to severe bullying, assessed their health as deteriorating in comparison with those, who had occasionally or never experienced bullying, respectively 43.4%, 22.0% and 21.7% ($p<0.05$). It was also determined that bullying assessed per operational methods, let the respondents significantly more often rate their health as deteriorating in comparison with those respondents, who had not experienced negative acts at work, respectively 40.2% and 21.3%; 35.5% and 20.6% ($p<0.05$). While analysing the data, it was noted, that high job demands let the respondents assess their health as deteriorating in comparison with those, who had low demands at work, respectively 34.7% and 21.2% ($p<0.05$). Significantly more respondents from different occupational groups, who reported low job control, assessed their health as deteriorating in comparison with those, who marked high control at work, respectively 33.1% and 23.5% ($p<0.05$) and significantly more respondents, who had low social support, in comparison with those, who had high social support, evaluated their health as deteriorating, respectively 34.2% and 22.1% ($p<0.05$).

The assessment of family physicians' self-rated health changes in view of such psychosocial work factors as workplace bullying, negative acts, job demands, job control and social support at work is shown in *Table 4.3.2.2.* It was determined that significantly more family physicians, who had been exposed to severe workplace bullying in comparison with those, who had occasionally or never been bullied, rated their health as deteriorating, respectively 61.9%, 28.6% and 32.9% ($p<0.05$). It was also determined that bullying assessed per operational method applying both – Mikkelsen& Einarsen and Leymann criterions, significantly more often let family physiccians rate their health as deteriorating in comparison with those doctors, who had not experienced negative acts at work, respectively 50.0% and 33.1%; 52.6% and 28.7% ($p<0.05$). The results of the analysis revealed that high job demands did not have significant relationship with the deterioration of health in recent year in the sample of family physicians. Significantly more family physicians, who had low control at work, assessed their health as deteriorated in comparison with those, who had high control at work, res-

pectively 42.8% and 29.8% (p<0.05). It was also determined during investigation, that the respondents, who had low social support at work, evaluated their health as deteriorated in comparison with those who had high social support at work, respectively 41.2% and 27.4% (p<0.05).

Table 4.3.2.1. *Self-rated health changes frequency among all investigated professions persons by occupational psychosocial factors*

	Health changes			χ^2; df; p
	Much better	**About the same**	**Much worse**	
Bullying (self-labelling method) (N=2394)				
Severe	5.7 ♦#	50.9 ♦#	43.4 ♦#	
Occasional	16.3 *	61.7 *	22.0	**49.85; 4; <0.001**
No	11.0	67.3	21.7	
Negative acts (operational method/Mikkelsen&Einarsen criterion) (N=2394)				
Yes	6.5 O	53.3 O	40.2 O	**45.98; 2; <0.001**
No	12.1	66.6	21.3	
Negative acts (operational method/Leymann criterion) (N=2394)				
Yes	6.3 O	58.2 O	35.5 O	**49.03; 2; <0.001**
No	12.7	66.7	20.6	
Job demands (N=1734)				
Low	8.2	70.6 ¤	21.2 ¤	**46.75; 2; <0.001**
High	10.1	55.2	34.7	
Job control (N=1734)				
Low	6.1 ¤	60.9	33.1 ¤	**30.29; 2; <0.001**
High	11.7	64.9	23.5	
Social support (N=1732)				
Low	8.5	57.3 ¤	34.2 ¤	**31.64; 2; <0.001**
High	9.6	68.3	22.1	

*p<0.05, comparing “occasional” and “no”;
♦p<0.05, comparing “severe” and “no”;
#p<0.05, comparing “severe” and “occasional”;
Op<0.05, comparing “yes” and “no”;
¤p<0.05, comparing “low” and “high”;
In Bold – significantly.

Table 4.3.2.2. *Self-rated health changes frequency among family physicians by occupational psychosocial factors*

	Health changes			χ^2; df; p
	Much better	**About the same**	**Much worse**	
Bullying (self-labelling method) (n=323)				
Severe	0.0	38.1 ♦#	61.9 ♦#	
Occasional	10.7 *	60.7	28.6	**16.3; 4; 0.003**
No	8.0	59.1	32.9	
Negative acts (operational method/Mikkelsen&Einarsen criterion) (n=323)				
Yes	1.9	48.1	50.0 O	**7.13; 2; 0.03**
No	8.6	58.3	33.1	
Negative acts (operational method/Leymann criterion) (n=323)				
Yes	1.0 O	46.4 O	52.6 O	**20.94; 2; <0.001**
No	10.2	61.1	28.7	
Job demands (n=323)				
Low	9.0	60.7	30.3	1.82; 2; 0.4
High	6.8	55.1	38.0	
Job control (n=323)				
Low	5.3	52.0	42.8 ¤	**6.68; 2; 0.04**
High	9.4	60.8	29.8	
Social support (n=323)				
Low	8.5	50.3 ¤	41.2 ¤	**8.66; 2; 0.013**
High	5.6	66.9	27.4	

*p<0.05, comparing "occasional" and "no";
♦p<0.05, comparing "severe" and "no";
#p<0.05, comparing "severe" and "occasional";
Op<0.05, comparing "yes" and "no";
¤p<0.05, comparing "low" and "high";
In Bold – significantly.

The assessment of teachers' self-rated health changes in view of such psychosocial work factors as workplace bullying assessed by self-labelling and operational methods, job demands, job control and social support at work is shown in *Table 4.3.2.3.* It was determined that significantly more teachers, who had been exposed to severe bullying in comparison with those, who had occasionally or never experienced bullying, workplace bullying assessed by operational method according to Mikkkelsen&Einarsen and Leymann criterions, significantly more often let teachers assess their

health as deteriorating in comparison with those teachers, who had not experienced negative acts at work, respectively 38.1% and 20.6%; 27.2% and 20.7% (p>0.05). While analysing the data it was determined that high job demands significantly more often let teachers assess their health as deteriorating in comparison with those teachers, who did not have high demands at work, respectively 31.1% and 14.4% (p<0.05). Job control did not have much influence on teachers' health deterioration. It was also determined during investigation, that teachers, who had low social support at work, evaluated their health as deteriorated in comparison with teachers who had high social support at work, respectively 31.0% and 15.1% (p<0.05).

Table 4.3.2.3. *Self-rated health changes frequency among teachers by occupational psychosocial factors*

	Health changes			**χ^2; df; p**
	Much better	**About the same**	**Much worse**	
Bullying (self-labelling method) (n=517)				
Severe	26.6	46.7 ♦#	26.7 ♦#	22.56; 4; <0.001
Occasional	11.6	41.9 *	46.5 *	
No	11.8	69.5	18.7	
Negative acts (operational method/Mikkelsen&Einarsen criterion) (n=517)				
Yes	14.3	47.6	38.1	4.17; 2; 0.13
No	12.1	67.3	20.6	
Negative acts (operational method/Leymann criterion) (n=517)				
Yes	11.4	61.4	27.2	1.03; 2; 0.6
No	12.3	67.0	20.7	
Job demands (n=517)				
Low	14.4	71.1 ¤	14.4 ¤	**21.85; 2; <0.001**
High	9.0	59.9	31.1	
Job control (n=517)				
Low	9.6	63.0	27.4	2.13; 2; 0.35
High	12.6	67.1	20.3	
Social support (n=515)				
Low	8.4 ¤	60.6 ¤	31.0 ¤	**20.24; 2; <0.001**
High	14.4	70.5	15.1	

*p<0.05, comparing "occasional" and "no";
♦p<0.05, comparing "severe"and "no";
#p<0.05, comparing "severe" and "occasional";
¤p<0.05, comparing "low" and "high";
In Bold – significantly.

The assessment of nurses' self-rated health changes is shown in *Table 4.3.2.4.* It was determined that significantly more nurses, who had experienced severe workplace bullying in comparison with those, who had occasionally or never been exposed to bullying, rated their health as deteriorating, respectively 34.3% and 16.3% ($p<0.05$). It was also determined that workplace bullying assessed by operational method according to Mikkkelsen&Einarsen and Leymann criterion, significantly more often let nurses assess their health as deteriorated in comparison with the nurses, who

Table 4.3.2.4. *Self-rated health changes frequency among nurses by occupational psychosocial factors*

	Health changes			**χ^2; df; p**
	Much better	**About the same**	**Much worse**	
Bullying (self-labelling method) (n=745)				
Severe	0.0	65.7	34.3 #	
Occasional	17.7 *	66.0	16.3 *	**49.72; 4; <0.001**
No	4.4	63.7	31.9	
Negative acts (operational method/Mikkelsen& Einarsen criterion) (n=745)				
Yes	4.1	51.5 O	44.3 O	**16.12; 2; <0.001**
No	8.5	66.4	25.2	
Negative acts (operational method/Leymann criterion) (n=745)				
Yes	5.5	63.0	31.5	2.4; 2; 0.3
No	8.5	64.8	26.7	
Job demands (n=745)				
Low	3.4 ¤	73.6 ¤	23.0 ¤	**51.81; 2; <0.001**
High	14.6	50.8	34.6	
Job control (n=745)				
Low	6.0 ¤	64.3	29.7	**9.64; 2; 0.008**
High	11.9	64.6	23.5	
Social support (n=745)				
Low	8.3	61.1	30.6	3.05; 2; 0.22
High	7.6	67.2	25.2	

*p<0.05, comparing "occasional" and "no";
#p<0.05, comparing "severe" and "occasional";
Op<0.05, comparing "yes" and "no";
¤p<0.05, comparing "low" and "high";
In Bold – significantly.

had not experienced negative acts at work, respectively 44.3% and 25.2% ($p<0.05$). While analysing the data it was determined that high job demands significantly more often let nurses assess their health as deteriorating in comparison with those teachers, who did not have high demands at work, respectively 34.16 and 23.0% ($p<0.05$). Also significantly more nurses, who reported low job control, rated their health as deteriorating in comparison with those, who reported high control, respectively 29.7% and 23.5% ($p<0.05$). Social support at work did not have significant relationship with deteriorating health of nurses.

The assessment of waiters' self-rated health changes is shown in *Table 4.3.2.5.* Study results revealed that significantly more waiters, who had experienced severe bullying in comparison with those, who had occasionally

Table 4.3.2.5. *Self-rated health changes frequency among waiters by occupational psychosocial factors*

	Health changes			χ^2; df; p
	Much better	**About the same**	**Much worse**	
Bullying (self-labelling method) (n=149)				
Severe	0.0	31.6 ♦#	68.4 ♦#	
Occasional	9.1	63.6	27.3	**11.82; 4; 0.02**
No	9.3	61.1	29.6	
Negative acts (operational method/Mikkelsen&Einarsen criterion) (n=149)				
Yes	0.0	47.6	52.4	*4.75; 2; 0.09*
No	9.4	59.4	31.3	
Negative acts (operational method/Leymann criterion) (n=149)				
Yes	0.0	45.0	55.0 O	**12.83; 2; 0.002**
No	11.0	62.4	26.6	
Job demands (n=149)				
Low	11.4	56.8	31.8	0.96; 2; 0.62
High	6.7	58.1	35.2	
Job control (n=149)				
Low	4.6	52.3	43.1 ¤	*4.92; 2; 0.09*
High	10.7	61.9	27.4	
Social support (n=149)				
Low	9.1	51.1	39.8	3.83; 2; 0.15
High	6.6	67.2	26.2	

♦$p<0.05$, comparing "severe" and "no";
#$p<0.05$, comparing "severe" and "occasional";
O$p<0.05$, comparing "yes" and "no";
¤$p<0.05$, comparing "low" and "high"; in Bold – significantly; in Italic – tendency.

or never experienced bullying, rated their health as deteriorating, respectively 68.4%, 27.3% and 29.6% ($p<0.05$). It was also determined that workplace bullying assessed by operational method according to Mikkelsen& Einarsen and Leymann criterion, significantly more often let waiters assess their health as deteriorated in comparison with the waiters, who had not experienced negative acts at work, respectively 52.4% and 26.6% ($p<0.05$). Job demands, job control and social support at work did not have significant relationship with deteriorating health of waiters.

The assessment of seafarers' self-rated health changes in view of such psychosocial work factors as workplace bullying, negative acts, job demands, job control and social support at work is shown in *Table 4.3.2.6.* It was determined that significantly more seafarers, who had experienced severe workplace bullying in comparison with those, who had never been exposed to bullying, rated their health as deteriorating, respectively 14.3% and 4.4% ($p<0.05$). It was also determined that workplace bullying assessed by operational method according to Mikkelsen&Einarsen and Leymann criterions, was significant for seafarers, when assessing health changes during the recent year. Seafarers did not complete Job content questionnaire; hence, the association of self-rated health changes within the recent year and job demands, control and social support could not be assessed.

Table 4.3.2.6. *Self-rated health changes frequency among seafarers by occupational psychosocial factors*

	Health changes			**$\chi 2$; df; p**
	Much better	**About the same**	**Much worse**	
Bullying (self-labelling method) (n=370)				
Severe	14.3	71.4	14.3	4.94; 4; 0.29
Occasional	29.7	67.6	2.7	
No	21.0	74.6	4.4	
Negative acts (operational method/Mikkelsen&Einarsen criterion) (n=370)				
Yes	21.4	75.0	3.6	0.08; 2; 0.96
No	21.6	73.7	4.7	
Negative acts (operational method/Leymann criterion) (n=370)				
Yes	16.7	75.0	8.3	3.01; 2; 0.22
No	22.6	73.5	3.9	

The assessment of police officer's health deterioration is shown in *Table 4.3.2.7.* It was determined that significantly more police officers, who had been exposed to severe workplace bullying in comparison with those, who had never been bullied, rated their health as deteriorating, respectively 35.3% and 14.7% ($p<0.05$). It was also determined that workplace bullying assessed by operational method according to Mikkelsen&Einarsen and Leymann criterions, significantly more often let police officers assess their health as deteriorated in comparison with the police officers, who had not experienced negative acts at work, respectively 36.0% and 18.1%; 38.5% and 16.8% ($p<0.05$). Police officers did not complete Job content questionnaire; hence, the association of self-rated health and job demands, control and social support could not be assessed.

Table 4.3.2.7. *Self-rated health changes frequency among police officers by occupational psychosocial factors*

	Health changes			χ^2; df; p
	Much better	**About the same**	**Much worse**	
Bullying (self-labelling method) (n=290)				
Severe	8.8	55.9 ♦#	35.3 ♦	
Occasional	13.3	55.6 *	31.1 *	**12.58; 4; 0.01**
No	13.7	71.6	14.7	
Negative acts (operational method/Mikkelsen&Einarsen criterion) (n=290)				
Yes	8.0	56.0	36.0 O	*4.78; 2; 0.09*
No	13.6	68.3	18.1	
Negative acts (operational method/Leymann criterion) (n=290)				
Yes	7.7	53.8	38.5 O	**10.32; 2; 0.01**
No	13.9	69.3	16.8	

*p<0.05, comparing "occasional" and "no";
♦p<0.05, comparing "severe" and "no";
#p<0.05, comparing "severe" and "occasional";
Op<0.05, comparing "yes" and "no";
In Bold – significantly;
In Italic – tendency.

4.3.3. Association between psychosocial work factors and subjective health evaluation

The stepwise logistic regression analysis was carried out to evaluate the association between psychosocial work factors and subjective health evaluation in all occupations but police officers and seafarers. Police officers

and seafarers did not complete the job content questionnaire; hence, their data could not be analysed. Self-rated health (good or poor) was the dependent variable, while the independent variables were – occupation, bullying assessed by self-labelling and operational methods (applying both – Mikkelsen&Einarsen and Leymann criterions), job demands, job control and social support at work. The stepwise logistic regression model assessed the odds ratio for evaluating health as poor depending on aforementioned independent variables. The analysis revealed that nursing profession, bullying at work, high job demands, and low social support had significant links with lowered self-reported health. It has been also found that nurses were approximately 1.79-fold more often (95% CI 1.35–2.37) likely to define their health as poor than family physicians. No significant associations were however detected between poor self-rated health in other occupations (teachers and waiters) as compared to family physicians. Severe bullying at work enhanced the OR for poor self-rated health by 1.84-fold (95% CI 1.17–2.89) on average, high job demands – by 1.74-fold (95% CI 1.41–2.15). High social support at work diminished the possibility to self-rate health as poor by 31.0% on average (OR 0.69, 95% CI 0.56-0.85) (*Table 4.3.3.1.*).

Table 4.3.3.1. *Multivariable analysis for predictors to assess self-rated health as bad by psychosocial occupational factors (backward stepwise logistic regression analysis model)*

		B	Sig.	Exp (B)	95% CI for Exp (B)	
					Lower	Upper
Occupation	Family physicians	–	–	–	–	–
	Nurses	0.58	**<0.001**	1.79	1.35	2.37
	Teachers	-0.06	0.68	0.94	0.7	1.26
	Waiters	0.2	0.32	1.23	0.82	1.83
Bullying (self–labelling method)	No	–	–	–	–	–
	Occasional	0.05	0.73	1.05	0.8	1.37
	Severe	0.61	**0.01**	1.84	1.17	2.89
Job demands	(low–high)	0.55	**<0.001**	1.74	1.41	2.15
Social support	(low–high)	-0.37	**<0.001**	0.69	0.56	0.85
Constant		-0.17	0.26	0.84	–	–

In Bold – significantly; 95% CI – 95% confidence interval.

Analogical stepwise logistic regression analysis was carried out to explore how changes of self-rated health within the last year were associated with psychosocial work environment factors and occupation. The dependent variable in this analysis was the change of health self-rated as worsened or not worsened, the independent variables were – occupation, bullying assessed by self-labelling and operational approaches (applying both – Mikkelsen&Einarsen and Leymann criterions), job demands, job control and social support at work. The results of the analysis demonstrated that bullying measured by a self-labelling method and operational approach (Mikkelsen&Einarsen criterion), job demands, job control and social support were significantly associated with health changes self-rated as worsened. Occasional bullying diminished the chance of self-rating health as deteriorating by 47.0% on average as compared to severe bullying (OR 0.53, 95% CI 0.39–0.72). Having been exposed to ≥2 negative acts a week for a period of at least 6 months (Mikkelsen&Einarsen criterion) and high job demands increased the OR for self-rating health as deteriorating by 1.83-fold (95% CI 1.29–2.60) and 1.76 (95% CI 1.4–2.23), respectively. High job control and high social support at work diminished the chance of self-rating health as deteriorating by 35.0% (OR 0.65, 95% CI 0.52–0.82) and 30.0% (OR 0.7, 95% CI 0.55–0.89) on average, respectively (*Table 4.3.3.2.*).

Table 4.3.3.2. *Multivariable analysis for predictors to assess health changes in worse by psychosocial occupational factors (backward stepwise logistic regression analysis model)*

		B	Sig.	Exp (B)	95% CI for Exp (B)	
					Lower	Upper
Bullying (self-labelling)	No	–	–	–	–	–
	Occasional	-0.64	**<0.001**	0.53	0.39	0.72
	Severe	0.31	0.16	1.37	0.89	2.11
Negative acts (operational method/ Mikkelsen& Einarsen criterion)		0.61	**0.001**	1.83	1.29	2.6
Job demands	(low-high)	0.57	**<0.001**	1.76	1.4	2.23
Job control	(low-high)	-0.42	**<0.001**	0.65	0.52	0.82
Social support	(low-high)	-0.36	**0.003**	0.7	0.55	0.89
Constant		-0.84	**<0.001**	0.43	–	–

In Bold – significantly; 95% CI – 95% confidence interval.

5. DISCUSSION

The current research revealed that the highest prevalence of bullying assessed using both methods – self-labelling and operational (applying both – Mikkelsen&Einarsen and Leymann criterions), was found among family physicians – 13.0%, 16.7% and 30.0% and waiters – 10.9%, 19.8% and 29.5%, respectively. Police officers labelled themselves as victims of severe bullying somewhat more frequently than waiters – 11.7% vs. 10.9%, however the prevalence of bullying assessed by operational method was significantly lower. The lowest rates of bullying using operational approach was detected among teachers (4.1% and 8.5%), seafarers (7.6 and 16.2%) and police officers (8.6% and 13.4%). Teachers and seafarers also claimed having suffered workplace bullying most rarely – 2.9% and 3.8%, respecttively. In terms of bullying prevalence, the nurses are situated between most and less bullied occupational groups – a relatively low number of surveyed nurses (4.7%) if compared to the proportion of family physicians reported having experienced severe bullying, however the occurrence of occasional bullying or bullying as assessed by operational method was high – 27.9%, 13.0% and 19.5%, respectively.

In general, these finding are in accordance with the results of a survey organized by the European Commission in 2004, which showed that the most affected by bullying fields are health and social services (15.7%), followed by public administration, hotels, restaurants and transport [244]. The employees in the healthcare sector are clearly and consistently most likely to report mistreatment, being almost twice as likely to experience verbal abuse, bullying and threats and almost six times more likely to experience physical violence as compared to all other sectors. Other sectors reporting high levels of workplace violence are transport sector, public administration and defence [66, 102]. Other investigated occupations where high prevalence was found include restaurant employees [162], police officers [10], off-shore industry employees [192]. The results of the 6th EWCS carried out in 2015 in 34 European countries alerted that almost 16.0% of workers reported having been exposed to adverse social behaviours at workplace [202]. According to the results of the 5th EWCS concluded five years ago, the prevalence of bullying in general population oscillated between 0.6% and 9.5% across the EU Member States [204]. The review of workplace bullying studies from the past 20 years suggested that 3.0–4.0% of employees may be exposed to severe bullying, 9.0–15.0% may experience occasional bullying and 10.0–20.0% (or even more) may occasionally experience negative behaviours that do not necessarily fall within a

strict definition of bullying [272]. Comparison of the obtained results by occupation with the results suggested by the investigators worldwide is further discussed in the sub-sections below.

The data obtained from the 5th European Working Conditions Survey conducted in 2010 showed that the prevalence of workplace bullying was 11.3% among the employees in the healthcare sector [10]. In our study, severe and occasional bullying prevalence among family physicians was even higher, while prevalence of severe bullying among nurses was almost twice lower and the prevalence of occasional bullying more than 2-fold higher. Comparison of workplace bullying assessed by evaluating occurrence of negative acts and applying both criterions – Mikkelsen&Einarsen and Leymann, showed that the employees of healthcare system in Lithuania suffer more often. Investigation of workplace bullying in the healthcare sector, especially in nursing, is quite often and the rates of prevalence proposed by the investigators oscillate markedly. Data from 30 original studies noted, that the prevalence of bullying varies from 5.7% to 94% of surveyed nurses [23]. The UK researchers found that 2.7% of healthcare sector workers labelled themselves as bullying victims and 18.3% of this workforce was determined as bullied applying operational criterion [44]. The study conducted in Greece in 2013 showed that 30.2% of nurses reported that they had been psychologically harassed in their workplaces at various frequencies during the preceding several months (rarely – 17.2%; occasionally: 9.9%; a few times per week: 2.0%; almost daily: 1.1%) [115]. In the US, even 48.0% of healthcare sector workers were found to suffer from bullying as per self-labelling method [46]. The results of a study conducted in the US by Berry B. A. et al. in the sample of novice nurses showed that every fifth of them (21.3%) was bullied daily during the last six months as assessed using the Negative Acts Questionnaire and the primary source of bullying was more experienced colleagues (63.0%) [28]. Another study carried out in the State of Washington, US, revealed that nearly every third nurse (27.3%) had experienced workplace bullying during the last 6 months and most of the respondents who were bullied declared that they had experience hostile behaviour from their superiors [111]. Similar results are suggested by another US scientist – 21.1% of nurses reported being subjected to horizontal violence weekly and daily, while even two thirds of respondents reported experiencing it now and then and monthly [211]. Scientists in the Eastern Word reported significantly higher prevalence, e.g., in Japan 81.2% of healthcare sector workers were found to experience bullying by operational criterion [238]. The majority of nurses from one Saudi Arabian hospital where the research on bullying was carried out declared that they perceived workplace violence as verbal abuse and nearly all of them pointed patients

as their offenders [3]. South Korean investigators revealed that 17.2% of nurses met the criteria of being victims of bullying [271]. The research conducted in the samples of the emergency department physicians, doctors undertaking research and medicine students' alert that workplace violence in the healthcare field is a widespread problem [127, 235, 267]. In Ireland, even 30.0% of surveyed junior doctors reported to be subjected to one or more bullying behaviour [48]. Australian investigators have published similar results in 2016 where 27.0% of junior doctors across 15 hospital networks reported workplace bullying [201]. Another study in Australia showed that nearly 60.0% of surveyed general physicians experienced occupational violence during the previous 12 months [150].The results of a study conducted in the sample of medicine students in the US noted that the students particularly embarking on careers in family medicine claimed higher levels of harassment [75].

Studies on workplace bullying suggest that bullying is less prevalent in the educational sector [184] and this is compatible with the results of the current study where teachers reported the lowest rates among all investigated occupations. Nevertheless, the study based on the results of the 5th EWCS revealed that 48.7% of surveyed education employees reported having experienced workplace bullying [11]. In the Croatian sample, every 5th teacher (22.4%) declared exposure to different kinds of harassment during last 12 months [217]. In a sample of Polish teachers where the frequency and the type of hostile behaviours was measured using locally developed questionnaire, as many as 63.0% of teachers experienced hostile behaviour in their workplace and the prevalence of workplace bullying was at the rate of 7.0% [173]. In the study conducted in the US secondary schools a total of 567 athletic trainers were surveyed and 7.8% of the subjects were empirically identified as targets of bullying, 12.4% of trainers labelled themselves as bullying targets [209]. In Turkey 39.0% of teachers reported that they had been bullied at their workplaces within the last year [30].

The study carried out by Nielsen among seafarers revealed that that 8.0% of the sample was classified as targets of bullying as per operational method (Leymann criterion) and 7.4% of the respondents claimed to have been victimized by workplace bullying during the last six months before the survey [192]. Other authors found that even 25.00% had experienced personal harassment or bullying during last year of service [73]. In the Lithuanian maritime workforce, prevalence of bullying, as assessed using Leymann criterion was 2-fold higher (16.2%), while the rate of bullying victims as per self-labelling method was almost 2-fold lower (3.8%).

Working in the police forces has been recognized as one of the most tiring occupations due to constant confrontation with the public, the shift works and dealing system of organization in terms of hierarchy [149, 230]. Workplace bullying research within police forces, however, is not frequent; hence, the comparison of the results obtained in the current study with the results of other investigators is complex. The study concluded by Vartia M. among prison officers (773 males and 123 females) revealed that 20.0% of the respondents perceived themselves as victims of bullying [247]. In Turkey, even 56.0% of police officers reported that they had been bullied at their workplaces within the last year [30]. Polish researchers conducted a study in a sample of 222 correctional officers and found that approximately one third of participants experienced repetitive aggressive acts from their co-workers and/or superiors [166]. The prevalence of workplace bullying among police officers in the current study was significantly lower.

We could not locate many studies investigating prevalence of workplace bullying namely among employees of a restaurant sector, hence the comparison of the results is complicated. The results of a study conducted in a sample of 207 employees working in 70 restaurants in Norway detected that bullying indeed prevails in this sector [162]. The study carried out in the hospitality sector in Spain suggested that 16.0% of employees had been exposed to bullying behaviours on a weekly or more frequent basis during the past six months, 45.0% of respondents had witnessed bullying taking place [206].

Study results revealed that in general work-related bullying behaviours prevailed. Physically intimidating behaviour such as finger-pointing, invasion of personal space, blocking the way, or threats of violence or physical abuse or actual abuse were reported rather rarely in all occupational groups. The most frequent bullying behaviours reported by family physicians were – „withholding information", "unmanageable workload" and "excessive monitoring of work". Nurses suffered from "gossiping and rumours" and "being ordered to do work below your level of competence" most frequently. The comparison of the frequencies between both occupational groups shows that family physicians experienced „withholding information", „being humiliated or ridiculed", "unmanageable workload", "excessive monitoring of work, "excessive teasing and sarcasm", also undesired behaviours of ignorance nature, such as "being ignored or excluded" and "opinions and views ignored" on a daily/weekly basis significantly more often than nurses. Similar findings were identified in the Danish sample of hospital staff that was comprised mainly from nurses and in a representative sample of Norwegian work force where the most prevalent negative acts reported were "being ordered to do work below your level of competence"

and “withholding information which affects your performance” [169, 190]. In the UK, the most prevalent behaviours also included work-related behaviours (eg, unmanageable workload and someone withholding information that affects an individual's performance), being humiliated over work, socially isolating behaviours (e.g., being ignored) and being shouted at or being the target of spontaneous anger [44]. In South Korea the most common type of bullying was work-related bullying – “being exposed to an unmanageable workload” and “withholding information” followed by person-related bullying. The least common type was intimidation-related bullying [271]. The data from 30 studies revealed, that the forms of abuse experienced by nurses are ranging from acial harassment (less frequent, 4.5%), to emotional abuse (up to 62.4%) and being burdened with unmanageable workloads (71.0%) [23]. The meta-analysis of 51 studies demonstrated that 59.4% of medical trainees had experienced at least one form of harassment or discrimination during their training. Verbal harassment (63.0%) was the most commonly cited form of harassment. Consultants were the most commonly cited source of harassment and discrimination, followed by patients or patients' families (34.4% and 21.9%, respectively) [72].

As it can be seen from the results of the current study and the investigations conducted worldwide, being exposed to an unmanageable workload is one of the most frequently reported bullying behaviours among employees in healthcare sector. Some investigators intentionally removed this bullying behaviour from analysis assuming that this items reflects work environment in general and not a negative act as such [210].

The study results show that the most frequent negative behaviour experienced by teachers on a daily/weekly basis was „withholding information“ – 7.0%. The waiters claimed suffering from “being ordered to do work below your level of competence”, “gossiping and rumours” and “excessive monitoring of work” most frequently – 12.1%, 11.5% and 8.9%, respectively. The survey conducted by the UK researchers in 2000 showed that 57.0% of the surveyed students on a hospitality and catering course in a British higher education institution reported having experienced unwanted sexual attention during periods of supervised work experience [269]. A survey on bullying conducted in 2002 in the hospitality sector in Spain concluded that most commonly reported bullying behaviours were “giving meaningless work”, “giving work below one’s professional competencies”, “putting under undue pressure” and “systematically devaluing the effort of the person” [206].

The frequencies of experienced bullying behaviours by seafarers and police officers as well as the comparison of frequencies between both occupational groups are show that the most frequent negative behaviour

experienced by seafarers on a weekly/daily basis was „withholding information" – 7.0%. The most often reported negative acts among police officers were „being shouted and spontaneous anger" and „gossiping and rumours", 5.5% and 5.2%, respectively. These findings are similar to the results provided by Vartia, where gossiping and spreading negative rumours were the most common forms of bullying [247].

The results of the present investigation revealed that waiters and family physicians experienced bullying behaviour from their superiors most frequently, 28.2% and 26.6%, respectively. A survey on bullying conducted in 2002 in the hospitality sector in Spain concluded that 82.0% of bullies were primarily bosses or managers, colleagues accounted for 16.0% of the incidents [206]. In the current study, bullying by colleagues was indicated by 6.7% of waiters. Among nurses, bullying by peers prevailed. 17.5% of survey nurses indicated that they have experienced bullying behaviour from their colleagues. In the UK, the results of the survey conducted by Carter M. et al. revealed that the most common source of bullying was a superior (in 51.1% of bullied nurses), bullying by peers was reported by a third of bullied responders [44]. Some US investigators explain bullying within nurses through the oppression and social learning theories. According to those authors, nurses experiencing aggression form others, have internal aggression, which in turn is directed towards another person of a similar of lower status. Newcomers perceive bullying from the seniors as an organizational culture of a part of nursing job and through time, they repeat similar disruptive behaviours when they became seniors [61, 266]. In the current study, teachers suffered bullying behaviour from superiors most often - approximately a third of bullied teachers indicated this source of bullying. In the study conducted among US athletic teacher the vast majority of bullies were administrators [209]. In our study every twelfth family physician and teacher (11.8% and 11.5%, respectively), 13.4% of waiters and every tenth nurse (9.8%) suffered from bullying behaviours by the external customers (patients/students/clients). These results are in accordance with the findings of the 6th EWCS which alert that on average 17.0% of employees handle angry clients, customers, patients and students three-quarters or more of the time. Moreover, it was found that the proportion of employees handling angry clients all or almost of all the time doubled between 2010 and 2015. The sectors where the greatest increase in intensity in terms of dealing with angry clients are education, followed by the health sector and to a lesser extent in commerce and hospitality [202]. The study conducted in a sample of while-collar employees (education, healthcare and security sectors) in Turkey suggest that the most common source of bullying was a superior (44.0%), followed by peers (26.0) and only 10.0% of

subordinates [30]. In a Danish sample Ortega A. et al. found that peers were most often defined as perpetrators (even in 71.5% of cases), while the superiors were reported as bullies nearly twice less frequently and subordinates only in 6.0 of cases [195]. In the present study, the prevalence of bullying by subordinates was low. The highest rate was found among nurses – 3.4%. Other occupational groups reported even lower rates.

The study on exposure to psychosocial work factors in 31 European countries excluded Lithuania as one of the countries with higher prevalence of exposure to psychosocial work factors compared to the Northern Europe [184]. In the current study psychosocial job characteristics were investigated only within family physicians, nurses, teachers and waiters. Study results revealed physicians experienced high job demands significantly more often than nurses and teachers. Even 72.4% of surveyed family physicians reported high job demands. In most healthcare environments, employees in the health sector suffer heavy workload. In a study conducted by German investigators in a sample of emergency department personnel (physicians and nurses), high prevalence of work-related strain was observed, where 66.0% of employees showed high levels of emotional exhaustion [262]. Investigators in Germany found that nearly 40.0% of the physicians showed psychosocial strain patterns [258], in Morocco – 44.0% of surveyed health care workers suffered from high job strain [85]. The results of a study conducted in a representative sample of general practitioners in Finland also suggest that 69.0% of respondents reported high job demands and 55.0% low job control [129]. Another study by Finnish investigators revealed that general practitioners reported higher job strain as compared with consultants (OR 1.76, 95% CI 1.23 to 2.53) [257]. In the sample of Italian radiologists and radiotherapists 38.5% complained of severe organisational discomfort, 24.0% reported job strain, 28.0% reported effort/reward imbalance and 25.0% were dissatisfied with their job. Younger and less experienced radiologists and radiotherapists had higher strain scores than their older and more experienced colleagues [151].

In the current research, nurses had high control over their job also less frequently than family physicians and this difference is statistically significant. The teachers reported most favourable psychosocial job characteristics, where the rates of high job control and high social support were significantly higher as compared to the group of family physicians. We could not find studies investigating psychosocial work factors within waiters. The research of risk factors in the restaurant sector are mainly focused on physical hazards. In a survey conducted by UK investigators, waiters and bar staff were found to have high emotional labour due to the nature of their job (facing with customers, feeling a degree of responsibility coupled with

some unpredictability in how their clients might behave towards them) and a higher prevalence of common mental disorders [234].

The investigations suggest that employees in the Eastern European countries are more likely to report poor psychological well-being [227]. In the current study, 40.2% of family physicians complained suffering from psychological distress and almost 16.0% – from PTSS. More than a third (37.5%) of physicians reported having suffered from muscular pain in neck and shoulders. Mental and musculoskeletal disorders are defined as the most common work-related conditions reported by physicians [256]. Moreover there is evidence that musculoskeletal pain and depressive symptoms often co-occur [97, 226]. The survey conducted in a sample of UK doctors from different specialities revealed that mental health issues were widely reported and were associated with greater job constraints, managerial issues and lack of job satisfaction. Surgeons were found to be at a greatest risk of musculoskeletal pain [256]. Studies worldwide suggest high prevalence of psychological distress among physicians. In Pakistan 30.9% of doctors reported substantial levels of distress, a third of those had severe distress [19]. The study in Australia showed that the prevalence of elevated psychological distress among junior doctors was between 63.0% and 80.0% higher than in the general community. Distress was most strongly associated with being discontented with workload, lack of enjoyment from current job, taking time off work and having experienced workplace bullying [201]. In Finland distress was one of the factors causing general practitioners to leave their work [98]. Serbian scientists reported contrary results, where psychological distress among general practitioners and psychiatrists, measured by GHQ-12 was very low implying their good mental health [253]. The investigation of musculoskeletal complaints in a sample of Canadian surgeons revealed that nearly one third reported low back pain, 12.8% – shoulder pain or tendinitis [5]. In Saudi Arabia 70.0% of ophthalmologists reported neck and back pain. The association was found only with reported physical discomfort during professional activities, but not with mental stress [4].

The results of a number of studies assent that schoolteachers fall into the category of professionals who experience a huge amount of work – related stress, which may lead to sustained physical and mental health problems [60, 74, 125, 126, 179, 259]. Teachers also have many occasions to exhibit a non-ergonomic body posture while working with a computer, studying literature or correcting students` works. Over time, this may lead to musculoskeletal system disorders, such as pain in cervical and/or lumbar region [216]. In the present study 25.2% of teachers suffered from psychological distress, 14.3% – from PTSS. German researchers provided very similar

results where mental distress was reported by 29.8% of teachers using the same GHQ-12 instrument [26]. Study results in other countries show comparable scores [194]. In the Croatian sample, every 10th teacher (11.5%) complained about having psychological health problems caused by work [217]. The rate of psychological distress found among Japanese teachers is higher – 62.9% [178]. The survey conducted in the UK revealed that out of 27 occupations teaching was associated with the largest proportion of reported "high stress" [172], teachers in primary and secondary education also had a higher prevalence of common mental disorders [234]. 28.2% of Kaunas teachers suffered from muscular pain in neck and shoulders. Polish investigators detected somewhat higher prevalence (43.0% in female and 47.4% in male teachers) of at least mild back pain in cervical region [216]. In Sweden 44.0% of teachers reported pain in neck and 38.0% – in shoulders [12]. Upper back pain and lower back pain was also highly prevalent among schoolteachers in Jordan [2].

More than a third (35.6%) of waiters had psychological distress. PTSS and pain in the neck and shoulders were reported by 12.2% and 14.1% of waiters, respectively. The cross-sectional study in India (Pune-Mumbai) included 127 workers from 15 restaurants detected that musculoskeletal symptoms such as low back pain, fatigue, body ache and pain in limbs were present in 14.2% of the workers [123]. We could not find studies suggesting data on prevalence of psychological distress and PTSS among waiting staff.

The lowest reported prevalence rates of health complaints were found in the group of seafarers, where psychological distress was reported by 12.4%, PTSS by 4.1% and pain in neck and shoulders by only 3.5% of respondents. Globally seafaring is associated with mental, psychosocial and physical stressors [42]. The analysis of data on suicides also proved that mental health of seafarers in many cases continues to be very poor and often fatal [106]. In the previous study more than one-half of Latvian seafarers and almost half of Lithuanian seafarers stated that they had experienced psycho-emotional stress; also 16.0% of Lithuanian and 19.0% of Latvian seafarers complained of slightly more frequent depression when on the ship, compared to being on the shore [222]. Strain on neck, arm or back and heavy lifting were associated with female gender ($p=0.0001$) and younger age (below or above 30 years of age, $p<0.0001$) [73].

Every forth police officer (25.9%) suffered from psychological distress. Indian investigators [205] reported very similar results. In a study conducted in a representative sample of police officers in China (N=5811), 20.9% were diagnosed with psychological distress [139].

The assessment of health complaints reported by nurses in the present research revealed that almost every fourth nurse (23.1%) experienced

psychological distress, almost 13.0% of nurses had PTSS and almost one-third (30.2%) pointed out their neck and shoulder pain. The scientific literature suggests that healthcare workers, especially nurses in mental health care and intensive care units have high rates of PTSS due to emotionally stressful work, including witnessing patients 'deaths, suffers and also physical violence they experience from patients [231]. Research conducted in the health care sector in several countries suggests that nursing work has become increasingly stressful, with levels of psychological distress exceeding those of general population norms [207, 208]. The results of the survey in China showed that 85.5% of nurses experienced psychological distress [274]. Work related musculoskeletal disorders (MSD) is a serious occupational health problem among registered nurses globally with 89.0% of MSDs symptoms in the last 12 months. The most affected body regions are the lower back, followed by neck and shoulders [77, 215]. The systematic review of longitudinal studies confirm that occupations with highly repetitive work tasks, forceful exertions, awkward postures and heavy lifting, as well as in demanding psychosocial work environments increase risk to suffer from MSDs [128].

The main findings in the present study were that adverse psychosocial job characteristics (high job demands, low job control, low social support at work) were associated with workplace bullying. The results of the study confirmed the direct paths between job demands and negative acts in all four investigated occupations and inverse direct paths between job control and experienced bullying behaviours among nurses and teachers. Low social support and reported negative acts were also significantly related in all four occupations. Those findings coincide with the the results of other studies that bullying is likely to prevail in stressful working environments as it correlates with job control, workload and social climate [95, 213, 221]. Other investigators used SEM to investigate the relationship between workplace bullying, presumed antecedents (interpersonal conflicts, role ambiguity, and conflict and workplace social support) and consequences such as health complaints and absenteeism from work). They found that social support was a significant predictor of workplace bullying, which, in turn, was a cross-sectional and longitudinal predictor of workers' health complaints [43]. Åse Marie Hansen also found that social support from co-workers and supervisors correlated with bullying [94]. In general, workplace bullying may be reduced by limiting job demands and increasing job resources [11].

Another finding was that adverse psychosocial job characteristics were directly or through workplace bullying associated with mental health complaints (psychological distress, PTSS), which in turn were also associated

with reported pain in neck and shoulders. Several longitudinal epidemiological studies affirm that adverse psychosocial job characteristics, namely – high job demands, low job control and low social support at work are one of the risks for poor mental health [49]. On the other hand, high job demands were also directly related with pain in neck and shoulders, which is in accordance with the conclusions made by Swedish investigators [12]. Only in a sample of waiting staff, reported pain in neck and shoulders was not associated neither with adverse psychosocial work characteristics nor with experienced bullying behaviours and was probably related to body postures. Other investigators also suggest that prevalence of MSDs is associated with job demands more strongly than with job control [180, 270]. The results of a study carried out in Germany, suggested, that social support at work was inversely associated with musculoskeletal complaints [71]. In the present study, no associations between job control or social support and pain in neck and shoulders were detected. Overall, the findings of this research contribute to the understanding that intervention strategies should focus on managing psychosocial risk factors such as work stress, job climate, job satisfaction and supervisor support as they have been consistently related to musculoskeletal disorders [54]. Some researchers found associations between bullying and musculoskeletal disorders [170, 223, 254]. In the present study, direct associations between experienced negative acts and pain in neck and shoulders were detected only in the group of nurses; however, negative acts mediated between adverse psychosocial job characteristics and pain in all investigated occupational groups. In the study carried out in Italy, the results suggested that job-related strain acted as mediator between workplace bullying and MSDs [255].

The results of the present study contribute to the findings of the researchers' worldwide claiming that workplace bullying being a severe social stressor reduces the psychological and physical health of victims and is a strong predictor of stress-related psychological complaints, PTSS, anxiety and depression [31, 70, 124, 220, 252]. In the current study, experienced negative acts were directly and positively related with reported mental health complaints – psychological distress and PTSS in all investigated occupational groups but teachers.

In the sample of teachers, the investigation whether victimization from bullying as per self-labelling assessment was related to mental health complaints was performed and positive results were obtained. These results engage to contemplate that teachers feel more broken in terms of workplace bullying as perceive themselves as bullying victims stronger than employees in other investigated occupations. The study in a sample of Canadian nurses showed that greater exposure to workplace bullying was significantly

related to higher levels of PTSD symptomology [232]. The results of a prospective study run in the sample of German junior physicians suggested bi-directional associations between victimization from workplace bullying and depressive symptoms [147]. In Australia, junior doctors had psychological distress 63.0–80.0% higher than the general community did and having experienced workplace bullying was one of variables most strongly associated with psychological distress [201]. Italian researchers suggest that exposure to bullying was significantly associated with health complaints such as psychological distress, depression and some somatic complaints. Even after having included job strain model the results did not changes substantially showing that bullying is a very severe and unique psychosocial risk factor [21].

The present investigation of the associations between workplace bullying and self-rated health revealed that respondents who experienced negative acts at workplace, assessed their health as fair and poor significantly more often in comparison with those, who had not been exposed to bullying behaviours, respectively 11.4% and 2.1%; 8.7% and 1.8% ($p<0.05$). We could not find studies conducted in the workforce abroad that would allow comparison. However, in a number of studies assessing bullying among adolescents it was proposed that victims of bullying were more likely to report self-rate health, multiple health complaints [34, 225]. The research concluded among Lithuanian adolescents determined that every second respondent reported having experienced or witnessed bullying and bullying was associated with poor subjective health [88]. The results of the study conducted in Denmark suggested a strong association between poor self-rated health, sick leave, poor sleep and self-labelled bullying among the respondents reporting occasional and in particular – severe bullying [31]. This is in line with the findings of the present study as severe workplace bullying enhanced the OR for self-rating health as poor by 1.84-fold (95% CI 1.17–2.89). The results of the current research also suggest that respondents who reported high job demands evaluated their health as fair or poor in comparison with those, who had low job demands, 5.3% and 1.9% ($p<0.05$), respectively. Conversely, respondents having high control over their work evaluated their health as excellent or good if compared with those, having low job control. These results are in accordance with the findings proposed by the study conducted among health professionals in Brazil [240]. The findings of another study suggested that self-related health was positively associated with the quality of social relationships at workplace [218].

In general, the results of this study disclosed that bullying behaviours prevail in the Lithuanian workforce. It is hard to determine the reasons that

stand behind. As mentioned by some investigators, it could be determined by the cultural aspects [66]. It has been noted that workplace bullying in the Eastern European countries had started to attract attention of the scientists and to be considered as a social problem only recently [9]. It might make think that having spent decades under the pressure of Soviet regime should have made a significant influence on the mentality and cultural norms in the society. Considering that in some Western countries the prevalence rates are found to be even higher, it also encourages searching for the factors that influence the society globally despite of the nations or religions.

Our findings are also in line with the work environment hypothesis, which highlights the importance of psychosocial work characteristics, such as high job demands, low job control and low social support in the origin of bullying. This suggests that controlling job strain at work could help to prevent workplace bullying. The investigation of associations between adverse psychosocial job characteristics and health complaints in the present study showed cumulative effects of exposure to several stressors, including workplace bullying and psychosocial job characteristics (high demands, low control and low social support at work) that have contributed to developing mental health problems. Mental health problems in turn were associated with reported pain in neck and shoulders. The results of this dissertation confirm the importance and necessity to improve psychosocial working environment, escpecially in the health care and restaurant sectors where the employees reported the highest prevalence of psychosocial risk factors.

STRENGTHS AND LIMITATIONS OF THE STUDY

Strengths. To the best of our knowledge, this study is the first epidemiological complex study in Lithuania that investigated the associations between numerous psychosocial work environment risk factors, namely job demands, job control, job strain, social support and workplace bullying and the effects of adverse psychosocial working conditions on health complaints – both mental and physical. Moreover, the assessment was carried out in six different occupations. This allowed investigating psychosocial risk factors at work among employees that have an intense interaction with external clients (patients, customers, students) and those who work in small groups of employees for long shifts isolated from society (seafarers). This variety of occupations also allowed evaluating psychosocial risk factors at work in the occupations that mainly employ males (e.g. police officers, seafarers) and females (e.g. nurses, teachers). In the study, we employed Structural equation modelling (SEM) which is currently a very popular method in creating and analysing complex statistical models in social sciences, medicine,

psychology, economics and other fields, however is not yet widely used in the research of public health in the country. Employment of SEM allowed investigating adverse work characteristics, workplace bullying, mental distress complaints, and pain in the neck and shoulders simultaneously and detecting direct and indirect effects of workplace bullying on health complaints. Moreover, the study results revealed high rates of workplace bullying prevalence in the investigated occupations, which confirmed the existing problem in the society and the needs for further investigations and establishing preventive measures.

The study is based on reliable and valid instruments that are accepted and used globally. This allows the comparison of the results with the findings proposed by other investigators worldwide.

Limitations. The first limitation is related to the study design and is common to all cross-sectional studies. As the risk factors and the complaints are being researched at the same time-point, we cannot prove the causal relationships between the variables and can only describe correlations between them [91]. Despite the fact that some authors suggest that adverse psychosocial job characteristics are more likely to be the reason why bullying appears in the workplaces then vice versa [33], and that a number of longitudinal studies have found workplace bullying to be a predictor of mental health complaints [187], further longitudinal studies should be conducted to gain more knowledge about the causality of the relationships between workplace bullying and adverse psychosocial work characteristics, and the paths through which different psychosocial risk factors at work effect health complaints. We also admit that for a better evaluation of the reasons causing muscular pain in neck and shoulders, the level of physical workload at work and time spent in a non-ergonomic body posture while working (especially among nurses, waiters), time spent working with the computer or time spent working in a sitting position (especially among family physicians, teachers) should be assessed. In addition, we investigated only symptoms of post-traumatic stress. The individuals cannot be fully diagnosed with PTSD without having passed a diagnostic interview. The second limitation related to the methodology is the way of data collection. The collected data in the used questionnaire is based on self-reports which raises the possibility of reporting bias. The third limitation that we acknowledge is that the samples in separate occupations could be larger for SEM. Even though SEM allowed us to detect both – direct and indirect paths between psychosocial risk factors at work and health complaints, the R-squared values in the models were not very high. This indicates that other important factors were not captured and not included into the models. We therefore encourage to perform research in larger samples and to include

more factors that may have impact on health complaints. And the last limitation we acknowledge is that despite of a large sample in the study, it is not representative for the entire Lithuanian workforce. Three out of six occupations (teachers, waiters and police officers) were investigated in Kaunas City only. This should be taken into account when interpreting the results.

6. CONCLUSIONS

1. The investigation of prevalence of adverse psychosocial factors at work and health complaints (psychological distress, PTSS and muscular pain in neck and shoulders) among employees of various occupations revealed that:
   - The highest prevalence of bullying assessed by operational approach was found among family physicians and waiters. The lowest rates were found among teachers, seafarers and police officers. Nurses were situated between most and less bullied occupational groups. Self-labelling method revealed that family physicians and police officers suffered from severe bullying most often, 13.0% and 11.7%, respectively, followed by waiters – 10.9%. The lowest rate was found among teachers (2.9%) and seafarers (3.8%). Nurses reported low prevalence of severe but high prevalence of occasional bullying – 4.7% and 27.9%, respectively.
   - Family physicians suffered from psychological distress and pain in neck and shoulders most frequently. In the group of waiters prevalence of psychological distress was almost as high as among family physicians, however pain in neck and shoulders was one of least frequently reported. Prevalence of PTSS was similar in all occupational groups, but seafarers, and fluctuated from 12.2% to 15.9%. Seafarers reported the lowest prevalence of investigated health complaints.
   - Most favourable psychosocial job characteristics were reported by teachers, while most stressful working environment (high job demands, low job control and low social support) was found among family physicians and waiters.
2. The analysis of the associations between adverse psychosocial factors at work and health complaints (psychological distress, PTSS and muscular pain in neck and shoulders) among employees of various occupations revealed that:
   - High job demands and low social support were associated with experienced bullying behaviours at work in all investigated groups.
   - Adverse psychosocial job characteristics were directly or through workplace bullying associated with mental health complaints (psychological distress, PTSS), which in turn were also associated with reported pain in neck and shoulders. Only in a sample of waiting staff, reported pain in neck and shoulders was not associated neither with

adverse psychosocial work characteristics nor with experienced bullying behaviours.

- Experienced bullying behaviours were directly associated with mental health complaints (psychological distress and PTSS) in all occupational groups, but teachers. In the group of teachers, aforementioned mental health complaints were significantly related with reported victimization from bullying as per self-labelling assessment.

3. The investigation of the associations between adverse psychosocial work factors (workplace bullying, job demands, job control, job support) and self-rated health revealed that respondents who experienced negative acts at workplace, assessed their health as fair and poor significantly more often in comparison with those, who had not been exposed to bullying behaviours, respectively 11.4% and 2.1%; 8.7% and 1.8% ($p<0.05$). Respondents who reported adverse psychosocial job characteristics (high job demands, low job control, low social support) evaluated their health as fair or poor significantly more often than those having indicated favourable psychosocial working environment. Severe workplace bullying enhanced the OR for self-rating health as poor by 1.84-fold (95% CI 1.17–2.89), high job demands – by 1.74-fold (95% CI 1.41–2.15).

7. RECOMMENDATIONS

The results of the present study revealed that adverse psychosocial work characteristics and workplace bullying are prevalent in the Lithuanian work force and lead employees to a worsened physical and mental health. The study contributes to research of association between adverse psychosocial work factors and health complaints and can be useful for future investigations in this field. Considering study findings some practical recommenddations may be suggested.

At national level:

1. Workplace bullying should be recognized as a serious psychosocial hazard. Public awareness of this phenomenon and its' consequences for the targets as well for the organizations and society should be promoted through media publicity, anti-bullying campaigns led by public health centres, trade unions or any other institutions.
2. Although the employers are already obliged to ensure safety and health of workers at work in all aspects related to work, including psychosocial work environment by the Law on Safety and Health at Work of the Republic of Lithuania in force, it would be highly recommended to issue additional regulations directed specifically towards workplace bullying that would oblige every institution/ organization to develop, implement and monitor an anti-bullying policy.
3. Further research on workplace bullying, including, but not limited to regular surveys run by governmental institutions or scientific investigations should be promoted and financially supported by the government to investigate even more occupations and to identify the sectors at a high risk where implementation of preventive measures is critical.

At sectorial or organizational level:

1. Sectors or institutions/organizations should set and enforce clear standards of behaviour through a code of conduct or a workplace policy that would establish a zero-tolerance to bullying behaviour approach and would define how the employers experiencing or witnessing such behaviour should report and what response actions shall be taken to deal with unacceptable behaviour.
2. The employees, including managers and supervisors should be aware of their roles in relation to preventing and responding to workplace bullying. Every employee should get training on a routine basis, e.g. yearly, the newcomers – right after being employed during face-to-face mee-

tings, or through online courses. The training should include information about the workplace bullying and its antecedents, the roles of the parties involved, the consequences for the individual, organization and society. The employees should be trained to recognize bullying behaviours and to address them by reporting to responsible parties, how to support the colleague who experienced bullying behaviour and how to avoid being involved as a bystander or become a bully. Information about workplace bullying could be also given to employees by handing out newsletters or pamphlets, displaying posters around the workplace or any other most suitable ways.

3. As the results of the study also revealed that adverse psychological work characteristics have negative impact on employee's health, it is also important to take appropriate preventive measures to establish safe and healthy work environment and respectful working relationships. This could be achieved by providing appropriate trainings on positive leadership styles to the managers and supervisors, who should be able to effecttively manage workloads, clearly set up goals for every employee, define his/her role and responsibilities, provide constructive feedback on employee's performance, mentor and support newcomers and poor performing employees, facilitate teamwork and cooperation. The employees should also be able to plan their work and take decisions related to the assigned tasks.
4. It is also highly recommended to provide training to all employees, including managers/ supervisors on handling conflicts, managing anger, coping with daily stress and achieving satisfactory work-life balance. The employees should also be encouraged to increase physical activity, improve eating habits and cease tobacco use.
5. Institutions/ organizations should continuously monitor psychosocial job environment by confidential surveys, records of sick leave or exit interviews.

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9. LIST OF PUBLICATIONS

Publications on the dissertation theme

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3. Bernotaite L, Malinauskiene V. Workplace bullying and mental health among teachers in relation to psychosocial job characteristics and burnout. International Journal of Occupational Medicine and Environmental Health 2017;30(4):1-12.

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ORIGINAL PAPER

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BULLYING BEHAVIOR AND MENTAL HEALTH IN HEALTHCARE AND EDUCATIONAL SECTORS IN KAUNAS, LITHUANIA

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Abstract

Background: Investigations on workplace bullying in the countries of Eastern Europe are yet not too extensive. The aim of the study has been to identify the most frequent bullying behavior and to explore the associations with psychological distress and post-traumatic stress symptoms in 3 female-dominated occupations in Kaunas, Lithuania. **Material and Methods:** This cross-sectional study employed 517 teachers (response rate (RR) = 71.3%), 174 family physicians (RR = 65.7%) and 311 internal medicine department nurses (RR = 69.1%). The twenty-two-item Negative Acts Questionnaire was used for measuring the exposure to bullying behavior, Goldberg 12-item General Health Questionnaire (GHQ-12) – psychological distress, Event Scale-Revised (IES-R) inventory – post-traumatic stress symptoms, Karasek & Theorell Demand-Control questionnaire – psychosocial job characteristics. The International Business Machines Corporation (IBM) SPSS Statistics version 20.0 was used for performing the statistical analysis. Logistic regression was used for assessing the associations among 22 negative acts as continuous variable and mental health outcomes adjusting to age, psychosocial factors at work and everyday life. **Results:** Exposure to workplace bullying behavior on a weekly/daily basis was prevalent among family physicians at the rate of 19%, among nurses – 12.9%, among teachers – 4.1%. Even after adjustment to age, psychosocial job characteristics and threatening life events, the exposure to 22 negative acts as continuous variable was significantly associated with psychological distress and post-traumatic stress symptoms for all 3 occupations. **Conclusions:** Health care sector is particularly affected by workplace bullying. Exposure to bullying behavior was associated with mental health problems for all 3 occupations. Preventive measures are necessary to improve psychosocial work environment conditions in healthcare and educational institutions in Lithuania. Med Pr 2017;68(3)

Key words: nurses, teachers, psychological distress, bullying behavior, family physicians, negative acts

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INTRODUCTION

Workplace may impact an employee's mental health positively through the feeling of being meaningful for society, social support, but may also act conversely by contributing to the development of mental health problems [1]. Research has shown that workplace bullying is a severe social stressor and reduces the psychological and physical health of victims [2]. The prolonged exposure to bullying behavior is a predictor of psychological distress [3] and is even related to symptomatology specific for post-traumatic stress [4]. The definition of workplace bullying provided by Einarsen et al. [5] describes it as harassing, offending or socially excluding someone or negatively affecting someone's work behavior, that occurs repeatedly and regularly, e.g., weekly and lasts for a period of time, e.g., about 6 months. Bullying is also often described as a long lasting and gradually escalating process where frequent and ever more intense negative acts are directed towards a peer or a subordinate and leads the respondent to victimization [6].

The prevalence of bullying ranges from 4% in Northern to 17% in Southern Europe. This variation could be explained by cultural differences, diverse level of

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knowledge of the phenomenon, the inconsistency of bullying measurement methods and the variety of instruments used worldwide [7,8].

Generally, 2 different methods to assess the prevalence of bullying are employed by researchers:

- the self-labelling approach where the respondent is requested to indicate whether she/he has felt being exposed to bullying at work within the last 6 months on the basis of the provided definition of workplace bullying,
- the "operational" approach which measures how frequently the respondent has been subjected to various types of bullying behavior presented in the inventory during the last 6 months without having referred it to the concept of bullying – exposure to bullying is then assessed by defining a criterion whether the respondent is regarded as bullied or not, e.g., at least 2 (Mikkelsen and Einersen (2011) [9]) negative acts per week during the last 6 months.

In this article terms: bullying behavior and negative acts will be used interchangeably.

The sectors with high level of contact with external customers, such as healthcare and education, tend to have the highest levels of workplace violence and are very often female-dominated [2,10].

To be able to develop preventive strategies that would improve working conditions in terms of undesirable behavior at work, it is necessary to gain more detailed understanding of the phenomenon. The investigations on workplace bullying are yet not too extensive in Eastern European countries. This study has aimed to lessen the gap in this field of occupational epidemiology and to:

- assess the level of an employee's exposure to negative acts most frequently identified with bullying (bullying behavior) in 3 female-dominated occupations within healthcare and educational sectors in Kaunas, the second largest city of Lithuania,
- examine whether there are differences in the prevalence of bullying behavior among investigated occupations,
- identify who in the organizational hierarchy are the most frequent perpetrators in every examined occupation,
- assess whether the associations among 22 negative acts might be influenced by other stressful exposures at workplace and everyday life, taking into account possible effects from high job demands, low job control, low social support at work, threatening life events and age in three investigated occupations.

MATERIAL AND METHODS

This cross-sectional study was approved by the Kaunas Regional Biomedical Research Ethics Committee (No. BE-2-12) and was carried out in 2015 for the sample of Kaunas employees representing 3 occupations – teachers, family physicians and nurses, that was representative in terms of place of employment.

The sample consisted of:

- 517 teachers from 13 secondary education schools (the response rate of 71.3%). The mean age of participants was 49.92 years old (the standard deviation (SD) = 9.11), 419 (81%) were female and 41 (7.9%) were male, 57 (11%) respondents did not declare their gender, 42 (8.12%) did not declare their age;
- 174 family physicians from 5 public and 5 private out-patient clinics (the response rate of 65.7%). The mean age of the participants was 52.46 years old (SD = 9), 144 (82.8%) were female and 30 (17.2%) were male;
- 311 internal medicine department nurses from 3 hospitals (the response rate of 69.1%). The mean age of participants was 46.65 years old (SD = 8.98), 310 (99.7%) were female and 1 (0.3%) was male, 26 (8.4%) respondents did not indicate their age.

The survey was based on a self-administered anonymous questionnaire, which included demographic measures and globally used questionnaires, translated and validated for usage in Lithuania.

The Lithuanian version of the 22-item Negative Acts Questionnaire (NAQ) (Einarsen et al.) was used for assessing the variety of negative behavior forms [11]. It contains 22 items that represent the person-oriented and work-oriented negative acts and physical intimidation. The respondents are asked to indicate how often they have experienced each behavior during the last 6 months, using a 5-point Likert-type scale (where: 5 = daily, 4 = weekly, 3 = monthly, 2 = now and then, and 1 = never). The Negative Acts Questionnaire is the most widely used instrument for measuring exposure to workplace bullying and it is proven that its psychometric quality is good [11,12]. We used the operational approach and the exposure criteria proposed by Mikkelsen and Einarsen's (2001) [9]. The respondents were also asked to indicate the source of bullying.

Psychological distress was measured by Goldberg 12-item General Health Questionnaire (GHQ-12) which is a well-established self-administered screening scale for the evaluation of psychological distress in non-clinical population samples, valued for its excel-

lent screening performances and good clinical validity in terms of diagnosing mental disorders and measuring general psychological well-being [12]. Three and more positive answers were assessed as psychological distress. Cronbach's α was 0.81 for family physicians, 0.83 – for nurses and 0.75 – for teachers.

Current subjective distress for a traumatic event was assessed using the Impact of Event Scale-Revised (IES-R) inventory [13]. It is a self-report measure scale adapted for usage in Lithuania that contains 22-items and assesses 3 categories of post-traumatic stress symptoms: hyper arousal, avoidance behavior and intrusive thoughts and/or feelings with reference to the past 7 days. Scoring over 33 was considered as a cut-off for a "probable post-traumatic stress disorder (PTSD) case" [14]. Internal consistency for the total IES-R scale was high (Cronbach's α for family physicians and nurses = 0.96, for teachers = 0.95).

Psychosocial job characteristics were measured by the Swedish version of Karasek & Theorell Demand--Control questionnaire translated and validated for usage in Lithuania. It consists of 6 items for assessing job control, psychological demands (5-items), supervisor support and coworker support (6-items) [15]. High and low categories for job demands, job control, and social support were determined by a cut-off point corresponding to the median of the total score for each of these constrains. Scores below the median were assessed as "low."

Participants were asked about the occurrence of threatening life events in the past 12 months that were associated with a long-term psychological threat: unemployment, divorce, financial crisis, death of a first degree relative or a close friend.

The study data was analyzed using the IBM SPSS Statistics version 20.0. Comparisons of mean scores of the responses to every NAQ-22 question across 3 occupations were performed by one-way ANOVA with *post hoc* Bonferroni correction, $p < 0.05$ was considered statistically significant. Other statistical procedures employed were: the frequency, Chi^2 tests with p-values and logistic regression analysis to investigate the associations between exposure to 22 negative acts as continuous variable and mental health outcomes (psychological distress and post-traumatic stress symptoms) adjusting to age in the first model and in the second model adjusting to age, dichotomized below the medium psychosocial job characteristics (job demands, job control, social support) and threatening life events.

RESULTS

Study results revealed that the highest prevalence of bullying behavior was detected in the healthcare sector while among teachers it was 3–5-fold lower as compared to nurses and family physicians (Table 1).

One-way ANOVA with *post hoc* Bonferroni correction investigated the differences in the mean scores of the responses to every NAQ-22 item among 3 occupations. The Table 2 contains 22 bullying acts ranked according to their mean values, i.e., their frequency of occurrence. The test showed that the differences between responses in 3 occupational groups to all items but one ("Hints or signals from others that you should quit your job" (10)) were significant. In general the greatest differences between the groups were observed for work-oriented items: "withholding information" (1), $F(2, 999) = 40.377$, "pressure not to claim" (19), $F(2, 999) = 37.918$, "unmanageable workload" (21), $F(2, 999) = 35.360$, etc. The differences between the groups for the person-oriented negative acts were somewhat lower.

The Table 3 contains the data for the status of bullying perpetrators. Family physicians experienced bullying behavior from their superiors most frequently, meanwhile in the group of nurses peers tended to bully somewhat more often than superiors. The prevalence of bullying by external customers – patients/students, was similar in all 3 occupations. Teachers were offended by students most frequently.

The results of this study showed that respondents who were exposed to workplace bullying behavior re-

Table 1. Prevalence of being exposed to bullying behavior during the last 6 months in investigated female-dominated occupations in Kaunas, Lithuania

Negative acts [n/week]	Family physicians [n (%)]	Nurses [n (%)]	Teachers [n (%)]
0–1	141 (81.0)	271 (87.1)	496 (95.9)
2–22	33 (19.0)	40 (12.9)	21 (4.1)

$Chi^2 = 40.441$, $p < 0.001$.

Table 2. Mean ranks of Negative Acts Questionnaire [11] in female-dominated occupations in Kaunas, Lithuania (one-way ANOVA with *post hoc* Bonferroni correction)

Negative Acts Questionnaire Item	Mean ranks by occupation			F(2, 999)
	family physicians	nurses	teachers	
1. Someone withholding information, which affects your performance	2.18*,***	1.70***	1.47	40.377
2. Being humiliated or ridiculed in connection with your work	1.60*,***	1.32$^{\#}$	1.21	29.083
3. Being ordered to do work below your level of competence	1.70***	1.69***	1.26	34.679
4. Having key areas of responsibility removed or replaced with more trivial or unpleasant tasks	1.47**,***	1.29$^{\#\#}$	1.15	17.974
5. Spreading of gossip and rumours about you	1.90*,***	1.71***	1.40	28.027
6. Being ignored or excluded	1.57*,***	1.18	1.16	29.605
7. Having insulting or offensive remarks made about your person (i.e., habits and background), your attitudes or your private life	1.57***	1.47***	1.25	21.389
8. Being shouted at or being the target of spontaneous anger (or rage)	1.77***	1.66***	1.38	28.214
9. Intimidating behavior such as finger-pointing, invasion of personal space, shoving, blocking/barring the way	1.29***	1.22$^{\#\#}$	1.11	10.825
10. Hints or signals from others that you should quit your job	1.25	1.28	1.19	2.706
11. Repeated reminders of your errors or mistakes	1.51***	1.47***	1.23	19.776
12. Being ignored or facing a hostile reaction when you approach	1.56*,***	1.30	1.21	21.907
13. Persistent criticism of your work and effort	1.46***	1.35$^{\#\#}$	1.21	11.853
14. Having your opinions and views ignored	1.80*,***	1.42	1.30	34.025
15. Practical jokes carried out by people you don't get on with	1.26***	1.23***	1.09	12.888
16. Being given tasks with unreasonable or impossible targets or deadlines	1.45*,**	1.30	1.28	5.542
17. Having allegations made against you	1.52*,***	1.25	1.22	19.899
18. Excessive monitoring of your work	1.70*,***	1.37$^{\#\#}$	1.22	32.853
19. Pressure not to claim something which by right you are entitled to	1.61*,***	1.26$^{\#}$	1.15	37.918
20. Being the subject of excessive teasing and sarcasm	1.67*,***	1.41$^{\#}$	1.27	23.272
21. Being exposed to unmanageable workload	1.66*,***	1.36***	1.17	35.360
22. Threats of violence or physical abuse or actual abuse	1.41*,***	1.27***	1.11	24.295

F(2, 999) – F statistics (degrees of freedom).
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$, comparing data of family physicians and nurses.
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$, comparing data of family physicians and teachers.
$^{\#}$ $p < 0.05$, $^{\#\#}$ $p < 0.01$, $^{\#\#\#}$ $p < 0.001$, comparing data of nurses and teachers.

Table 3. Status of bullying perpetrator in investigated female-dominated occupations in Kaunas, Lithuania

Bullying perpetrator	Family physicians [n (%)]	Nurses [n (%)]	Teachers [n (%)]	Chi^2	df	p
Superior	44 (25.3)	48 (15.4)	34 (6.6)	44.384	2	< 0.001
Colleague	17 (9.8)	54 (17.4)	19 (3.7)	44.299	2	< 0.001
Subordinate	5 (2.9)	11 (3.5)	2 (0.4)	12.190	2	< 0.010
Patients or students	18 (10.3)	28 (9.0)	59 (11.5)	1.268	2	0.530

df – degrees of freedom.

ported significantly ($p < 0.05$) more mental health complains than employees not subjected to bullying behavior (Table 4). In the group of family physicians the dichotomized association between workplace bullying behavior and psychological distress was insignificant, though in the logistic regression model the continuous associations were significant.

The Table 5 presents the associations between exposure to 22 negative acts as continuous variable and mental health outcomes (psychological distress and post-traumatic stress symptoms) adjusting to age in the first model and in the second model - adjusting to age, dichotomized below the medium psychosocial job characteristics (job demands, job control, social support) and threatening life events.

In the final model the associations between exposure to 22 negative acts and mental health outcomes remained stable in all 3 occupations.

DISCUSSION

The aim of this study has been to assess the prevalence of workplace bullying using the "operational" method, to identify the most frequent bullying behavior and to explore the associations between the exposure to workplace bullying behavior and mental health – psychological distress and post-traumatic stress symptoms in 3 female-dominated occupations (healthcare and education sectors) in Kaunas (Lithuania) taking into account the possible effects of age, adverse psychosocial job characteristics (high job demands, low job control, low social support at work) and threatening life events. We have also aimed to reveal the sources of bullying within every investigated sample.

Our study results revealed that workplace bullying was prevalent for all 3 occupations; however the prevalence in the healthcare sector was much higher – 19% among

Table 4. Association between experiencing negative acts and mental health in investigated female-dominated occupations in Kaunas, Lithuania

Occupation and negative acts	Post-traumatic stress symptoms [n (%)]		Chi^2	p	Psychological distress [n (%)]		Chi^2	p
	no	yes			no	yes		
Family physicians			18.383	< 0.0001			0.296	0.5870
0–1 acts/week	122 (87)	18 (55)			80 (82)	61 (79)		
2–22 acts/week	18 (13)	15 (45)			17 (18)	16 (21)		
Nurses			6.992	0.0080			12.377	< 0.0001
0–1 acts/week	243 (89)	28 (74)			214 (91)	53 (75)		
2–22 acts/week	30 (11)	10 (26)			22 (9)	18 (25)		
Teachers			44.076	< 0.0001			30.215	< 0.0001
0–1 acts/week	341 (98)	45 (78)			378 (99)	113 (88)		
2–22 acts/week	7 (2)	13 (22)			5 (1)	16 (12)		

Table 5. Associations between exposure to 22 negative acts as continuous variable and mental health in the logistic regression models in investigated female-dominated occupations in Kaunas, Lithuania

Occupation	Psychological distress		Post-traumatic stress symptoms	
	OR (95% CI)*	OR (95% CI)**	OR (95% CI)*	OR (95% CI)**
Family physicians	1.03 (1.00–1.06)	1.01 (0.98–1.04)	1.08 (1.04–1.12)	1.10 (1.05–1.14)
Community nurses	1.08 (1.05–1.12)	1.05 (1.02–1.09)	1.06 (1.03–1.09)	1.01 (1.01–1.07)
Teachers	1.07 (1.04–1.10)	1.03 (1.00–1.07)	1.11 (1.07–1.15)	1.06 (1.02–1.11)

OR – odds ratio, CI – confidence interval.
* Age adjusted.
** Adjusted to age, job demands, job control, social support at work, threatening life events.

family physicians and 12.9% – among nurses compared to 4.1% among secondary school teachers. The data obtained from 5th European Working Conditions Survey conducted in 2010 showed that the prevalence of workplace bullying was 11.3% among the employees in the healthcare sector [7].

The research on workplace bullying solely among physicians is rather limited as compared to the extent of the investigations in the samples of nurses or healthcare sector in general. The research conducted on the samples of the emergency department physicians, medicine students alert that workplace violence in the healthcare field is a widespread problem [16,17]. In Ireland even 30% of surveyed junior doctors reported to be subjected to one or more bullying behavior [18]. The results of the study conducted on the sample of medicine students in the U.S. noted that the students particularly embarking on careers in family medicine claimed higher levels of harassment [19]. The prevalence that we found among Kaunas family physicians at the rate of 19% is very high; hence it requires further in-depth investigations to explore the root cause.

The results of the study carried out in the State of Washington, the USA, revealed that nearly every 3rd nurse (27.3%) had experienced workplace bullying during the last 6 months and most of the respondents who had been bullied declared that they had experienced hostile behavior from their superiors [20]. Another study conducted in the USA by Berry et al. [21] on the sample of novice nurses showed that every fifth of them (21.3%) had been bullied daily during the last 6 months as assessed by the Negative Acts Questionnaire and the primary source of bullying came from the more experienced colleagues (63%). In our study we have found that nurses are offended by peers somewhat more frequently than by superiors (17.4% vs. 15.4%). The most frequent bullying behavior experienced on a daily or weekly basis by nurses in our study is work-related, e.g., "withholding information" (1) – 6.4%, "work below your level of competence" (3) – 7.7%. Similar findings have been identified in the Danish sample of hospital staff that has comprised mainly nurses and in the representative sample of Norwegian work force where the most prevalent negative acts reported include "work below your level of competence" (3) and "withholding information" (1) [9,22]. In the study carried out in the sample of Spanish nurses, the most frequently reported negative acts are also work-oriented [23].

Studies on workplace bullying suggest that bullying is less prevalent in the educational sector [10]. In this study we have found the prevalence of workplace bullying in the sample of Kaunas teachers at the rate of 4.1%. In the sample of Polish teachers where the frequency and the type of hostile behavior were measured using locally developed questionnaire, the prevalence of workplace bullying was at the rate of 7% [24], in the Croatian sample every 5th teacher (22.4%) declared exposure to different kinds of harassment during last 12 months and every 10th (11.5%) one complained about having psychological health problems caused by work [25].

The scientific literature suggests that healthcare workers, especially nurses in mental health care and intensive care units have high rates of post-traumatic stress symptoms due to emotionally stressful work, including witnessing patients' deaths, suffers and also physical violence they experience from patients [26]. The meta-analysis on cross-sectional and longitudinal data obtained during the studies conducted worldwide confirms that workplace bullying is a strong predictor of stress-related psychological complaints, post-traumatic stress symptoms, anxiety and depression [27]. The study carried out in Italy affirmed that bullying mediated the relationship between job demands and post-traumatic symptoms [28].

The results of a prospective study run in the sample of German junior physicians suggested bi-directional associations between victimization from workplace bullying and depressive symptoms [29]. Our study revealed that concomitant exposure to 22 negative acts at the workplace was significantly associated with psychological distress, post-traumatic stress symptoms among family physicians, internal medicine departments' nurses and secondary school teachers even after adjustment to adverse psychosocial job characteristics (high job demands, low job control and low social support at work) and threatening life events. In the representative sample of German teachers psychological distress was assessed for nearly 1/3 (29.8%) of teachers [30].

The study on exposure to psychosocial work factors in 31 European countries excluded Lithuania as one of the countries with higher prevalence of exposure to psychosocial work factors which also included workplace violence as compared to Northern Europe [10]. The aforementioned results confirm that working conditions are critical in terms of workplace bullying, especially in the healthcare sector, and it is therefore essential to institute a zero-tolerance approach to all forms of bullying. It is important to increase the awareness of employees, to establish the nationwide strategies or local organizational policies that would provide guidance to

employees subjected to any type work violence on how to cope with the experienced adverse situations.

Moreover, it is necessary to continue research on workplace bullying in a wider spectrum of sectors and occupations and to identify the high-risk groups. We hope that the results of this study will contribute to acknowledgment of the existing problem and the development and implementation of measures to prevent workplace bullying.

To our best knowledge, this is the first study investigating the prevalence of bullying using the operational method, exploring the variety of bullying behavior and the differences among female-dominated occupations in Lithuania.

The strengths of the study have been that our sample size has been relatively large to produce reliable results. We have surveyed nearly 1/5 (approximately 17.1%) of Kaunas secondary school employees, around 41% of nurses working in the internal medicine departments in Kaunas hospitals and 65.7% of family physicians representing public and private out-patient clinics. We have also used reliable and valid instruments for measuring study variables.

Nevertheless, we should admit and mention several limitations of this research. Firstly, due to a cross-sectional design of the study we should be cautious while interpreting the results as we can only describe correlations, but not prove the causal relationships between the variables. Hence, longitudinal studies should be conducted to gain more knowledge about the causality of the relationships between workplace bullying, psychological distress and post-traumatic stress symptoms. Secondly, the collected data in the used questionnaire is based on self-reports which raises the possibility of reporting bias.

CONCLUSIONS

Health care sector is greatly affected by workplace bullying. Lower prevalence of bullying behavior has been found among teachers. Exposure to bullying behavior has been associated with mental health problems for all 3 occupations. Preventive measures are necessary to improve psychosocial work environment conditions in healthcare and educational institutions in Lithuania.

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The Impact of Event Scale – Revised: psychometric properties of the Lithuanian version in a sample of employees exposed to workplace bullying

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Background. The Impact of Event Scale-Revised (IES-R) is often used as a self-report instrument for symptoms of post-traumatic stress (PTS). The objective of this study was to explore the reliability and validity of the Lithuanian IES-R in a sample of employees with exposure to workplace bullying in different occupations.

Materials and methods. The original IES-R was translated into Lithuanian, and the comparability of content was verified through back-translation procedures. 294 employees with exposure to workplace bullying (52 teachers from the secondary schools of Kaunas, 56 family physicians, 101 nurses of internal medicine departments, 40 waiters, and 45 seafarers) were administered the Lithuanian IES-R and the General Health Questionnaire – 12 (GHQ-12) in order to verify some aspects of convergent validity. The exploratory factor analysis was used to verify the construct validity of the IES-R.

Results. The reliability of the Lithuanian version of the IES-R was verified. Cronbach's α of the total scale was 0.95. Exploratory factor analysis showed a clear factor structure with three independent dimensions: intrusion, avoidance and hyperarousal. Cronbach's α for subscales of intrusion, avoidance and hyperarousal were 0.89, 0.85, and 0.88, respectively. The convergent validity was supported by positive correlations between the subscales (intrusion, avoidance, hyperarousal) and the GHQ-12.

Conclusions. The results suggest that the self-reported Lithuanian IES-R is a valid instrument for assessing the dimensions of post-traumatic stress, has good psychometric properties, and may be applied in prolonged trauma-exposed populations.

Keywords: Lithuanian Impact of the Event Scale-Revised, psychometric properties, workplace bullying, validity

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INTRODUCTION

In 1980, post-traumatic stress disorder (PTSD) was introduced into the third edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM-III), and later also into the fourth edition (DSM-IV). On the basis of the diagnostic criteria of the DSM-IV, PTSD is an anxiety disorder that follows a traumatic event (Criterion A). It is characterized by recurrent re-experiencing of the traumatic event (Criterion B), constant avoidance of trauma-related stimuli and emotional numbing (Criterion C), and persistent symptoms of hyperarousal (Criterion D). In addition, symptoms must be prevalent for at least one month (Criterion E) and lead to impaired functioning in at least one important life domain (Criterion F) (1). In DSM-V Criterion A (exposure to a traumatic event) was additionally defined as "individual experiences first-hand repeated or extreme exposure to aversive details of the traumatic event" (2). A prolonged stress reaction, e. g., produced by ongoing exposure to workplace bullying, has been found to be particularly detrimental to the victim's health and causes significant psychological stress in those exposed, possibly leading to a range of post-traumatic stress symptoms (PTSS) (3). One of the most widely used self-report instruments for the assessment of PTSS is the Impact of Event Scale Revised (IES-R). It was developed to cover all three clusters of symptoms of PTSD (i. e., intrusion, avoidance and hyperarousal) with respect to a particular life-threatening event (4). It consists of 22 items. It was translated and adapted in many languages for the detection of PTSS after tsunamis, earthquakes, floods, attacks, etc. (5–11), and showed good psychometric properties. In Lithuania, the psychometric properties of the IES-R were tested in a sample of 475 persons with traumatic experiences evaluated by the Harvard Trauma questionnaire (12). The studies investigating the associations between workplace bullying and PTSS are scarce, though good psychometric properties of the IES-R were demonstrated in the investigation of the relationship between exposure to workplace bullying and symptoms of posttraumatic stress in a cross-sectional sample of 221 self-labelled targets of workplace bullying (13) and family physicians (14).

The objective of the present paper was to validate the Lithuanian version of the IES-R in a large sample of victims of workplace bullying in five ifferent occupations in Lithuania.

MATERIALS AND METHODS

Participants and procedure

This cross-sectional study was approved by Kaunas Regional Biomedical Research Ethics Committee (No. BE-2-12) and was carried out from 2013 to 2015 in representative samples of employees from Kaunas representing five occupations – teachers, family physicians, internal medicine department nurses, waiters, and seafarers. In total, 1378 employees were investigated.

The sample consisted of:

– 406 teachers from 13 secondary education schools (response rate 71.3%). The mean age of the participants was 49.92 years (standard deviation (SD): 9.11). 81.0% were females and 7.9% were males.

– 173 family physicians from five public and five private out-patient clinics (response rate 65.7%). The mean age of the participants was 52.46 years (SD): 9.00). 82.8% were females and 17.2% were males.

– 311 internal medicine department nurses from three hospitals (response rate 69.1%). The mean age of the participants was 46.65 years (SD): 8.98). 99.7% were females and 0.3% was males.

– 147 waiters from 217 cafes (response rate 72.1%). The mean age of the participants was 24.05 years (SD): 4.19). 80.8% were females and 19.2% were males.

– 341 seafarers from the Lithuanian Seafarer's Register (response rate 68.2%). The mean age of participants was 37.51 years (SD): 10.92). 3.0% were females and 97.0% were males.

Out of 1378 study participants, 294 were selected with workplace bullying experience:

– 52 teachers (17.7%),

– 56 family physicians (19.0%),

– 101 internal medicine department nurses (34.4%),

– 45 seafarers (15.3%), and

– 40 waiters (13.6%)

There were 97 (33%) males and 197 (67%) females. The mean age of the participants was

45.81 years (standard deviation (SD): 11.74). Those participants with workplace bullying experience were administered the IES-R, and the psychometric properties of the Lithuanian IES-R are presented in this article.

Measures

Participants completed an anonymous self-administered questionnaire which included sociodemographic measures and questionnaires to measure workplace bullying, PTSS, and psychological distress.

The Negative Acts Questionnaire (H. Hoel & S. Einarsen) was used to assess the variety of negative behaviour forms, and victimization from workplace bullying was measured using the single-item measure. The respondents were asked to indicate if they had experienced bullying during the last six months. Bullying was then classified into two categories – occasional and severe (weekly and more frequent) (15). This report presents data on the victims of occasional and severe bullying.

Due to experienced workplace bullying, posttraumatic stress symptoms were assessed by the Impact of Event Scale-Revised (IES-R) inventory (4). The IES-R is a short, easily administered self-report questionnaire containing 22 items. Each item is rated on a 5-point scale using anchors between 0 (not at all) and 4 (extremely), reflecting the extent to which a particular symptom was a problem for the respondent during the past week in relation to workplace bullying. The items that compose the scale include: 8 for intrusion symptoms, 8 for avoidance and numbing symptoms, and 6 for arousal symptoms. The maximum score is 88, which would indicate the worst PTSS state. Psychometric properties of the scale were tested in numerous studies (5–12). Scoring over 33 was considered as a cut off for a "probable PTSD case" (16).

The comparability of the Lithuanian IES-R and the original IES-R has been validated by stringent back-translation procedures. First, the IES-R was translated into Lithuanian by two psychiatrists and one psychologist, and any English phrases that were difficult to understand were translated into Lithuanian after consulting a Lithuanian professor of English literature. Then, the Lithuanian IES-R was back-translated by a person bilingual in English and Lithuanian to validate the translation, and the back-translated version was reviewed. As a result, some items such as 5, 13, and 17 in the first Lithuanian version were modified to better correspond to the meaning of the original items in the IES-R. The content of the final Lithuanian IES-R was further verified by a back-translation procedure until the meaning of each item matched the original item of the IES-R. After obtaining permission from the original author of the translated version, we established the final Lithuanian IES-R.

Psychological distress was measured by Goldberg's 12-item General Health Questionnaire (GHQ-12), which is a well-established self-administered screening scale for the evaluation of psychological distress in non-clinical population samples, valued for its excellent screening performances and good clinical validity in terms of diagnosing mental disorders and measuring general psychological well-being (17) and used in studies in the primary care sector (18). The short GHQ version consists of 12 questions covering feelings of strain, anxiety-based insomnia, depression, inability to cope, lack of self-confidence, and other symptoms of psychological distress. The reliability and validity of the Lithuanian version of the GHQ-12 were verified in local studies (19). Three and more positive answers were assessed as psychological distress. The Lithuanian version of the GHQ-12 was used to examine the external validity of the Lithuanian IES-R. Internal consistency of the GHQ-12 in the present study was calculated using Cronbach's α coefficients. It was 0.81 for family physicians, 0.83 for nurses, 0.75 for teachers, 0.68 for seafarers, and 0.79 for waiters. Cronbach's α for the whole sample was 0.80.

Data analyses

The SPSS version 20.0 was used for data entry and analysis. In order to investigate the underlying dimensional structure of the scale, exploratory principal axis factor analyses with equamax rotation were performed on the whole sample. Prior to exploratory factor analysis, Bartlett's test of sphericity was used to inspect data to ensure items were significantly correlated; to ensure they shared sufficient variance to justify factor extraction the Kaiser–Meyer–Olkin (KMO) measure of sampling adequacy was used. Sampling

adequacy values that are less than 0.50 are considered unacceptable, values that are between 0.50 and 0.60 are considered marginally acceptable, and values greater than 0.80 and 0.90 are considered excellent (20). Kaiser's criterion was used to set a number of factors. Salience was detected by applying the three following item-retention criteria to the rotated structure matrix: (1) a factor loading of at least 0.30 on the primary factor, ensuring a high degree of association between the item and the factor; (2) a difference of 0.30 between the loading on the primary factor and the loading on other factors; (3) a minimum of three items for each factor, ensuring meaningful interpretation of stable factors (21).

Internal consistencies of the total scale and subscales were calculated using Cronbach's α coefficient. In order to investigate the extent to which factor scores were correlated, we used the Pearson correlation coefficient.

RESULTS

Descriptive statistics

The mean score on the IES-R was 1.23 (SD = 0.73) for the total sample (Table 1). As recommended by Creamer et al. (16), a "probable PTSS case" was identified by using a cut-off of the total score of 33 on the IES-R. According to this criterion, a total of 88 (29.9%) participants were identified as probable PTSS cases. Of them, 79.6% were women and 20.4% were men.

Table 1. **Means and Standard deviations of the IES-R total and subscales, Cronbach's α coefficients**

	M	SD	Cronbach's α
IES-R total	1.23	0.73	0.95
IES-R Intrusion	1.23	0.78	0.89
IES-R Avoidance	1.28	0.76	0.88
IES-R Hyperarousal	1.16	0.83	0.85

M – Mean

SD – Standard deviation

Exploratory factor analysis

To assess the construct validity of the Lithuanian IES-R, a principal components analysis was performed to all the subjects on the 22 items of the scale. Bartlett's test sphericity (χ^2 = 5,101.951; df = 231) was significant ($p < 0.0001$), and the KMO measure of sampling adequacy was 0.949, indicating that the constructing questionnaire items were appropriate for factor analysis. The Kaiser–Guttman criterion and the inspection of the scree plot suggested extracting three factors. The factor correlation matrix, indicating a prominent inter-correlation among factor scales, supported the use of the rotation procedures (the equamax criterion). Factor loadings greater than 0.51 were considered significant. Exploratory factor analysis revealed that the Lithuanian IES-R had three underlying factors accounting for 51.6% of the total variance and generated the intrusion factor (items 1, 2, 3, 6, 9, 14, 16, and 20), the avoidance factor (items 5, 7, 8, 11, 12, 13, 17, and 22), and the hyperarousal factor (items 4, 10, 15, 18, 19, and 21) (Table 2).

Reliability of the IES-R

Internal consistency of the Lithuanian IES-R scale was high. Cronbach's α for the whole sample was 0.95 (Table 3). All subscale Cronbach's α coefficients may be considered as good (hyperarousal Cronbach's α = 0.88, avoidance Cronbach's α = 0.85, and intrusion Cronbach's α = 0.89).

Intercorrelations between subscale scores were $r = 0.73$ ($p < 0.01$) between hyperarousal and avoidance; $r = 0.86$ ($p < 0.01$) between hyperarousal and intrusion; $r = 0.76$ ($p < 0.01$) between intrusion and avoidance. As expected, the dimensions showed a significant level of correlation with each other, indicating that the questionnaire subscales measured several approaches of the impact of event.

Convergent validity

To examine the convergent validity of the Lithuanian IES-R as a measure of psychological distress, the relationship with GHQ-12 scores was examined. Pearson correlation between the total score of the GHQ-12 and the whole Lithuanian IES-R was 0.413, $p < 0.001$. Further, three Lithuanian IES-R subscale scores were studied. The correlation coefficients for the intrusion subscale score ($r = 0.416$), the avoidance subscale score ($r = 0.356$), and the hyperarousal subscale score ($r = 0.418$) were significant ($p < 0.01$).

Table 2. **Exploratory factor analysis: factor loadings**

		Scale	Intrusion	Avoidance	Hyperarousal
1	Any reminders brought back feelings about it	In	0.72		
2	I had trouble staying asleep	In	0.56		
3	Other things kept making me think about it	In	0.62		
4	I felt irritable and angry	Hy			0.64
5	I avoided letting myself get upset...	Av		0.62	
6	I avoided letting myself get upset...	In	0.76		
7	I felt as if it hadn't happened or wasn't real	Av		0.59	
8	I stayed away from reminders about it	Av		0.79	
9	Pictures about it popped into my mind	In	0.62		
10	I was jumpy and easily startled	Hy			0.63
11	I tried not to think about it	Av		0.87	
12	I was aware that I still had a lot of feelings...	Av		0.62	
13	My feelings about it were kind of numb	Av		0.59	
14	I found myself acting or feeling like I was back...	In	0.52		
15	I had trouble falling asleep	Hy			0.60
16	I had waves of strong feelings about it	In	0.55		
17	I tried to remove it from my memory	Av		0.64	
18	I had trouble concentration	Hy			0.75
19	Reminders caused me to have physical reactions...	Hy			0.71
20	I had dreams about it	In	0.78		
21	I felt watchful and on guard	Hy			0.59
22	I tried not to talk about it	Av		0.55	

Table 3. **Pearson correlations between the subscales of the Lithuanian IES-R**

	Intrusion	Avoidance	Hyperarousal
Intrusion			
Avoidance	0.76*		
Hyperarousal	0.86*	0.73*	
IES-R total	0.95*	0.90*	0.92*

* $p < 0.01$

DISCUSSION

Workplace bullying, that is, systematic and long-term exposure to aggression and social exclusion by other organisation members is prevalent in contemporary working life (22). Typically, victims of bullying are exposed to an ever harsher treatment by their tormentors over a long period of time and in a situation where they initially, or at least eventually, experience great difficulties defending themselves from these ongoing attacks and instances of social exclusion, with the result that they gradually become ever more victimized and stigmatized. Studies have shown that this may go on for months and years and tends to become as something of a continuous shock to those exposed (23), with potentially traumatic effects on those exposed (3). In the beginning of the process, the negative behaviours are often indirect and subtle thus difficult to recognize and confront, and often lead to much confusion and anxiety in those exposed. The next phase tends to involve more direct and openly aggressive acts, often leaving the target humiliated, ridiculed and increasingly isolated (24). Research has shown that the work situation of these victims may become so difficult that finally they either choose to leave work, or they are forced out of the workplace by means of dismissal or redundancy (25).

This study examined the factor structure, internal consistency, and concurrent validity of the IES-R

in a sample of five occupations in Lithuania investigated in relation to exposure to workplace bullying. Results supported the three-factor structure of the Lithuanian IES-R – Intrusion, Avoidance, and Hyperarousal, with adequate internal consistency noted for each subscale. As with previous accounts (e. g., Creamer et al., 2003), the three subscales of the IES-R showed a high degree of intercorrelation (16). Given that most of extant studies on the factor structure of PTSD were all conducted in the samples from populations exposed to tsunamis, earthquakes, floods, civilian trauma, terrorist attack, or military combat, the current study contributes to the literature by drawing data from an occupational sample exposed to workplace bullying.

The current study results indicate that items 2 and 15 which both discuss sleep disorders were on different factors: hyperarousal and intrusion. This is considered very appropriate because those items are originally derived from the same source in DSM-IV, namely D1 (sleep disturbance) which consist of a double-barreled question ("difficulty falling or staying asleep") (American Psychiatric Association 2000) (1). Weiss & Marmar (1997) modified the original item of sleep disturbance into two items which are: trouble falling asleep and trouble staying asleep (4). It was decided to put these items into different factors due to their high correlation to those factors. Item No. 2, trouble staying asleep, was assigned to the intrusion subscale since it had higher correlation with items on that subscale, while item No. 15, trouble falling asleep, was put into the hyperarousal subscale due to its correlation with the subscale (26). This result is similar to the findings of King (2009), who also identified these two items as separate factor structures of sleep (27).

Several limitations in this study should be noted. First, the generalizability of our findings is limited by our utilization of a sample of five specific occupations in Lithuania. These findings need to be further tested with samples drawn from other occupations in Lithuania.

The present study is also limited by the use of a single self-reported screening instrument, the GHQ-12, for examination of the convergent validity of the Lithuanian IES-R. Further investigation of the relationship between the Lithuanian IES-R and other specific measurements of PTSD, such as the Clinician-Administered PTSD Scale (CAPS) (28, 29), as well as systematically conducted clinical interviews would be needed to examine the specificity of the Lithuanian IES-R for screening PTSS in future. On the other hand, the comparison of the Lithuanian IES-R with other general measures of psychological distress, such as the Symptom Checklist 90 – Revised (SCL-90-R) (30), would also help to further establish the external validity of the Lithuanian IES-R.

Notwithstanding these limitations, the present study provides empirical support for the adapted Lithuanian version of the IES-R.

In summary, the study extends the available psychometric information to support the efficacy of the IES-R as a tool for assessing the impact of traumatic experience on the victims of workplace bullying. In particular, this study provides support for the translated version of the IES-R for use with Lithuanian participants. Assessing survivors for PTSS and other psychological sequelae resulting from workplace bullying experience is important as it provides mental health specialists with the information needed to make decisions about the development and implementation of appropriate interventions when and as needed. The study makes an important contribution to the science of mental health nursing, as it is the first to test the usefulness of the Lithuanian IES-R to assess PTSS among the victims of workplace bullying.

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ĮVYKIO POVEIKIO SKALĖS – REVIZUOTOS LIETUVIŠKOS VERSIJOS PSICHOMETRINĖS SAVYBĖS PRIEKABIAVIMĄ DARBE PATYRUSIŲ DARBUOTOJŲ GRUPĖJE

Santrauka

Tikslas. Įvykio poveikio skalė – revizuota versija (ĮPS-R), dažnai naudojama tarptautiniuose tyrimuose potrauminio streso simptomams vertinti. Šio tyrimo tikslas buvo įvertinti lietuviškos ĮPS-R skalės konstrukto validumą ir patikimumą priekabiavimą darbe patyrusių įvairių profesijų darbuotojų grupėje.

Medžiaga ir metodai. Originali ĮPS-R skalės versija išversta į lietuvių kalbą, po diskusijų parengtą variantą ekspertai peržiūrėjo dar kartą. 294 priekabiavimą darbe patyrusiems įvairių profesijų darbuotojams (52 Kauno vidurinių mokyklų mokytojams, 56 šeimos gydytojams, 101 vidaus ligų profilio bendrosios praktikos slaugytojai, 40 padavėjų ir 45 jūrininkams) pateikta lietuviškoji ĮPS-R versija ir Lietuvoje adaptuotas Bendrosios sveikatos 12-tas klausimynas vertinant konvergentinį validumą. Siekiant patikrinti ĮPS-R konstrukto validumą atlikta faktorinė analizė.

Rezultatai. Lietuviškosios ĮPS-R patikimumo rodikliai buvo geri. Cronbacho alpha koeficientas aukštas – 0,95. Faktorinės analizės metu išsiskyrė trys veiksniai: invazijos, vengimo ir dirglumo. Šių poskalių Cronbacho alpha išsidėstė atitinkamai 0,89; 0,85 ir 0,88. Konvergentinis validumas patvirtintas teigiamomis koreliacijomis tarp minėtų subskalių ir Bendrosios sveikatos 12-to klausimyno.

Išvados. Lietuviškoji ĮPS-R versija yra patikimas instrumentas potrauminio streso sutrikimo dimensijoms vertinti, turi geras psichometrines savybes ir gali būti naudojamas ilgalaikę traumą patyrusių asmenų populiacijoje Lietuvoje.

Raktažodžiai: įvykio poveikio skalė – revizuota lietuviška versija, psichometrinės savybės, priekabiavimas darbe, validumas

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WORKPLACE BULLYING AND MENTAL HEALTH AMONG TEACHERS IN RELATION TO PSYCHOSOCIAL JOB CHARACTERISTICS AND BURNOUT

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Abstract

Objectives: The objective of the study has been to assess the associations between psychological distress and exposure to workplace bullying, taking into account possible influence of adverse psychosocial job characteristics and occupational burnout in a sample of Kaunas (Lithuania) teachers. **Material and Methods:** The study sample included 517 teachers from 13 secondary schools and was conducted in 2014. The participants filled in the anonymous questionnaire (response rate 71.3%). Twenty-two-item Negative Acts Questionnaire (H. Hoel and S. Einarsen) was used for measuring the exposure to workplace bullying, Goldberg 12-item General Health Questionnaire (GHQ-12) – psychological distress, Maslach Burnout Inventory (MBI) – occupational burnout, Karasek Demand-Control questionnaire – psychosocial job stressors. The IBM SPSS Statistics version 20.0 was used for performing the statistical analysis. Associations between psychological distress, exposure to workplace bullying, psychosocial job characteristics and occupational burnout were analyzed in the logistic regression and expressed in terms of odds ratios (OR). Statistical significance was determined using the 95% confidence interval (CI) level. **Results:** Workplace bullying was prevalent among Kaunas teachers (occasional – 8.3%, severe – 2.9%). Twenty-five percent of teachers suffered from psychological distress. High emotional exhaustion was found in 25.6% of them, high depersonalization in 10.6% and low personal achievement in 33.7% of cases. Almost a half of respondents (47.4%) reported job strain and 59.6% – low social support at work. Occasional and severe bullying was associated with psychological distress after adjusting to job strain, social support and emotional exhaustion, depersonalization, personal accomplishment (adjusted OR was 3.27, 95% CI: 1.56–6.84 for occasional and 4.98, 95% CI: 1.27–19.62 for severe bullying). **Conclusions:** Occasional and severe bullying were strong predictors for psychological distress. Burnout did not mediate those associations. The effect of job strain and low social support decreased to the insignificant level in the final model. Preventive measures are necessary to improve psychosocial working conditions in secondary education institutions. Int J Occup Med Environ Health 2017;30(4)

Key words:
Teachers, Psychosocial job characteristics, Psychological distress, Workplace bullying, Occupational epidemiology, Occupational burnout

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INTRODUCTION

Numerous investigations conducted within recent years in the field of mental health support the conception of mental health as an integral and essential component of health. The definition of mental health provided by the World Health Organization (WHO) describes it as a state of well-being in which an individual realizes his or her own potential, may cope with the normal stresses of life, can work productively and fruitfully, and is able to make a contribution to her or his community [1]. The WHO also affirms that mental health problems result from a compound of interacting psychological, biological, social and environmental factors and that there is an increasing evidence that both – the content and the context of work may play a role in the development of mental health problems in the workplace [2]. The investigations reveal that employment in occupations related to human services, such as health care, social work and educational system, suggests the association with psychological distress [3]. The results of a number of studies assent that schoolteachers fall into the category of professionals who may experience a huge amount of work-related stress, which may lead to sustained physical and mental health problems, and that one of the co-worker groups most affected by psychological problems namely include teachers [4–7].

The Lithuanian educational system undergoes the organizational reforms on a continuous basis, which results in numerous changes in the daily work, hence extra workload and work related stress to be absorbed by its employees. Due to the aforementioned organizational changes and insufficient financial reward, the dissatisfaction with working conditions at schools is often escalated by labor unions in mass media, however, the specific mental health hazards the teachers face are rarely publicized.

The results of earlier studies affirm that a stressful work environment often leads to a workplace bullying due to worsened interpersonal relationships caused by strained working conditions [8]. The research of workplace bullying started in the early 1980's, and since then various investigators have used different terms, such as mobbing, hostile behavior or psychological abuse to describe this phenomenon [9]. In 2011 Einarsen et al. provided a comprehensive definition of workplace bullying describing it as harassing, offending or socially excluding someone or negatively affecting someone's work behavior, that occurs repeatedly and regularly, e.g., weekly and lasts for a period of time, e.g., about 6 months [10]. According to the results of the fifth European Working Conditions Survey, carried out in 2011–2012, education sector is one of those, which tends to have the highest levels of incidence of workplace bullying [11]. The Polish investigators conducted a study among teachers, which suggested that experience of hostile behavior and bullying at work was significantly associated with symptoms of occupational burnout [12]. Other researchers propose that in the public view as well as amongst teachers, burnout is commonly regarded as an innate problem of this particular profession [13].

Burnout that consists of 3 dimensions – emotional exhaustion, depersonalization and reduced professional efficacy [14] – is a widespread health-related problem in the current working life and develops as a prolonged response to chronic emotional and interpersonal stressors that repeatedly occur in the working environment [15]. It is most common in the case of occupations with close social interactions and it is confirmed that teachers have the highest burnout levels as compared to other professionals in social services [16]. The results of a number of studies have confirmed that high job demands result in the occupation burnout which, in turn, leads to health problems in various occupational groups, including teachers [17]. Several longitudinal epidemiological studies affirm that adverse psychosocial job characteristics, namely – high job demands, low job control and low social support at work – constitute one of the risks for poor mental health [18]. In our previous study among family physicians in Lithuania we showed that workplace bullying was a substantial risk factor for

poor mental health far exceeding the risk associated with other work and everyday life stressors. The study results indicated the cumulative effects of exposure to several stressors, including workplace bullying and psychosocial job characteristics (high demands, low control, and low social support at work) that contributed to the victimization and development of mental health problems [19]. Recent investigations were directed towards the understanding of possible interconnections between bullying and burnout, showing that bullying was positively associated with burnout among nurses [20,21]. Another recent study on nurses has indicated that workplace bullying does not affect health directly, but only indirectly, via mediation of burnout [22].

In this study, we have tried to reveal how bullying is associated with psychological distress among teachers, what effect of job strain, low social support at work, life threatening events is and how burnout is interconnected in the pathway between workplace bullying and poor mental health. Thus, we have aimed to assess the association between exposure to workplace bullying and psychological distress among Kaunas (Lithuania) teachers taking into account the possible influence of other psychosocial work-related stressors (job strain, low social support at work), occupational burnout and threatening life events happening outside the workplace.

MATERIAL AND METHODS

Participants and procedure

The study sample consisted of 517 teachers from Kaunas (Lithuania) secondary schools (N = 3), gymnasiums (N = 7) and pro-gymnasiums (N = 3). For the purpose of participation in the research, the schools were selected based on the localization in order to represent various districts of the city. The participating institutions represented 8 out of 11 city neighborhoods. The collection of data started upon receipt of approbation of the Chief of the Kaunas City Municipality Education Department, as well as the approval of the Regional Biomedical Research Ethics Committee and was processed in the year of 2014. The researchers visited participating schools during the routine staff meetings, explained the purpose of the research to the employees and confirmed the unmitigated confidentiality and anonymity of the collected data. Every teacher who attended the staff meeting was provided with the Subject Information and Informed Consent Form and the anonymous self-administrative questionnaire for completion purposes. The participation in the study was voluntary. Teachers who agreed to take part in the research were asked to sign the Informed Consent Form and to return the filled in questionnaires by placing them into the sealed boxes within 5 working days from receipt.

According to the Lithuania Official Statistics Portal, 3023 teachers were employed in Kaunas City secondary education institutions in 2014–2015. Out of 725 distributed questionnaires, 517 (response rate – 71.3%) were returned. The mean age of participants was 49.92 years old (standard deviation (SD) = 9.11). Four hundred and nineteen (81%) were female and 41 (7.9%) were male. Fifty-seven (11%) respondents did not indicate their gender, 42 (8.12%) did not indicate their age.

Instruments

Participants completed the anonymous self-administered questionnaire which included sociodemographic measures – age, gender, marital status (having a partner or spouse, divorced, single, widow(er)), a number of children living at home, work and family interference evaluated with a single question with the answers on a 7-point scale and globally used questionnaires, translated and validated for usage in Lithuania to measure psychological distress, psychosocial job characteristics and occupational burnout.

The 22-item Negative Acts Questionnaire (H. Hoel and S. Einarsen) was used for assessing the variety of negative behavior forms from colleagues, superiors and students;

however, the collected data was not analyzed in this paper work. Victimization from workplace bullying was measured using the single-item measure. The respondents were asked to indicate whether or not they had been exposed to bullying during the previous 6 months based on the provided definition of bullying: "A situation where one or several individuals persistently over a period of time perceived oneself to be on the receiving end of negative actions from one or several persons, in a situation where the target of the bullying has difficulty in defending him/herself against these actions. A one-off incident is not bullying." The response categories were: "No," "Yes, very rarely," "Yes, now and then," "Yes, several times per week" and "Yes, almost daily." Victimization from workplace bullying was then classified into occasional ("Yes, very rarely") and severe ("Yes, now and then," "Yes, several times per week" and "Yes, almost daily") [23].

Psychological distress was measured by Goldberg 12-item General Health Questionnaire (GHQ-12) which is a well-established scale for the evaluation of psychological distress in population samples, valued for its excellent screening performances and good clinical validity in terms of diagnosing mental disorders [3] and used in a number of the WHO studies and in the primary care sector [24]. The short GHQ version consists of 12 questions, covering feelings of strain, anxiety-based insomnia, depression, inability to cope, lack of self-confidence and other symptoms of psychological distress. Three and more positive answers were assessed as psychological distress. Cronbach's α in this sample was 0.751.

The risk for occupational burnout was measured using the widely applied Maslach Burnout Inventory (MBI) [25]. It is a 22-item questionnaire divided into 3 subscales: emotional exhaustion, 9 items (the feelings of being emotionally overrun and exhausted by one's work); depersonalization, 5 items (the tendency to view others as objects rather than as feeling persons), and personal achievement, 8 items (the degree to which a person perceives doing well on worthwhile tasks). The items are answered in terms of the frequency with which the respondent experiences those feelings, on a 7-point scale ranging from 0 (never) to 6 (every day). The 3 dimensions are measured for each respondent. A higher score indicates greater burnout except for personal accomplishment that is rated inversely and low scores indicate high burnout. Specifically, a high degree of burnout is represented by high scores of emotional exhaustion (low: $\leq$ 13, medium: 14–26, high: $\geq$ 27), high scores of depersonalization (low: $\leq$ 5, medium: 6–9, high: $\geq$ 10), and low scores of personal accomplishment (low: $\leq$ 33, medium: 34–39, high: $\geq$ 40). Cross-cultural adaptation of the Inventory has been described previously [26]. Cronbach's α in that sample was 0.871 for emotional exhaustion, 0.748 for depersonalization and 0.837 for personal achievement.

The Swedish version of the Karasek Demand-Control questionnaire was used for measuring psychosocial job stressors. The questionnaire, that was previously adapted in Lithuanian and used in the previous research, consists of 6 items for the assessment of job control, 5 items for evaluation of psychological demands and 6 items for assessment of supervisor and co-worker support [27]. Each question had 4 response categories for frequency ranging from "never" to "always." The scoring was directed in such a way that high score meant greater demand, more decision latitude and higher levels of social support. Job strain was calculated as the ratio of demands to control. Cronbach's α in that sample was 0.706.

The respondents were also queried about the occurrence of life-threatening events such as divorce, death or fatal disease of a family member and financial crisis within the past 12 months.

IBM SPSS Statistics version 20.0 was used for performing the statistical analysis. Firstly, prevalence data for psychological distress by independent variables was calculated and chi-squared tests were used with p-values. Pearson correlations were calculated between continuous measures of workplace bullying and burnout dimensions. Secondly,

associations between the psychological distress and exposure to workplace bullying, adverse psychosocial job characteristics, risk to occupational burnout components – emotional exhaustion, depersonalization and personal achievement and threatening life events were analyzed in the logistic regression and expressed in terms of odds ratios (OR) and its 95% confidence interval (CI) level. Statistical significance was determined if $p < 0.05$. Adjustments for sociodemographic factors were made in all analyses.

Four models were estimated:

- The associations between workplace bullying and psychological distress were adjusted to demographical factors: marital status, a number of children in the family as well as work and family interference.
- To test the hypothesis that psychosocial job characteristics and threatening life events might affect the associations between workplace bullying and psychological distress, further adjustment to job strain, social support at work and threatening life events was performed in model II.
- In model III the possible mediating effect of burnout dimensions together with life threatening events was tested.
- In model IV all above mentioned variables were included in one model to test if elevated OR for workplace bullying would be effected.

RESULTS

According to the GHQ-12 assessment results, a quarter (25%) of all respondents was classified as sufferers from psychological distress. High emotional exhaustion was found in 25.6%, high depersonalization in 10.6% and low personal achievement in 33.7% of cases. Almost a half of respondents (47.4%) reported job strain and 59.6% – low social support at work.

The Table 1 presents the distribution of sociodemographic and psychosocial work factors in the groups of sufferers and non-sufferers from psychological distress. The study results revealed that psychological distress among women was more frequent than among men ($p < 0.0001$). However, the frequency of psychological distress between the age groups was not significant ($p > 0.05$). The prevalence of occasional bullying among questioned Kaunas teachers was 8.3%, severe bullying – 2.9%. Teachers with psychological distress were exposed more often to occasional and severe bullying and witnessed bullying as compared to teachers not suffering from psychological distress. Bullying from the superiors was reported by 6.6% of teachers, from colleagues – 3.7%, meanwhile bullying rate from students was the highest – 11.4%. Bullying was witnessed by 3.3% of respondents. The research results demonstrate that bullying by students and colleagues and frequent witnessing of negative behavior is more related to the development of mental distress than bullying by superiors. And teachers with psychological distress more often experience job strain, low social support at work, emotional exhaustion, depersonalization and low personal achievement.

Pearson correlation between workplace bullying and emotional exhaustion was 0.165 ($p < 0.01$) and depersonalization – 0.260 ($p < 0.01$). To gain more knowledge of the complex links between psychological distress and bullying, the logistic regression analysis was applied allowing the influence of other independent variables.

The Table 2 presents logistic regression models which evaluate the associations between psychological distress (dependent variable) and independent variables used in this study – bullying, psychosocial job characteristics, burnout dimensions and threatening life events.

Firstly we assessed the association between workplace bullying and psychological distress after adjustment to marital status, a number of children in the family and work–family interference. In model I occasional as well as severe bullying was strongly associated with psychological distress with the OR equal to 5. After adjustment to job strain and social support at work the adjusted OR (OR_{adj}) decreased to 3, but in model III the values of odds ratios for severe

Table 1. Workplace bullying, psychosocial job characteristics, burnout and threatening life events among teachers with and without psychological distress symptoms

Variable	Respondents				p
	with psychological distress (N = 129)		without psychological distress (N = 388)		
	n	%	n	%	
Gender					< 0.0001
men	1	0.9	40	11.6	
women	115	99.1	304	88.4	
Age					0.227
24–34 years	4	3.4	23	6.5	
35–44 years	28	23.5	94	26.5	
45–54 years	54	45.4	127	35.8	
≥ 55 years	33	27.7	111	31.3	
Workplace bullying					< 0.0001
no	96	74.4	363	93.6	
occasional	24	18.6	19	4.9	
severe	9	7.0	6	1.5	
Bully students					< 0.0001
no	99	76.7	359	92.5	
yes	30	23.3	29	7.5	
Bully superiors					0.149
no	117	90.7	366	94.3	
yes	12	9.3	22	5.7	
Bully colleagues					0.004
no	379	97.7	119	92.2	
yes	9	2.3	10	7.8	
Bullying witness					< 0.0001
no	88	68.2	332	85.6	
rarely	31	24.0	49	12.6	
frequently	10	7.8	7	1.8	
Job strain					< 0.0001
low	41	31.8	231	59.5	
high	88	68.2	157	40.5	
Social support					< 0.0001
high	27	20.9	182	46.9	
low	102	79.1	206	53.1	
Emotional exhaustion					< 0.0001
low	18	14.3	144	38.4	
moderate	29	23.0	135	36.0	
high	79	62.7	96	25.6	

Table 1. Workplace bullying, psychosocial job characteristics, burnout and threatening life events among teachers with and without psychological distress symptoms – cont.

Variable	Respondents				p
	with psychological distress (N = 129)		without psychological distress (N = 388)		
	n	%	n	%	
Depersonalization					< 0.0001
low	50	39.7	253	67.7	
moderate	44	34.9	100	26.7	
high	32	25.4	21	5.6	
Personal achievement					< 0.0001
high	27	21.4	188	50.0	
moderate	32	25.4	86	22.9	
low	67	53.2	102	27.1	
Threatening life events					0.028
yes	85	65.9	294	75.8	
no	44	34.1	94	24.2	

Table 2. Associations between psychological distress and workplace bullying, psychosocial job characteristics, burnout and threatening life events among teachers in the logistic regression models*

Variable	Model I		Model II		Model III		Model IV	
	OR_{adj}	95% CI	OR_{adj}	95% CI	OR_{adj}	95% CI	OR_{adj}	95% CI
No bullying (reference)	–	–	–	–	–	–	–	–
occasional	5.05	2.60–9.83	3.61	1.82–7.17	3.74	1.79–7.82	3.27	1.56–6.84
severe	5.05	1.60–16.02	3.34	1.02–10.99	6.18	1.58–24.08	4.98	1.27–19.62
job strain			2.02	1.27–3.22			1.37	0.82–2.29
low social support			2.19	1.31–3.65			1.72	0.99–3.01
Low emotional exhaustion (reference)					–	–	–	–
moderate					1.47	0.74–2.94	1.47	0.73–2.96
high					4.70	2.34–9.44	4.15	2.04–8.43
Low depersonalization (reference)								
moderate					1.25	0.72–2.17	1.22	0.70–2.12
high					2.07	0.95–4.51	1.89	0.86–4.15
High personal achievement (reference)					–	–	–	–
moderate					2.49	1.30–4.75	2.38	1.23–4.59
low					4.27	2.34–7.80	3.89	2.12–7.16
Threatening life events			1.34	0.83–2.16	1.34	0.79–2.26	1.31	0.77–2.21

* Model I adjusted to marital status, work–family interference, a number of children in the family; model II adjusted to marital status, work–family interference, a number of children in the family, job strain, social support and threatening life events; model III adjusted to marital status, work–family interference, a number of children in the family, emotional exhaustion, depersonalization, personal achievement and threatening life events; model IV adjusted to marital status, work–family interference, a number of children in the family, job strain, social support, emotional exhaustion, depersonalization, personal achievement and threatening life events.
OR_{adj} – adjusted odds ratio; CI – confidence interval.

bullying increased to 6.18. In the final model that included both – psychosocial job characteristics and burnout dimensions, odds ratios for occasional bullying and severe bullying remained significant and were 3.27 (95% CI: 1.56–6.84) and 4.98 (95% CI: 1.27–19.62), respectively. The effect for job strain and social support at work lost the statistical significance in the final model. Model III and Model IV results revealed that teachers with high emotional exhaustion were approximately 4-times more often likely to have psychological distress than the ones with low emotional exhaustion. Personal achievement was also associated with psychological distress in the final model.

Threatening life events were found to be not significant in all the models ($p > 0.05$).

DISCUSSION

The aim of this study has been to investigate the association between exposure to workplace bullying and psychological distress in Kaunas (Lithuania) teachers taking into account the possible influence of other psychosocial work-related stressors, burnout and threatening life events. To our best knowledge, this is the first study on the relationship between bullying and psychological distress in the sample of Kaunas teachers that has also included and investigated the links to adverse psychosocial job characteristics and occupational burnout.

The research results revealed that the prevalence of psychological distress was 25% as assessed using the self-reported GHQ-12 questionnaire. Very similar results were provided by German researchers, namely mental distress was reported by 29.8% of teachers using the same GHQ-12 instrument [24]. Study results in other countries show comparable scores [28]. The rate of psychological distress found among Japanese teachers is higher – 62.9% [29]. In our study we have found women to experience psychological distress significantly more often than men – 27.4% vs. 2.4% ($p < 0.0001$). The results provided by other researchers indicate the gender proportion to be more balanced – 14% among females and 15% – among males as found by Ofili et al. [28], 47.8% – among males and 57.8% – among females as reported by Japanese investigators [30] or 31.5% vs. 28% among German teachers [24]. A significant increase in psychological distress with age among teachers was observed by Kovess-Mastefy et al. [31]. We, however, did not find significant difference in mental distress prevalence between different age groups ($p > 0.05$). We found that almost 1/3 (29.8%) of respondents aged 45–54 years suffered from mental distress.

The prevalence of occasional bullying was 8.3% and severe bullying – 2.9%. A very similar score of severe bullying among Kaunas teachers (2.6%) was reported by Lithuanian researchers back in 2005, meanwhile the prevalence of occasional bullying was almost 3-fold higher – 23% [32]. According to the Fifth European Working Conditions Survey results, the prevalence of bullying in general population varies across the European Union (EU) Member States from approximately 0.6% in Bulgaria to 9.5% in France [11] and this difference could be explained by cultural differences and the level of awareness of the phenomenon in separate countries. The recent study in Spanish and Italian samples found the bullying prevalence to be at the rate of 15% [33]. The results of the study carried out among Polish teachers suggested the prevalence of bullying at the rate of 7% [12].

Our results indicated that job strain and low social support were associated with psychological distress in model II (OR for job strain was 2.02, 95% CI: 1.27–3.23, OR for low social support was 2.19, 95% CI: 1.31–3.65). Those results were consistent with other research outcomes [34,35] and corresponded to the job strain model. Though in the final model the OR for job strain and low social support decreased to the statistically insignificant level. Other researchers also indicated that cumulative exposure to a high strain job was not associated with poorer outcomes in adjusted models [36].

We have found that 34.9% of surveyed teachers suffer from high emotional exhaustion and our results

comply with the rates of burnout that range between 25% and 35% in many European countries [37]. In model III adjusted to burnout dimensions, high emotional exhaustion increases the risk for mental distress by almost 5-fold (OR_{adj} = 4.70, 95% CI: 2.34–9.44) and remains a similarly strong predictor in the final model with OR = 4.15, 95% CI: 2.04–8.43. While the causes of burnout are complex, some studies have linked the experience of workplace violence with higher rates of burnout [12,20,21,38], but the interdependence of bullying with burnout on mental health is sometimes controversial.

In our study, we have tested the comprehensive model of concomitant effect of psychosocial job characteristics and burnout in the associations of workplace bullying and psychological distress among teachers. We have found that workplace bullying is associated with the distress in all the adjusted models. The effect of severe bullying remains stable with the OR = 4.98, 95% CI: 1.27–19.62, therefore indicating the cumulative effects of all investigated variables. Other studies have also shown that experiences and outcomes of workplace bullying may be hidden within other health-related problems at work or in one's daily life or behavioral and personality characteristics [19,39,40]. In our study burnout has not mediated the associations between workplace bullying and psychological distress, but it has mediated the effect of job strain as well as in the study of teachers conducted in Poland [17]. Our study has demonstrated that sources of burnout among teachers might be other than bullying and may reflect organizational climate as well as personality characteristics.

To summarize, this study has shown that occasional and severe bullying remains to be strong predictors for psychological distress in all the models, including the final one adjusted to adverse psychosocial work characteristics and burnout dimensions. Burnout has not mediated the associations between workplace bullying and psychological distress, high emotional exhaustion and low personal accomplishment have shown strong independent effect in the associations with poor mental health. The results have also shown that threatening life events lose the statistical significance in all the models ($p > 0.05$). The aforementioned results confirm the importance to improve psychosocial working conditions in the secondary education institutions by reducing bullying exposure and promoting employee health and well-being through established nationwide strategies or local school policies.

Strengths and limitations

The strengths of the study were that our sample size was relatively large to produce reliable results. Three thousand and twenty-three teachers were employed in Kaunas secondary education institutions in 2014–2015 according to the Lithuania Official Statistics Portal. We surveyed nearly 1/5 (approximately 17.1%) of the employees of Kaunas educational system. Moreover our study covered 8 out of 11 city neighborhoods, which reduced the possibility of differences in socio-cultural context. Since Kaunas is the second largest city in Lithuania and the educational system is uniform across the country, we can estimate that similar data would be collected in other regions. Yet, the comparative studies in other regions, including rural areas are necessary in order to draw more generalized conclusions with respect to teachers nationwide. We have also used reliable and valid instruments for measuring study variables.

Another strength of our study was the fact that we investigated the concomitant effect of many predictors on poor mental health and showed that burnout and workplace bullying were independently associated with psychological distress.

Nevertheless, we should also admit and mention several limitations of this research. Firstly, due to a cross-sectional design of the study we should be cautious while interpreting the results as we can only describe correlations but not prove the causal relationships between the variables. Hence, longitudinal studies should be conducted to gain more knowledge

about the causality of the relationships between psychological distress, workplace bullying, psychosocial job characteristics and occupational burnout. Secondly, the collected data in the used questionnaire is based on self-reports, which raises the possibility of reporting bias. Furthermore, it is also worth noting that victimization from workplace bullying was measured using the single-item measure, leaving it up to a respondent to define the concept of bullying.

CONCLUSIONS

The workplace bullying was prevalent at the rates of 8.3% for occasional and 2.9% for severe bullying. A quarter (25%) of Kaunas teachers suffered from psychological distress. Our study revealed that occasional and severe bulling were strong predictors for psychological distress after adjustment to adverse psychosocial job characteristics and burnout. Burnout did not mediate those associations. Workplace bullying and burnout were independently associated with poor mental health among teachers. Since adverse psychosocial working conditions lead teachers to poorer mental health, which in turn affects educational process of new generations, preventive measures, such as nationwide strategies or local school policies should be applied to reduce bullying, to improve psychosocial working conditions in secondary education institutions and to promote employee health and well-being.

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10. SUMMARY IN LITHUANIAN

Įvadas

Pusę pasaulio populiacijos sudaro darbingo amžiaus gyventojai, kurie yra pagrindinis ekonomikos ir socialinio vystymosi veiksnys [268]. Daugelis visą darbo dieną dirbančių darbuotojų pramoninėse šalyse daugiau kaip pusę savo aktyvaus laiko praleidžia darbe [79]. Tai sudaro gana didelę laiko dalį, todėl socialinis klimatas darbe bei darbo sąlygos atlieka svarbų vaidmenį žmogaus gyvenime, o "sveikos darbo" vietos sukūrimas yra būtinas.

Sveikos darbo aplinkos apibrėžimas per pastaruosius kelis dešimtmečius žymiai pakito, ir fizinius darbo aplinkos rizikos veiksnius (fizinius, cheminius, biologinius, mechaninius ir ergonominius) papildė su darbo aplinka susiję psichosocialiniai rizikos veiksniai, tokie kaip organizacijos kultūra ir darbo organizavimas [40].

Psichosocialiniai darbo aplinkos rizikos veiksniai, kurie apima prastą darbo organizavimą (aukšti reikalavimai, laiko trūkumas, žema darbo kontrolė, ribota socialinė parama, prasta komunikacija ir t. t.) ir organizacinę kultūrą (socialiniai santykiai, priekabiavimas, patyčios, diskriminacija ir t. t.) daro įtaką psichinei ir fizinei darbuotojų gerovei. Minėti psichosocialiniai rizikos veiksniai sukelia psichinę ar emocinę įtampą ir dažnai vadinami darbovietės „stresoriais" [264]. Maždaug ketvirtadalis darbuotojų Europoje patiria su darbu susijusį stresą visą ar didžiąją darbo dienos dalį [64], daugiau nei 40 milijonų darbuotojų kenčia nuo pasekmių, susijusių su patiriamu stresu darbe, kuris, savo ruožtu, sukuria daugiau nei 20 milijardų eurų išlaidų, susijusių su sveikatos problemomis bei pravaikštomis [85].

Naujausi darbo rinkos sąlygų pasikeitimai, tokie, kaip išaugęs konkurencingumas ir darbo krūvis, sumažėjęs darbo saugumas, prisideda prie didesnio nepageidaujamų psichosocialinių darbo aplinkos rizikos veiksnių paplitimo.

Šeštojo Europos darbo sąlygų tyrimo metu gautais rezultatais įspėjama, kad net 17,0 proc. moterų ir 15,0 proc. vyrų patyrė neigiamą socialinį elgesį darbovietėje (žodinį užgauliojimą, fizinį smurtą, seksualinį priekabiavimą ir patyčias per paskutiniuosius 12 mėnesių) [65].

Mokslinių tyrimų duomenimis atskleista, kad priekabiavimas darbe yra rimtas socialinis stresorius, silpninantis psichologinę ir fizinę sveikatą [220]. Nuolatinis susidūrimas su priekabiavimu darbe yra psichologinio distreso pranašas [187] ir taip pat susijęs su potrauminio streso simptomatika (sujaudinimu, situacijų, primenančių patirtą traumą, vengimu, pasikartojančiais, įkyriais prisiminimais, susijusiais su išgyventa traumuojančia patirtimi) [164]. Atliktas psichosocialinių darbo aplinkos rizikos veiksnių tyrimas

trisdešimt vienoje Europos valstybėje, išskyrė Lietuvą kaip vieną iš šalių, kuriose psichosocialinių rizikos veiksnių darbe paplitimas, įskaitant ir smurtą darbe, aukštesnis, lyginant su Šiaurės Europos šalimis [184]. Be to, buvo nustatyta, kad darbuotojai Rytų Europos šalyse buvo labiau linkę pranešti apie prastą psichologinę savijautą [227].

Priekabiavimas darbe jau kelis dešimtmečius yra tyrinėjimų objektu. Įvairios jo priežastys bei pasekmės vis dar analizuojamos pasaulinėje mokslininkų bendruomenėje, ypač Vakarų šalyse. Rytų Europos šalyse, įskaitant ir Lietuvą, išgyvenusiose pereinamąjį laikotarpį iš centralizuotai planuotos ekonomikos į rinkos ekonomiką, visuomenės supratimas apie šį reiškinį žemas, o moksliniai tyrimai šioje srityje yra nepakankami. Lietuvoje buvo atlikti keli priekabiavimo darbe tyrimai, tačiau priekabiavimas darbe tirtas tik pavienėse profesijose (tarp slaugos, švietimo sistemos darbuotojų) arba pavienėse organizacijose. Atsižvelgiant į Europos darbuotojų saugos ir sveikatos pagrindų direktyvą (Directive 89/391/EEC), išleistas Lietuvos Respublikos darbuotojų saugos ir sveikatos įstatymas, įpareigojantis darbdavius užtikrinti darbuotojų saugumą ir sveikatą visais su darbu susijusiais aspektais, įskaitant ir psichosocialinę darbo aplinką [140, 141, 142]. Nepaisant to, 2014 m. Europos darbuotojų saugos ir sveikatos darbe agentūros, atliktos Antrosios Europos įmonių apklausos apie naują ir kylančią riziką (ESENER-2), sutelkiant dėmesį į psichosocialinius rizikos veiksnius (priekabiavimą, smurtą) ir patiriamą stresą darbe, rezultatais nustatyta, kad dauguma Lietuvos įmonių, dalyvavusių apklausoje, priekabiavimo darbe nelaiko problema [224]. Tai patvirtina faktą, kad visuomenės sąmoningumas apie neigiamas darbo sąlygas Lietuvoje yra nepakankamas ir reikalingi tolimesni tyrimai.

Mokslinis naujumas ir mokslinio darbo vertė

Kaip jau minėta anksčiau, Lietuvoje buvo atlikti keli tyrimai, tačiau jie apėmė pavienius sektorius ar atskiras organizacijas. Kiek mums žinoma, šis tyrimas yra pirmasis epidemiologinis kompleksinis tyrimas, tiriantis priekabiavimą darbe (patiriamą neigiamą elgesį darbe, kuris laikomas priekabiavimu bei viktimizaciją dėl priekabiavimo darbe), psichosocialinių darbo charakteristikų ryšius su nusiskundimais sveikata, tiriant šešias skirtingas profesijas, kuriose daugiausiai susiduriama ir intensyviai bendraujama su klientais bei tarp darbuotojų dominuojant daugiau moteriškai arba vyriškai lyčiai.

Atsižvelgiant į tyrimo rezultatus, nustatyta, kad patyčios daro įtaką ne tik individo, bet ir visos organizacijos gerbūviui, daugelis Vakarų pasaulio šalių ėmėsi prevencijos priemonių. Plėtojant prevencines strategijas, kurios prisidėtų prie darbo sąlygų gerinimo, kalbant apie patyčias darbo vietoje, ir

prisidėtų prie darbuotojo geros sveikatos bei gerovės, svarbu žinoti, kaip tam tikruose sektoriuose veikia šis reiškinys, kurių darbuotojų grupės yra labiausiai pažeidžiamos ir patenka į didžiausios rizikos grupes. Žinios apie paplitusias patyčių elgesio formas padės tikslingiau vystsyti prevencijos priemones.

Šiuo darbu siekiama, kad tyrimo rezultatai prisidėtų prie esamos problemos didesnio pripažinimo ir priemonių, skirtų užkirsti kelią patyčioms Lietuvoje plėtojimo bei įgyvendinimo. Taip pat tikimasi, kad šios disertacijos rezultatai sudomins ateities mokslininkus toliau gilintis į patyčių darbe problematiką mokslinių tyrimų srityje.

Darbo tikslas ir uždaviniai

Šio mokslinio darbo tikslas: įvertinti įvairių profesijų darbuotojų Lietuvoje psichosocialinę darbo aplinką bei įvertinti jos sąsajas su nusiskundimais sveikata.

Uždaviniai:

1. Išanalizuoti nepalankių psichosocialinių veiksnių darbovietėje (patyčių darbe, darbo reikalavimų, darbo kontrolės, socialinės paramos) ir nusiskundimų sveikata – psichologinio distreso, potrauminio streso simptomų bei kaklo ir pečių juostos raumenų skausmų paplitimą tarp įvairių profesijų darbuotojų.
2. Ištirti ryšius tarp psichosocialinių veiksnių darbe bei nusiskundimų sveikata – psichologinio distreso, potrauminio streso simptomų, kaklo ir pečių juostos raumenų skausmo tarp įvairių profesijų darbuotojų.
3. Nustatyti ryšius tarp psichosocialinių veiksnių darbe (patyčių darbe, darbo reikalavimų, darbo kontrolės, socialinės paramos) ir subjektyvaus savo sveikatos vertinimo.

Tyrimo medžiaga ir metodai

Šį momentinį stebėjimo tyrimą patvirtino Kauno regioninis biomedicinos tyrimų etikos komitetas Lietuvos sveikatos mokslų universitete, Kaunas, Lietuva (Nr. BE-2-12), o jis buvo atliekamas 2013–2015 m. darbuotojų, atstovaujančių šešias skirtingas profesijas reprezentatyviąja imtimi Kauno mieste ir šalies mastu. Tyrimo dalyviai buvo informuoti apie tyrimo tikslą ir apie tai, kad jų dalyvavimas tyrime yra savanoriškas. Buvo gautas rašytinis dalyvių sutikimas.

Dalyvauti tyrime atsitiktiniu būdu atrinkta 13 vidurinio lavinimo įstaigų (atstovaujančios 8 iš 11 miesto seniūnijų), atsižvelgiant į jų vietą, siekiant atstovauti įvairius miesto rajonus. Atrinktose mokyklose buvo lankomasi per įprastus darbuotojų susirinkimus, o visiems susirinkime dalyvaujantiems

darbuotojams buvo išdalytos anketos. Buvo išdalytos 725 anketos, o surinkta 517 užpildytų anketų (atsako dažnis 71,3 proc.).

Dalyvauti tyrime atsitiktiniu būdu buvo atrinktos institucijos, nurodytos iš Valstybinės akreditavimo sveikatos priežiūros veiklai tarnybos prie Sveikatos apsaugos ministerijos gautame pirminės sveikatos priežiūros pasalugas teikiančių įstaigų sąraše. Iš viso buvo aplankytos 34 (19 valstybinių ir 15 privačių) atsitiktinai atrinktos poliklinikos 9 apskrityse. Jose buvo lankomasi per įprastinius darbuotojų susirinkimus, o anketos buvo išdalytos visiems atrinktose klinikose dirbantiems šeimos gydytojams. Buvo išdalytos 464 anketos, o surinktos 323 užpildytos anketos (atsako dažnis 69,6 proc.).

Atsitiktinai atrinktos ligoninės 9 apskrityse (iš viso 15) buvo aplankytos per įprastus darbuotojų susirinkimus, o anketos buvo išdalytos visiems slaugytojams, dirbantiems atrinktų ligoninių vidaus ligų skyriuose. Iš 1082 išdalytų anketų surinkta 748 anketos (atsako dažnis 69,1 proc.).

Klaipėdos jūrininkų ligoninės Jūrų medicinos poskyryje, kuriame atliekamos įprastinės jūrininkų sveikatos patikros, buvo įregistruota 11025 jūrininkų. Iš pradžių jūrininkai buvo suskirstyti į amžiaus grupes (18–24 m.; 25–34 m.; 35–44 m.; 45–54 m. ir $\geq$ 55 m.). Tai atlikus, pasirenkant kiekvieną penkioliktąjį asmenį sąraše, buvo atsitiktiniu būdu atrinkta 730 darbuotojų. Per trejus metus į Jūrų medicinos poskyrį kreipėsi 520 jūrininkų, kurie buvo pakviesti dalyvauti tyrime. 120 (23,1 proc.) jūrininkų atsisakė dalyvauti tyrime, o 30 (5,7 proc.) jūrininkų neteisingai užpildė anketas. Į tyrimą buvo įtraukta 370 tinkamai anketas užpildžiusių respondetų (atsako dažnis 71,2 proc.).

Dalyvauti tyrime atsitiktinai buvo atrinktos trys iš penkių Kauno mieste esančių policijos nuovadų. Atsižvelgiant į Lietuvos Oficialiosios statistikos portalą, 2012 m. Kauno policijoje dirbo 1085 policijos pareigūnai.

Buvo išdalytos 457 anketos, o surinkta 290 užpildytų anketų (atsako dažnis 63,5 proc.).

Atsižvelgiant į Valstybinės maisto ir veterinarijos tarnybos duomenis, 2012 m. Kaune buvo registruotos 542 kavinės (restoranai), o kiekvienoje kavinėje (restorane) dirbo vidutiniškai 5-7 padavėjai, o tai sudarė apytiksliai 3200 asmenų, dirbančių restoranų pramonėje Kaune. Turint Kauno kavinių ir restoranų sąrašą, pasirenkant kiekvieną penkioliktąją įstaigą sąraše, buvo atrinkta 100 įstaigų. Tyrime dalyvauti sutiko tik 72 tikslinės kavinės (restoranai).

Buvo išdalyta 500 anketų, o surinktos 349 užpildytos anketos (atsako dažnis 69,8 proc.).

Apklausa buvo paremta asmeniškai pildomomis anoniminėmis anketomis, kuriose buvo klausimai, skirti gauti sociodemografinės informacijos (amžius, lytis, šeiminė padėtis, kartu gyvenančių vaikų skaičius, darbo pa-

tirtis, pavojų gyvybei keliantys įvykiai), informacijos apie gyvenimo būdą (rūkymas, alkoholio vartojimas, fizinis aktyvumas), sveikatos istoriją (respondentai buvo prašomi nurodyti, kurios iš 17 sąraše nurodytų ligų (sveikatos būklių) (pavyzdžiui, hipertenzija, diabetas, *kaklo ir pečių skausmas*) jiems buvo diagnozuotos ir gydomos per praėjusiuosius metus); bei pasauliniu mastu naudojamomis anketomis, kurios buvo išverstos ir patvirtintos naudoti Lietuvoje, siekiant nustatyti priekabiavimą darbe, įvertinti psichosocialinius darbo bruožus, psichologinį distresą, potrauminio streso simptomus ir asmeninį sveikatos vertinimą.

Priekabiavimas darbe. Siekiant įvertinti kolegų, viršininkų, pavaldinių, išorės klientų (pacientų, mokinių, pirkėjų ir pan.) negatyvaus elgesio formas, buvo naudojama lietuviška 22 klausimų „negatyvių veiksmų anketa“ (angl. *Negative Acts Questionnaire*) (H. Hoel ir S. Einarsen). Buvo taikomas patiriamo elgesio formų vertinimas ir naudojami 2 kriterijai: 1. Leymann siūlomas kriterijus, pagal kurį asmuo yra laikomas patyčių auka, jeigu jis (ji) susiduria su mažiausiai 1 neigiamo elgesio forma per savaitę mažiausiai 6 mėnesius [137]; 2. Mikkelsen ir Einarsen kriterijus, pagal kurį būtini mažiausiai du negatyvūs veiksmai per savaitę mažiausiai 6 mėnesius [169].

Viktimizacija buvo vertinama naudojant vieno klausimo priemonę. Respondentų buvo prašoma nurodyti, ar per pastaruosius 6 mėnesius jie susidūrė su patyčiomis, atsižvelgiant į pateiktą patyčių apibrėžimą: „Situacija, kurioje vienas ar daugiau asmenų tam tikrą laikotarpį nuolat jaučia į jį (ją) nukreiptus vieno ar kelių asmenų negatyvius veiksmus situacijoje, kurioje patyčių taikiniui sunku apsiginti nuo tokių veiksmų. Vienkartinis incidentas nėra patyčios.“ Atsakymo variantai buvo: „Ne“, „Taip, labai retai“, „Taip, retkarčiais“, „Taip, keletą kartų per savaitę“ ir „Taip, beveik kasdien“. Vėliau pasikartojančios patyčios darbe buvo suskirstytos į dvi kategorijas – atsitiktines („Taip, labai retai“) ir sunkias („Taip, retkarčiais“, „Taip, keletą kartų per savaitę“ ir „Taip, beveik kasdien“) [57].

Psichologinis distresas buvo matuojamas pagal Goldberg 12 klausimų bendrosios sveikatos klausimyną (BSK) (angl. *General Health Questionnaire* (GHQ-12)) [89]. Trumpąją BSK versiją sudaro 12 klausimų apie įtampą, nerimo sukeltą nemigą, depresiją, negebėjimą susidoroti, pasitikėjimo savimi trūkumą ir kitus psichologinių kančių simptomus. Trys ir daugiau teigiamų atsakymų buvo vertinami kaip psichologinis distresas.

Potrauminio streso simptomai. Jaučiamas subjektyvus sielvartas dėl specifinių gyvenimo įvykių buvo vertinamas naudojant revizuotą įvykio poveikio skalės versiją (angl. *Impact of Event Scale-Revised (IES-R) inventory*) [263]. Tai išversta ir naudoti Lietuvoje pritaikyta savęs vertinimo skalė, kurią sudaro 22 klausimai ir kuria vertinamos 3 potrauminio streso simptomų kategorijos: per didelis susijaudinimas, vengimas ir įkyrios mintys ir (ar)

jausmai, susiję su pastarosiomis 7 dienomis [155]. Daugiau nei 33 taškų buvo laikoma „galimo PTSD atvejo“ riba [50].

Psichosocialiniai darbo bruožai buvo vertinami naudojant švedišką Karasek ir Theorell reikalavimų ir kontrolės klausimyno (angl. *Demand-Control questionnaire*) versiją [113]. Klausimyną sudaro 6 klausimai, skirti įvertinti darbo kontrolę, psichologinius reikalavimus (5 klausimai), viršininkų paramą ir kolegų paramą (6 klausimai) Aukštos ir žemos darbo reikalavimų, darbo kontrolės ir socialinės paramos kategorijos buvo nustatytos pagal ribinį tašką, atitinkantį bendrą taškų skaičiaus už kiekvieną iš šių suvaržymų medianą. Medianos nesiekiantis taškų skaičius buvo vertinamas kaip „žemas“.

Subjektyvus savo sveikatos vertinimas buvo atliekamas naudojant pirmą ir antrą SF-36 sveikatos apklausos klausimą – tai savęs vertinimo anketa, kurios bendrųjų rezultatų priemonė skirta patikrinti, kaip asmuo pats suvokia savo sveikatos būklę [260].

Tyrimo duomenų statistinė analizė buvo atlikta naudojant IMB SPPSS Statistics 20.0 bei Mplus programas. Statistinės hipotezės apie požymių tarpusavio ryšį reikšmingumui patikrinti buvo naudotas Chi-kvadrato (χ^2) kriterijus. Ryšiams tarp kintamųjų patikrinti buvo taikomas Pearson’o koreliacijos kriterijus. Naudoti tokie statistinių išvadų reikšmingumo lygiai: $p<0,05$ – reikšminga, $p<0,01$, $p<0,001$ – labai reikšminga. Siekiant įvertinti atskirų profesinių grupių asmenų psichosocialinių sveikatos sutrikimų, tokių kaip psichologinis distresas, potrauminio streso simptomai bei kaklo ir pečių lanko skausmai, bei juos prognozuojančių sociodemografinių ir psichosocialinių darbo aplinkos veiksnių tarpusavio sąsajas naudojama struktūrinių lygčių modeliavimo metodika – kelių analizė [45, 121]. Pagrindiniais modelių kokybės rodikliais buvo kintamųjų R2 koeficientai, parodantys, kokią dalį priklausomo kintamojo dispersijos paaiškina nepriklausomi kintamieji (prediktoriai). Taip pat svarbi nustatytų statistiškai reikšmingų ryšių ir jų krypties prasmė ir priimtinumas.

Rezultatai

Psichosocialinės darbo charakteristikos tirtose profesijose

1 lentelė. *Psichosocialinės darbo charakteristikos tirtose profesijose*

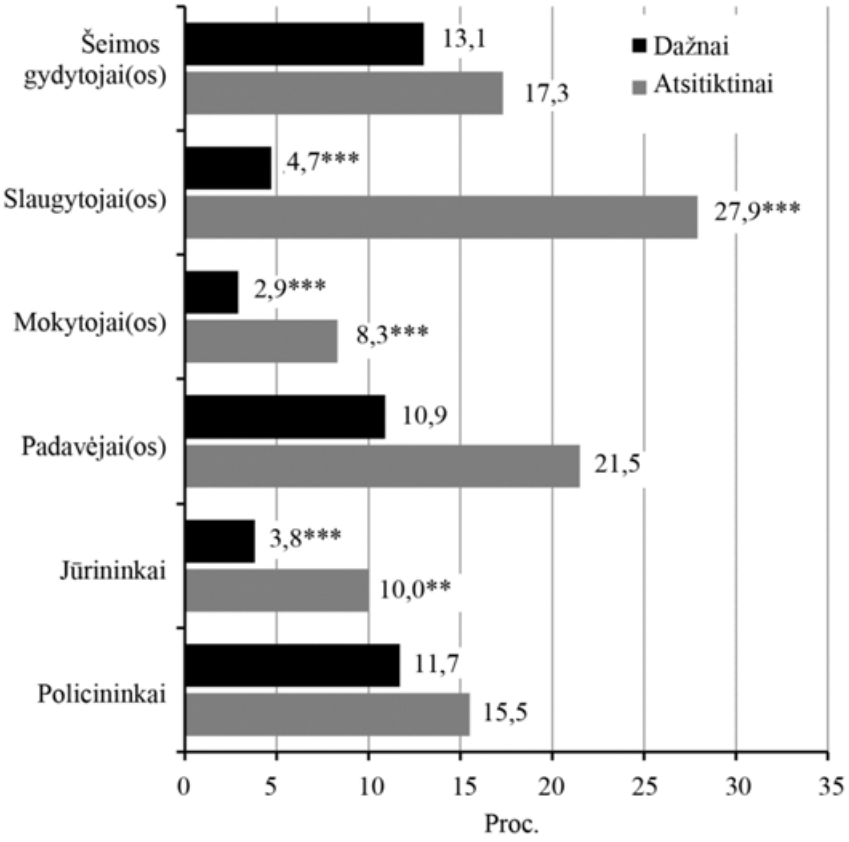
Profesija	Reikalavimai darbe		Darbo kontrolė		Įtampa darbe		Socialinė parama	
	Aukšti proc.	**Žemi proc.**	**Aukšta proc.**	**Žema proc.**	**Aukšta proc.**	**Žema proc.**	**Aukšta proc.**	**Žema proc.**
Šeimos gydytojai/-os (N=323)	72,4	27,6	52,9	47,1	65,0	35,0	38,4	61,6
Slaugytojai/-os (N=748)	40,6*	59,4	32,5*	67,5	59,8	40,2	54,9*	45,1
Mokytojai/-os (N=517)	41,0*	59,0	85,9*	14,1	23,6*	76,4	60,6*	39,4
Padavėjai/-os (N=149)	70,5	29,5	56,4	43,6	61,1	38,9	40,9	59,1

*p<0,05, lyginant su šeimos gydytojų duomenimis.

Tyrimo metu psichosocialinės darbo charakteristikos buvo tirtos šeimos gydytojų, slaugytojų, mokytojų ir padavėjų grupėse (*1 lentelė*). Išanalizavus duomenis, nustatyta, kad slaugytojai/-os ir mokytojai/-os aukštus reikalavimus darbe patyrė reikšmingai rečiau nei šeimos gydytojai/-os. Nepaisant to, slaugytojai/-os galėjo kontroliuoti savo darbą reikšmingai rečiau nei šeimos gydytojai/-os. Iš žemiau pateiktų rezultatų matyti, jog mokytojų psichosocialinės darbo charakteristikos buvo palankiausios, nes šioje grupėje aukšta darbo kontrolė ir socialinė parama buvo nustatytos reikšmingai dažniau, negu tarp šeimos gydytojų.

Priekabiavimo darbe paplitimas tirtose profesijose

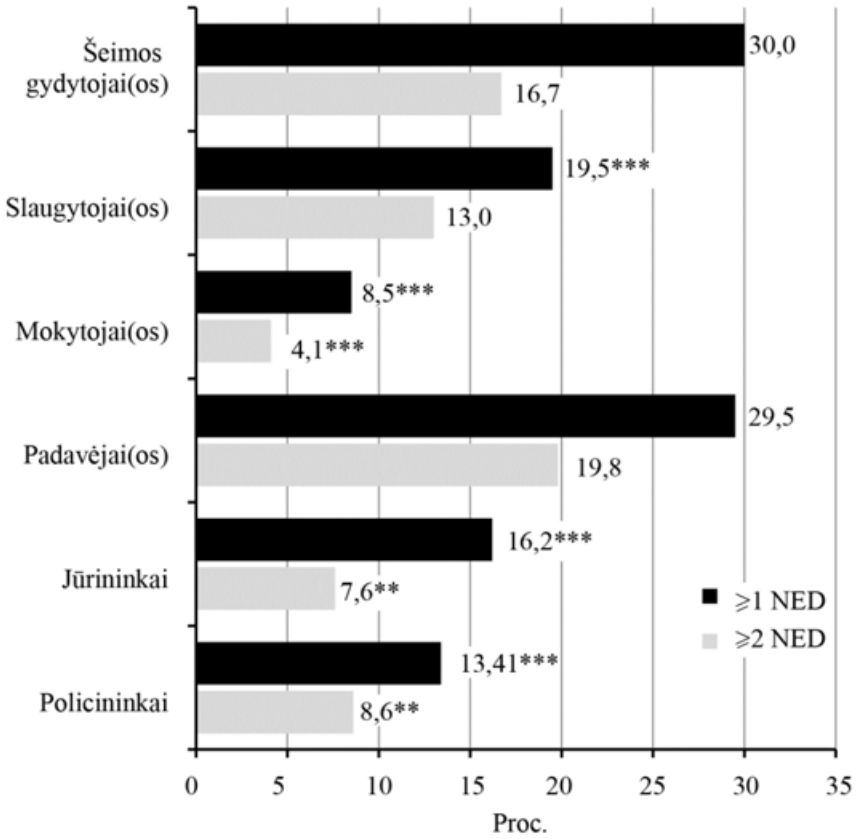
Ištyrus priekabiavimo darbe paplitimą įvairiose profesijose, nustatyta, kad, vertinant priekabiavimo darbe paplitimą metodu, kuomet respondentai patys save įvardina kaip patyrusius priekabiavimą, šeimos gydytojai/-os, policijos pareigūnai ir padavėjai/-os dažną priekabiavimą patyrė dažniausiai, atitinkamai 13,0 proc., 11,7 proc. ir 10,9 proc., tuo tarpu, kitose tirtose profesijose patyrusiųjų dažną priekabiavimą darbe buvo 3–5 kartus mažiau (*1 pav.*).



** p<0,01; *** p<0,001, duomenis lyginant su šeimos gydytojų duomenimis.

1 pav. *Priekabiavimo darbe paplitimas (tiriant respondentų savęs, kaip priekabiavimo darbe aukų, vertinimą)*

Kaip matyti iš duomenų, pateiktų *2 pav.*, šeimos gydytojai/-os ir padavėjai/-os priekabiavimą, vertinant patirtą negatyvų elgesį darbe ir taikant Mikkelsen ir Einarsen kriterijų, patyrė dažniausiai, atitinkamai 16,7 ir 19,9 proc. Rečiausiai negatyvų elgesį darbe patyrė mokytojai/-os (4,1 proc.), jūrininkai (7,6 proc.) ir policijos pareigūnai (8,6 proc.). Taikant Leymann kriterijų, šeimos gydytojai/-os ir padavėjai/-os neigiamą elgesį darbe patyrė, taipogi, dažniausiai, atitinkamai 30,0 ir 29,5 proc.



NED – negatyvus elgesys darbe.
** p<0,01; *** p<0,001, duomenis lyginant su šeimos gydytojų duomenimis.

2 pav. *Priekabiavimo darbe paplitimas įvairiose profesijose (vertinant respondentų patirtą negatyvų elgesį darbe pagal Mikkelsen ir Einarsen bei Leyman kriterijus)*

Nusiskundimų sveikata paplitimas tirtose profesijose

Nusiskundimų sveikata, tokių kaip psichologinis distresas, potrauminio streso simptomai, skausmas kakle ir pečių juostoje, tirtose profesijose paplitimas pateiktas *2 lentelėje.* Didžiausias psichologinio distreso paplitimas buvo tarp šeimos gydytojų ir padavėjų, atitinkamai 40,2 ir 35,6 proc., mažiausias – tarp jūrininkų (12,4 proc.). Kitose tirtose profesijose psichologinį distresą patyrė apytikriai po ketvirtį darbuotojų. Žemiausias PTSS paplitimas buvo tarp jūrininkų (4,1 proc.). Kitose profesinėse grupėse jis buvo panašus ir svyravo nuo 12,2 iki 15,9 proc. Skausmu kakle ir pečių juostoje

rečiausiai skundėsi jūrininkai (3,5 proc.) ir padavėjai/-os (14,1 proc.), dažniausiai – šeimos gydytojai/-os (37,5 proc.).

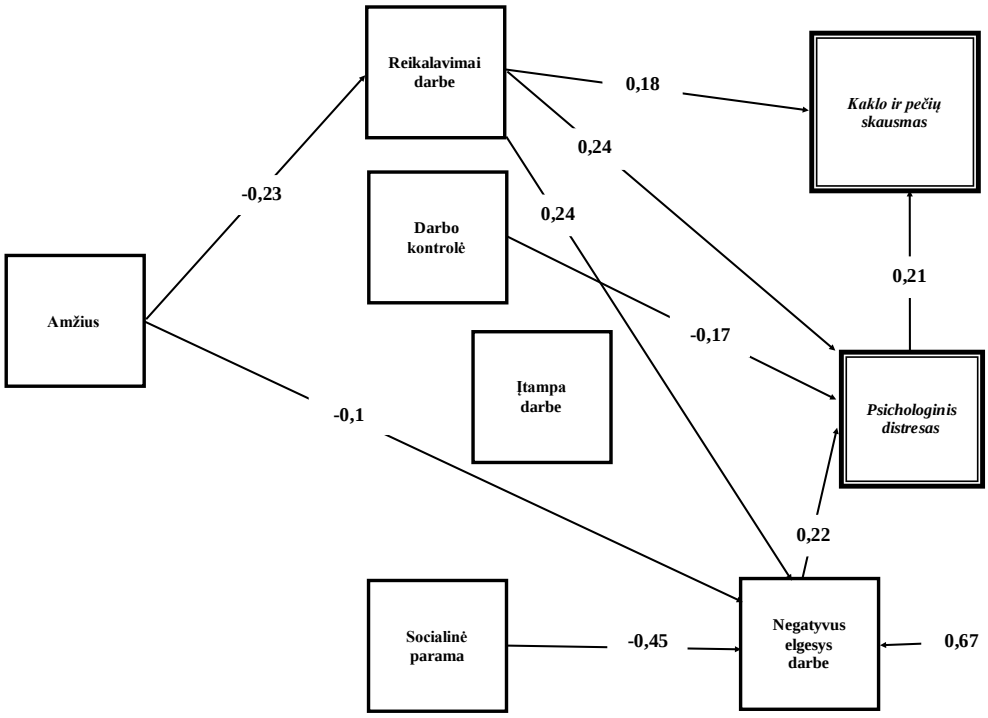
2 lentelė. *Tirtų nusiskundimų sveikata paplitimas įvairiose profesijose*

Profesija	Psichologinis distresas		Potrauminio streso simptomai		Kaklo ir pečių skausmas	
	Yra proc.	Nėra proc.	Yra proc.	Nėra proc.	Yra proc.	Nėra proc.
Šeimos gydytojai/-os (N=323)	40,2	59,8	15,9	84,1	37,5	62,5
Slaugytojai/-os (N=748)	23,1***	76,9	12,8	87,2	30,2*	69,8
Mokytojai/-os (N=517)	25,2***	74,8	14,3	85,7	28,2**	71,8
Padavėjai/-os (N=349)	35,6	64,4	12,2	87,8	14,1***	85,9
Jūrininkai (N=370)	12,4***	87,6	4,1***	95,9	3,5***	96,5
Policijos pareigūnai (N=290)	25,9***	74,1	–	–	–	–

*p<0,05; **p<0,01; ***p<0,001, lyginant su šeimos gydytojų duomenimis.

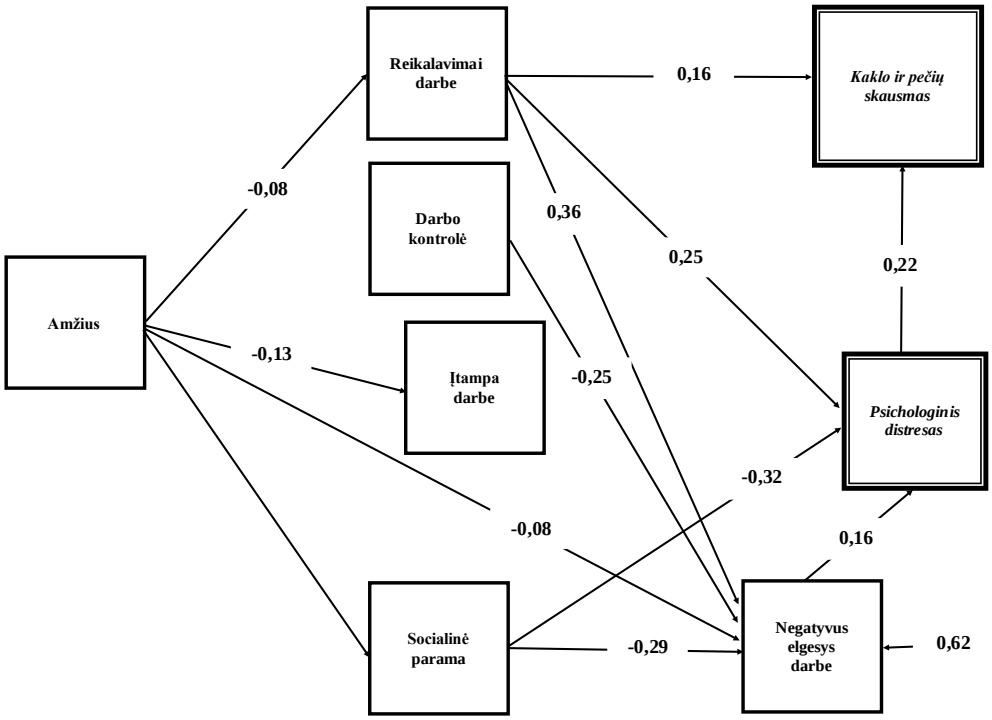
Ryšiai tarp psichosocialinių darbo veiksnių, psichologinio distreso bei kaklo ir pečių lanko skausmo tirtose profesijose

3 pav. pavaizduotame kelių analizės modelyje pateikiami nustatyti reikšmingi ryšiai tarp psichosocialinių darbo veiksnių, psichologinio distreso bei kaklo ir pečių lanko skausmo šeimos gydytojų grupėje. Šiuo modeliu paaiškinama 16,0 proc. skausmo kakle ir pečių lanko juostoje (R kvadratas – 0,16) bei 18,0 proc. psichologinio distreso (R kvadratas – 0,18). Iš tyrimo rezultatų matyti, kad jaunesni respondentai nurodė patiriantys aukštesnius reikalavimus darbe (-0,23, p<0,001) ir dažniau patiriamą negatyvų elgesį darbe (-0,1, p<0,05). Aukšti reikalavimai darbe buvo susiję su kaklo ir pečių lanko skausmu (0,18, p<0,05), psichologiniu distresu (0,25, p<0,05) ir patiriamu neigiamu elgesiu darbe (0,24, p<0,05). Patirtas negatyvus elgesys darbe buvo susijęs su psichologiniu distresu (0,22, p<0,05), o šis, savo ruožtu, su kaklo ir pečių lanko skausmu (0,21, p<0,05).



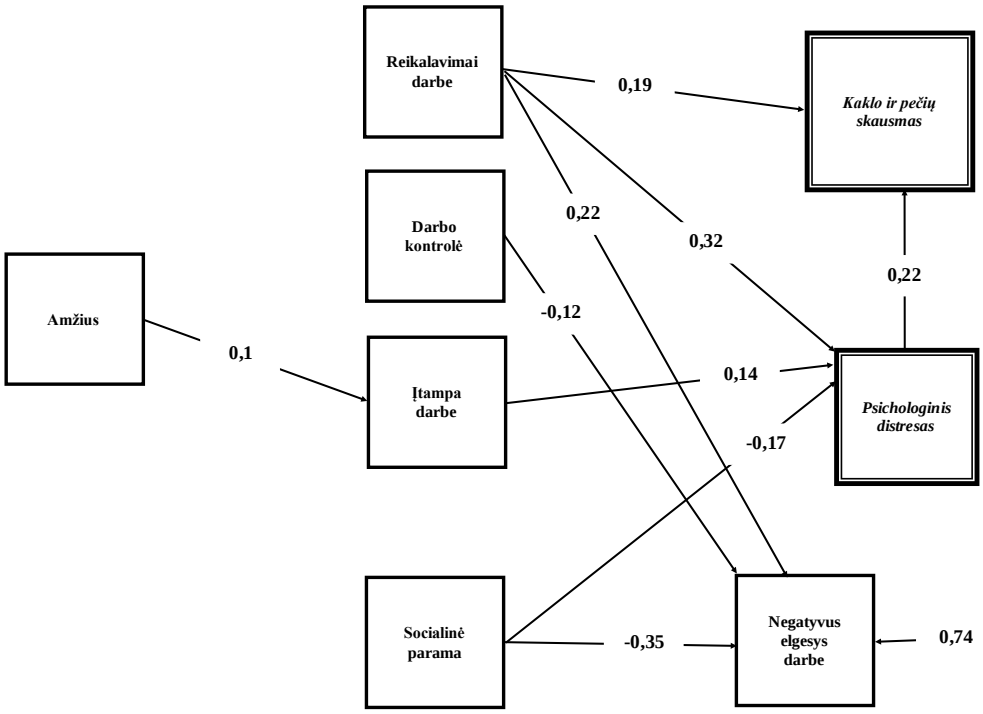
3 pav. *Šeimos gydytojų grupėje ryšius tarp psichosocialinių darbo veiksnių, psichologinio distreso bei skausmo kakle ir pečių juostoje paaiškinantis modelis*

Kelių analizės modelyje, pavaizduotame *4 pav.*, pateikiami nustatyti reikšmingi ryšiai tarp psichosocialinių darbo veiksnių, psichologinio distreso ir kaklo ir pečių lanko skausmo slaugytojų grupėje. Šiuo modeliu paaiškinama 12,0 proc. slaugytojų patiriamo kaklo ir pečių lanko skausmo (R kvadratas – 0,12) bei 32,0 proc. psichologinio distreso (R kvadratas – 0,32). Aukšti reikalavimai darbe buvo susiję tiek su nurodytu kaklo ir pečių lanko skausmu (0,16, $p<0,05$), tiek su patiriamu psichologiniu distresu (0,25, $p<0,001$) bei patirtu negatyviu elgesiu darbe (0,36, $p<0,001$). Žema socialinė pareiga buvo susijusi su psichologiniu distresu (-0,32, $p<0,001$) ir patiriamu neigiamu elgesiu darbe (-0,29, $p<0,001$).



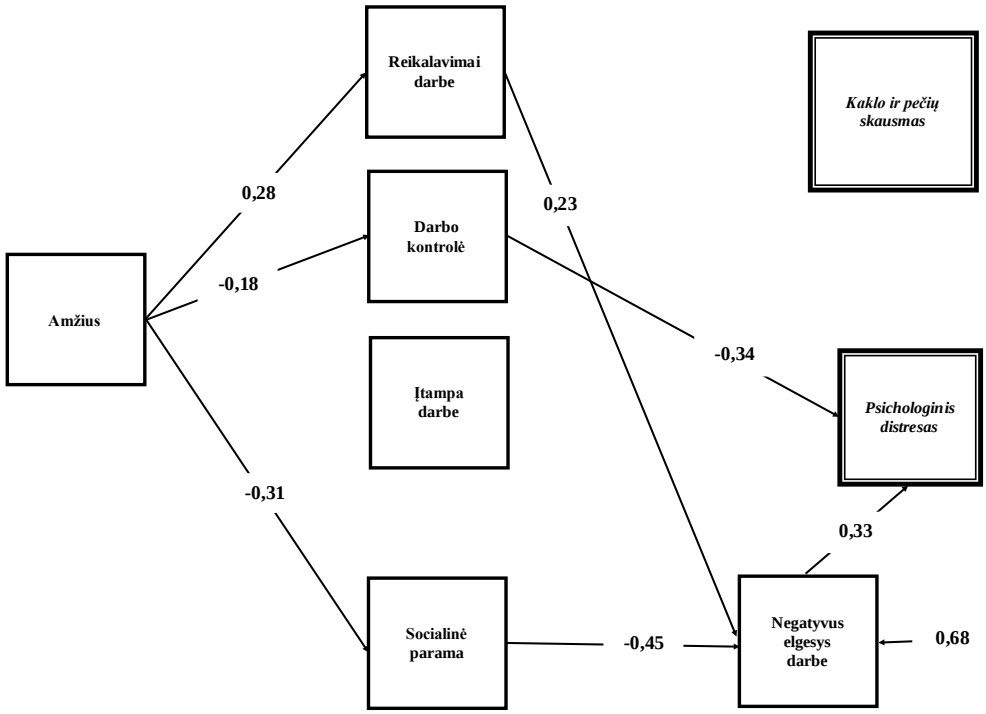
4 pav. *Slaugytojų grupėje ryšius tarp psichosocialinių darbo veiksnių, psichologinio distreso bei skausmo kakle ir pečių juostoje paaiškinantis modelis*

5 pav. pavaizduotame kelių analizės modelyje pateikiami nustatyti reikšmingi ryšiai tarp psichosocialinių darbo veiksnių, psichologinio distreso bei kaklo ir pečių lanko skausmo mokytojų grupėje. Šiuo modeliu paaiškinama 14,0 proc. skausmo kakle ir pečių lanko juostoje (R kvadratas – 0,14) bei 24,0 proc. psichologinio distreso (R kvadratas – 0,24). Aukšti reikalavimai darbe buvo susiję su patiriamu neigiamu elgesiu darbe (0,22, $p<0,001$), psichologiniu distresu (0,32, $p<0,001$) bei kaklo ir pečių lanko skausmu (0,19, $p<0,05$). Reikšmingas ryšys tarp patirto neigiamo elgesio darbe ir psichologinio distreso nebuvo nustatytas.



5 pav. *Mokytojų grupėje ryšius tarp psichosocialinių darbo veiksnių, psichologinio distreso bei skausmo kakle ir pečių juostoje paaiškinantis modelis*

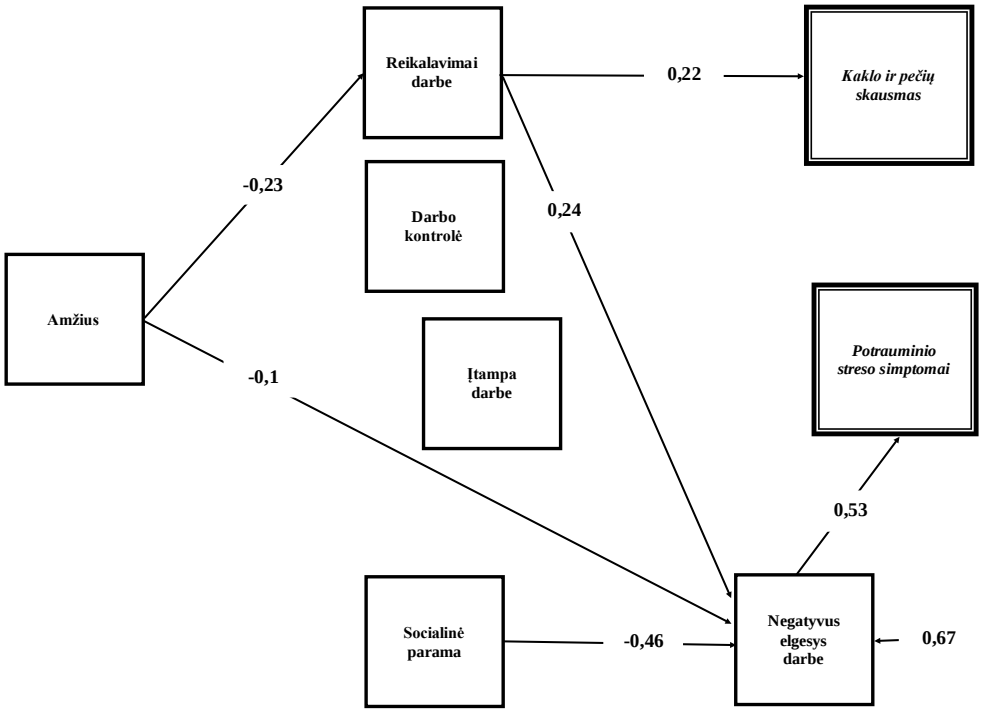
Kelių analizės modelyje, pavaizduotame *6 pav.*, pateikiami nustatyti reikšmingi ryšiai tarp psichosocialinių darbo veiksnių, psichologinio distreso bei kaklo ir pečių lanko skausmo padavėjų grupėje. Šiuo modeliu paaiškinama 29,0 proc. padavėjų patiriamo psichologinio distreso (R kvadratas – 0,29). Reikšmingas ryšys tarp kaklo ir pečių lanko skausmo bei kitų į modelį įtrauktų kintamųjų nebuvo nustatytas. Aukšti reikalavimai darbe ir žema socialinė parama buvo susiję su patiriamu negatyviu elgesiu darbe (atitinkamai 0,23, $p<0,001$ ir -0,15, $p<0,001$).



6 pav. *Padavėjų grupėje ryšius tarp psichosocialinių darbo veiksnių, psichologinio distreso bei skausmo kakle ir pečių juostoje paaiškinantis modelis*

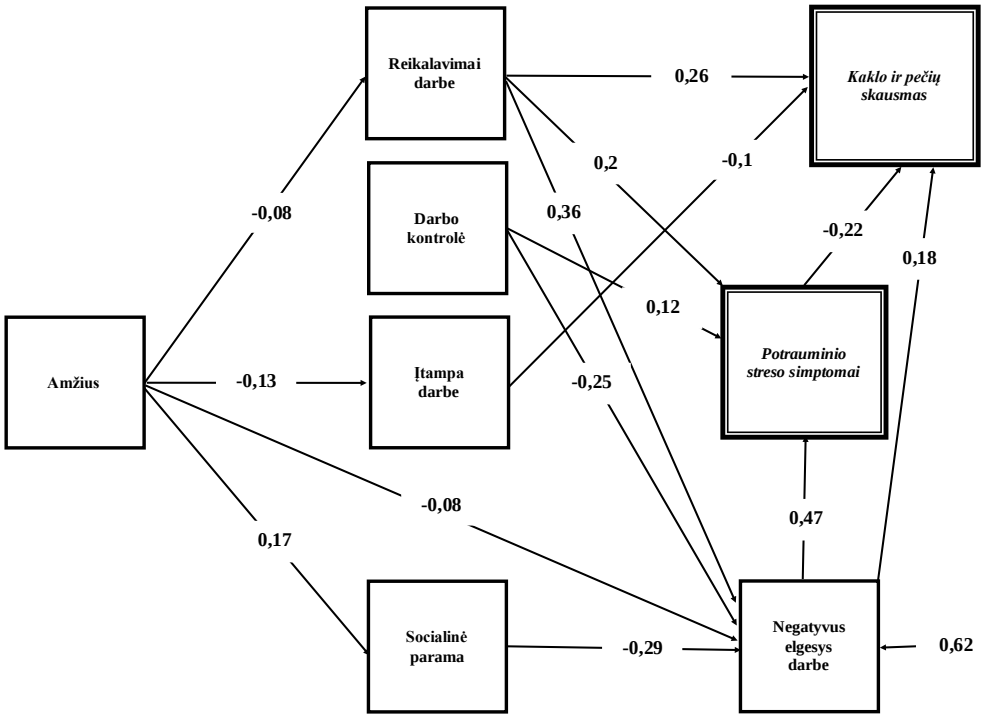
Ryšiai tarp psichosocialinių darbo veiksnių, potrauminio streso simtomų bei kaklo ir pečių lanko skausmo tirtose profesijose

7 pav. pavaizduotame kelių analizės modelyje pateikiami nustatyti reikšmingi ryšiai tarp psichosocialinių darbo veiksnių, PTSS bei kaklo ir pečių lanko skausmo šeimos gydytojų grupėje. Šiuo modeliu paaiškinama 14,0 proc. skausmo kakle ir pečių lanko juostoje (R kvadratas – 0,14) bei 31,0 proc. PTSS (R kvadratas – 0,31). Aukšti reikalavimai darbe ir žema socialinė parama buvo susiję su patiriamu negatyviu elgesiu darbe (atitinkamai 0,24, $p<0,001$ ir -0,46, $p<0,001$). Aukšti reikalavimai darbe buvo, taipogi, tiesiogiai susiję su kaklo ir pečių lanko skausmu (0,22, $p<0,05$). Patirtas neigiamas elgesys darbe buvo susijęs su nusiskundimais PTSS (0,53, $p<0,001$).



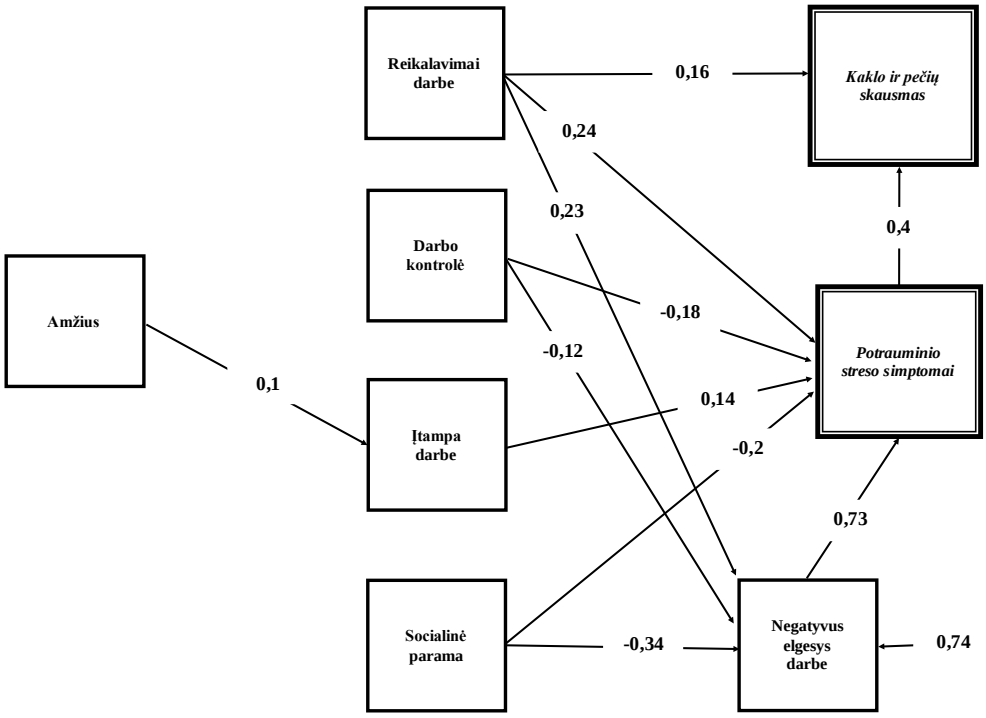
7 pav. *Šeimos gydytojų grupėje ryšius tarp psichosocialinių darbo veiksnių, potrauminio streso simptomų bei skausmo kakle ir pečių juostoje paaiškinantis modelis*

Kelių analizės modelyje, pavaizduotame *8 pav.*, pateikiami nustatyti reikšmingi ryšiai tarp psichosocialinių darbo veiksnių, PTSS bei kaklo ir pečių lanko skausmo slaugytojų grupėje. Šiuo modeliu paaiškinama 35,0 proc. padavėjų patiriamo PTSS (R kvadratas – 0,35) bei 12,0 proc. kaklo ir pečių lanko skausmo (R kvadratas – 0,12). Aukšti reikalavimai darbe, žema darbo kontrolė ir socialinė parama darbe buvo susiję su patiriamu negatyviu elgesiu darbe (atitinkamai 0,36, $p<0,001$; -0,25, $p<0,001$ ir -0,29, $p<0,001$). Patiriamas negatyvus elgesys darbe buvo susijęs su nusiskundimais PTSS (0,47, $p<0,001$) bei kaklo ir pečių skausmu (0,18, $p<0,05$).



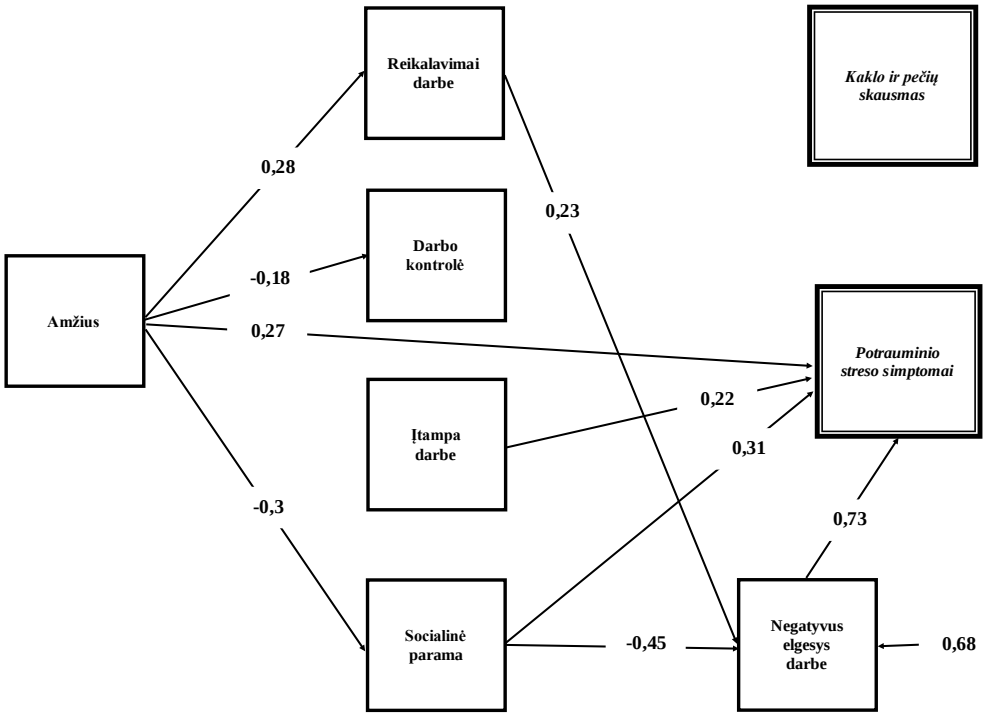
8 pav. *Slaugytojų grupėje ryšius tarp psichosocialinių darbo veiksnių, potrauminio stresso simptomų bei skausmo kakle ir pečių juostoje paaiškinantis modelis*

9 pav. pavaizduotame kelių analizės modelyje pateikiami nustatyti reikšmingi ryšiai tarp psichosocialinių darbo veiksnių, PTSS bei kaklo ir pečių lanko skausmo mokytojų grupėje. Šiuo modeliu paaiškinama 21,0 proc. kaklo ir pečių lanko skausmo (R kvadratas – 0,21) bei 31,0 proc. PTSS (R kvadratas – 0,31). Aukšti reikalavimai darbe buvo susiję su patiriamu kaklo ir pečių lanko skausmu (0,16, $p<0,05$), neigiamu elgesiu darbe (0,23, $p<0,001$) ir PTSS (0,24, $p<0,05$), kuris, savo ruožtu, buvo, taipogi, susijęs su kaklo ir pečių lanko skausmu (0,4, $p<0,001$). Reikšmingas ryšys tarp patirto neigiamo elgesio darbe ir PTSS nebuvo nustatytas.



9 pav. *Mokytojų grupėje ryšius tarp psichosocialinių darbo veiksnių, potrauminio stresso simptomų bei skausmo kakle ir pečių juostoje paaiškinantis modelis*

Kelių analizės modelyje, pavaizduotame *10 pav.*, pateikiami nustatyti reikšmingi ryšiai tarp psichosocialinių darbo veiksnių, PTSS bei kaklo ir pečių lanko skausmo padavėjų grupėje. Šiuo modeliu paaiškinama 58,0 proc. padavėjų patiriamo PTSS (R kvadratas – 0,58). Reikšmingas ryšys tarp kaklo ir pečių lanko skausmo bei kitų į modelį įtrauktų kintamųjų nebuvo nustatytas. Aukšti reikalavimai darbe ir žema socialinė parama buvo susiję su patiriamu negatyviu elgesiu darbe (atitinkamai 0,23, $p<0,001$ ir -0,45, $p<0,001$).



10 pav. *Padavėjų grupėje ryšius tarp psichosocialinių darbo veiksnių, potrauminio stresso simptomų bei skausmo kakle ir pečių juostoje paaiškinantis modelis*

Ryšiai tarp psichosocialinių darbo veiksnių ir subjektyvaus savo sveikatos vertinimo visose tirtose profesijose

Kaip matyti iš duomenų, pateiktų *3 lentelėje*, respondentai, kurie patyrė neigiamą elgesį darbe, vertino savo sveikatą kaip blogą ar labai blogą žymiai dažniau, lyginant su tais, kurie neigiamo elgesio darbe nepatyrė, atitinkamai 11,4 ir 2,1 proc; 8,7 ir 1,8 proc. ($p<0,05$). Aukštus darbo reikalavimus turintys respondentai vertino savo sveikatą kaip blogą ar labai blogą žymiai dažniau,negu turintieji žemus darbo reikalvimus, atitinkamai 5,3 ir 1,9 proc. ($p<0,05$). Respondentai, galintys labiau kontroliuoti savo darbą, vertino savo sveikatą kaip gerą arba puikią reikšmingai dažniau, lyginant su mažą darbo kontrolę turinčiais respondentais, atitinkamai 49,6 proc. ir 40,1 proc. ($p<0,05$). Reikšmingai daugiau respondentų, nurodžiusių žemą socialinę paramą darbe, vertino savo sveikatą kaip blogą ar labai blogą, lyginant su tais, kurie turėjo aukštą socialinę paramą darbe, atitinkamai 6,7 ir 0,7 proc. ($p<0,05$).

3 lentelė. *Ryšiai tarp psichosocialinių darbo veiksnių ir subjektyvaus savo sveikatos vertinimo visose tirtose profesijose*

	Subjektyvus savo sveikatos vertinimas			χ^2; lls; p
	Puiki ar labai gera	**Gera**	**Bloga ar labai bloga**	
Bauginimas (savęs vertinimo metodas) (N=2396)				
Dažnas	32,1 ♦	57,2 ♦	10,7 ♦ #	**82,66; 4; <0,001**
Atsitiktinis	37,6 *	56,8 *	5,6 *	
Nėra	51,8	46,5	1,7	
Negatyvaus elgesio darbe formos (operacinis metodas/Mikkelsen&Einarsen kriterijus) (N=2396)				
Yra	35,8 O	52,8	11,4 O	**73,46; 2; <0,001**
Nėra	49,4	48,5	2,1	
Negatyvaus elgesio darbe formos (operacinis metodas/Leymann kriterijus) (N=2396)				
Yra	38,5 O	52,8	8,7 O	**67,03; 2; <0,001**
Nėra	50,1	48,1	1,8	
Reikalavimai darbe (N=1737)				
Žemi	52,7 ¤	45,4 ¤	1,9 ¤	**47,53; 2; <0,001**
Aukšti	37,5	57,2	5,3	
Darbo kontrolė (N=1737)				
Žema	40,1 ¤	54,7 ¤	5,2 ¤	**22,45; 2; <0,001**
Aukšta	49,6	48,2	2,2	
Socialinė parama (N=1735)				
Žema	38,3 ¤	55,0 ¤	6,7 ¤	**65,26; 2; <0,001**
Aukšta	51,5	47,8	0,7	

*p<0,05, lyginant „atsitiktinis“ ir „nėra“;
♦p<0,05, lyginant „dažnas“ ir „nėra“;
#p<0,05, lyginant „dažnas“ ir „atsitiktinis“;
Op<0,05, lyginant „yra“ ir „nėra“;
¤p<0,05, lyginant „žemi“ ir „aukšti”;
Statistiškai reikšmingi rezultatai paryškinti.

Ryšių tarp psichosocialinių darbo veiksnių ir subjektyvaus savo sveikatos pokyčių vertinimo visoje tirtose profesijose tyrimo rezultai, pateikti *4 lentelėje.* Respondentai, kurie patyrė dažną priekabiavimą darbe, vertino savo sveikatą kaip pablogėjusią reikšmingai dažniau, lyginant su atsitiktinį priekabiavimą patyrusiais arba visai jo nepatyrusiais respondentais, atitinkamai 43,4, 22,0 ir 21,7 proc. (p<0,05). Reikšmingai daugiau aukštus reikalavimus darbe turinčių respondentų savo sveikatą vertino kaip blogėjančią, lyginant su respondentais, kurie turėjo žemus darbo reikalavimus, atitinkamai 34,7 ir 21,2 proc. (p<0,05).

4 lentelė. *Ryšiai tarp psichosocialinių darbo veiksnių ir subjektyvaus savo sveikatos pokyčių vertinimo visose tirtose profesijose*

	Subjektyvus savo sveikatos pokyčių vertinimas			**χ^2; lls; p**
	Žymiai geresnė	**Panaši**	**Žymiai blogesnė**	
Bauginimas (savęs vertinimo metodas) (N=2394)				
Dažnas	5,7 ♦ #	50,9 ♦ #	43,4 ♦ #	**49,85; 4; <0,001**
Atsitiktinis	16,3 *	61,7 *	22,0	
Nėra	11,0	67,3	21,7	
Negatyvaus elgesio darbe formos (operacinis metodas/Mikkelsen&Einarsen kriterijus) (N=2394)				
Yra	6,5 O	53,3 O	40,2 O	**45,98; 2; <0,001**
Nėra	12,1	66,6	21,3	
Negatyvaus elgesio darbe formos (operacinis metodas/Leymann kriterijus) (N=2394)				
Yra	6,3 O	58,2 O	35,5 O	**49,03; 2; <0,001**
Nėra	12,7	66,7	20,6	
Reikalavimai darbe (N=1734)				
Žemi	8,2	70,6 ¤	21,2 ¤	**46,75; 2; <0,001**
Aukšti	10,1	55,2	34,7	
Darbo kontrolė (N=1734)				
Žema	6,1 ¤	60,9	33,1 ¤	**30,29; 2; <0,001**
Aukšta	11,7	64,9	23,5	
Socialinė parama (N=1732)				
Žema	8,5	57,3 ¤	34,2 ¤	**31,64; 2; <0,001**
Aukšta	9,6	68,3	22,1	

Išvados

1. Nepalankių psichosocialinių darbo veiksnių ir nusiskundimų sveikata (psichologinio distreso, PTSS bei kaklo ir pečių juostos raumenų skausmų) paplitimo tarp įvairių profesijų darbuotojų tyrimo duomenimis, nustatyta, kad:
   - didžiausias priekabiavimo darbe paplitimas, vertinant operaciniu metodu, buvo tarp šeimos gydytojų ir padavėjų. Mažiausias paplitimas buvo tarp mokytojų, jūrininkų, ir policijos pareigūnų. Slaugytojų grupė buvo viduryje tarp rečiausiai ir dažniausiai priekabiavimą darbe patyrusių darbuotojų grupių. Vertinant priekabiavimo darbe paplitimą metodu, kai respondentai patys save įvardina kaip patyrusius priekabiavimą, nustatyta, kad šeimos gydytojai, policijos pareigūnai ir pa-

davėjai dažną priekabiavimą patyrė dažniausiai, atitinkamai 13,0; 11,7 ir 10,9 proc. Rečiausiai patirtą priekabiavimą darbe nurodė mokytojai (2,9 proc.) ir jūrininkai (3,8 proc.). Slaugytojai/-os nurodė retai patyrusios dažną, bet dažnai patyrusios atsitiktinį priekabiavimą darbe, atitinkamai 4,7 proc. ir 27,9 proc.

- šeimos gydytojai/-os dažniausiai skundėsi patyrę psichologinį distresą bei skausmus kakle ir pečių juostoje. Padavėjų grupėje psichologinio distreso paplitimas buvo beveik toks pat aukštas, kaip tarp šeimos gydytojų, tačiau skausmo kakle ir pečių juostoje paplitimas šioje grupėje buvo vienas mažiausių. PTSS paplitimas buvo panašus visose profesijose, išskyrus jūrininkus, ir svyravo nuo 12,2 iki 15,9 proc. Jūrininkai rečiausiai išsakė tirtus nusikundimus sveikata.
- Palankiausios psichosocialinės darbo sąlygos buvo nurodytos mokytojų, kai tuo tarpu labiausiai stresą sukelianti darbo aplinka (aukšti darbo reikalavimai, žema darbo kontrolė bei socialinė parama) buvo nustatyta tarp šeimos gydytojų ir padavėjų.

2. Sąsajų tarp nepalankių psichosocialinių darbo veiksnių ir nusiskundimų sveikata (psichologinio distreso, PTSS bei kaklo ir pečių juostos raumenų skausmų) tarp įvairių profesijų darbuotojų tyrimo duomenimis, nustatyta, kad:
   - aukšti reikalavimai darbe ir maža socialinė parama buvo susiję su patirtu priekabiavimu darbe visose tirtose profesijose.
   - nepalankūs psichosocialiniai darbo veiksniai buvo tiesiogiai arba per priekabiavimą darbe susiję su nusiskundimais psichine sveikata (psichologiniu distresu ir PTSS), kurie, savo ruožtu, taip pat buvo susiję su skausmu kakle ir pečių lanko juostoje. Padavėjų grupėje skausmas kakle ir pečių juostoje nebuvo susijęs nei su nepageidaujamais psichosocialiniais darbo veiksniais, nei su patirtu negatyviu elgesiu darbo vietoje.
   - patirtas negatyvus elgesys darbe buvo tiesiogiai susijęs su nusiskundimais (psichologiniu distresu ir PTSS) psichine sveikata visose profesijose, išskyrus mokytojus. Mokytojų grupėje minėti nusiskundimai psichine sveikata buvo reikšmingai susiję su priekabiavimu darbe, vertintu metodu, kuomet respondentai patys save įvardina kaip patyrusius priekabiavimą.
3. Sąsajų tarp nepalankių psichosocialinių darbo veiksnių (priekabiavimo darbe, darbo reikalavimų, darbo kontrolės, socialinės paramos) ir subjektyvaus savo sveikatos vertinimo rezultatų duomenimis, nustatyta, kad respondentai, kurie patyrė neigiamą elgesį darbe, vertino savo sveikatą kaip blogą ar labai blogą ženkliai dažniau, lyginant su tais, kurie neigia-

mo elgesio darbe nepatyrė, atitinkamai 11,4 ir 2,1 proc; 8,7 ir 1,8 proc. ($p<0,05$). Nepalankias psichosocialines darbo sąlygas nurodę respondentai savo sveikatą kaip blogą ar labai blogą vertino žymiai dažniau, negu tie, kurie nurodė palankias sąlygas. Patirtas dažnas priekabiavimas darbe šansų santykį vertinti savo sveikatą kaip blogą ar labai blogą didino 1,84 karto (95 proc. PI 1,17–2,89), o aukšti reikalavimai darbe – 1,74 karto (95 proc. PI 1,41–2,15).

11. SUPPLEMENTS

Supplement 1

BIOETHICS COMMITEE'S APPROVAL

KAUNO REGIONINIS BIOMEDICININIŲ TYRIMŲ ETIKOS KOMITETAS

LSMUL KK, Fiziologijos ir farmakologijos institutas (Klinikinės farmakologijos padalinys), Eivenių g.2, LT-50009 Kaunas, tel. (+370) 37 32 68 89;el.paštas: kaunorbtek@lsmuni.lt

LEIDIMAS ATLIKTI BIOMEDICININĮ TYRIMĄ

2014-12-02 Nr. BE-2-12

Biomedicininio tyrimo pavadinimas: **"Įvairių profesijų darbuotojų psichosocialinių darbo sąlygų ir sveikatos nusiskundimų sąsajų tyrimas"**	
Protokolo Nr.:	**PDSSNT-LT-01**
Data:	**2013-11-11**
Versija:	**1.0, Galutinė**
Asmens informavimo forma	**Versija 3.0, 2014-11-05**
Pagrindinis tyrėjas:	**Doc. Dr. Vilija Malinauskienė**
Biomedicininio tyrimo vieta:	**LSMU MA Kardiologijos institutas**
Įstaigos pavadinimas:	Populiacinių tyrimų laboratorija
Adresas:	Sukilėlių pr. 17, Kaunas, LT-50009, Lietuva

Išvada:

Kauno regioninio biomedicininių tyrimų etikos komiteto posėdžio, įvykusio **2014 m. kovo 4 d.** (protokolo Nr. BE-10-2) sprendimu pritarta biomedicininio tyrimo vykdymui.

Mokslinio eksperimento vykdytojai įsipareigoja: (1) nedelsiant informuoti Kauno Regioninį biomedicininių Tyrimų Etikos komitetą apie visus nenumatytus atvejus, susijusius su studijos vykdymu, (2) iki sausio 15 dienos – pateikti metinį studijos vykdymo apibendrinimą bei, (3) per mėnesį po studijos užbaigimo, pateikti galutinį pranešimą apie eksperimentą.

Kauno regioninio biomedicininių tyrimų etikos komiteto nariai			
Nr.	Vardas, Pavardė	Veiklos sritis	Dalyvavo posėdyje
1.	Prof. Romaldas Mačiulaitis	Klinikinė farmakologija	taip
2.	Prof. Edgaras Stankevičius	Fiziologija, farmakologija	taip
3.	Doc. Eimantas Peičius	Filosofija	taip
4.	Dr. Ramunė Kasperavičienė	Kalbotyra	taip
5.	Med. dr. Jonas Andriuškevičius	Chirurgija	taip
6.	Agnė Krušinskaitė	Teisė	taip
7.	Prof. Skaidrius Miliauskas	Pulmonologija, vidaus ligos	taip
8.	Med. dr. Rokas Bagdonas	Chirurgija	ne
9.	Eglė Vaižgelienė	Visuomenės sveikata	taip

Kauno regioninis biomedicininių tyrimų etikos komitetas dirba vadovaudamasis etikos principais nustatytais biomedicininių tyrimų Etikos įstatyme, Helsinkio deklaracijoje, vaistų tyrinėjimo Geros klinikinės praktikos taisyklėmis.

Pirmininkas Prof. Romaldas Mačiulaitis

Supplement 2

STUDY QUESTIONNAIRE

ANKETA

Šioje anketoje klausiama Jūsų nuomonės apie Jūsų sveikatą bei Jūsų darbo sąlygas. Tyrimas, kurį atlieka Lietuvos sveikatos mokslų universiteto Medicinos akademijos mokslininkai, padės įvertinti patyčių dažnį darbe ir psichologinę savijautą. Surinkti duomenys bus naudojami palyginimui su tarptautiniais duomenimis. Taip pat tikimės, jog anketos rezultatai padės teikti pasiūlymus Jūsų sveikatos ir darbo sąlygų pagerinimui.

Anketa yra **ANONIMINĖ.** Duomenų slaptumą garantuojame. Tikimės nuoširdaus Jūsų bendradarbiavimo. Jeigu neprieštaraujate, kad ši anketa būtų naudojama mokslo tyrinėjimams, **įrašykite Jums tinkantį atsakymo variantą. Kvadratėlyje ☐ tinkamą atsakymo variantą pažymėkite × arba įrašykite reikiamą skaičių.** Labai prašome atsakyti į **VISUS** klausimus. Iš anksto dėkojame už Jūsų sugaištą laika.

I. Jūsų amžius (metais) _____
☐☐

II. Lytis Vyras(1) Moteris (2)
☐

III. Jūsų darbo paskutinėje darbovietėje stažas (metais)
☐☐

IV. Sveikatai kenksmingi psichologiniai veiksniai darbe

NEGATYVAUS ELGESIO DARBE KLAUSIMYNAS

Pateiksime keletą negatyvaus elgesio darbe pavyzdžių. Ar Jūs asmeniškai patyrėte tokio negatyvaus elgesio **apraiškas per paskutinius 6 mėnesius?** Prašome atsakymus pažymėti tokiu būdu:
Kvadratėlyje ☐ tinkamą atsakymo variantą įrašykite reikiamą skaičių.

1	2	3	4	5
niekada	**taip, dabar ir kažkada**	**kas mėnesį**	**kas savaitę**	**kasdien**

1. Kažkas nepateikia Jums informacijos darbe, dėl ko nukenčia Jūsų atliekamo darbo kokybė (nepakviečia į susirinkimus, nuslepia sprendimus ir pan.)
☐
2. Buvote žeminamas ar išjuoktas darbo eigoje (dėl darbo)
☐
3. Jums buvo liepiama atlikti žemesnės kompetencijos pagal jūsų užimamą padėtį darbą
☐
4. Iš jūsų buvo atimta reikalaujanti atsakomybės veikla ir pakeista nereikšmingomis ir nemaloniomis užduotimis
☐
5. Apie Jus buvo platinamos apkalbos ir gandai
☐
6. Jūs buvote ignoruojamas, izoliuojamas nuo kitų darbe
☐
7. Jūs patyrėte užgaulias ir įžeidžiančias Jūsų asmenį pastabas apie Jūsų įpročius, pažiūras, asmeninį gyvenimą
☐
8. Ant Jūsų šaukė, Jūs buvote spontaniško pykčio arba įniršio auka
☐
9. Jūs patyrėte bauginantį elgesį (rodymas pirštu, įsiveržimas į asmeninę erdvę), Jus stumdė, Jums pastojo kelią)
☐
10. Jūs patyrėte užuominas iš kitų dirbančiųjų, kad Jums reikėtų palikti darbą
☐
11. Jums primygtinai dažnai primindavo Jūsų darbe padarytas klaidas
☐
12. Jums priartėjus, buvote ignoruojamas arba su Jumis buvo nedraugiškai elgiamasi
☐
13. Jūsų darbas ir pastangos buvo primygtinai kritikuojamos
☐
14. Jūsų nuomonę darbe ignoravo
☐

15. Iš jūsų tyčiodavosi nedraugiškai nusiteikę bendradarbiai ☐
16. Jums duodavo betiksles užduotis ir nustatydavo nerealiai trumpus terminus joms atlikti ☐
17. Apie Jus buvo skleidžiami nepagrįsti tvirtinimai ☐
18. Jūsų darbą perdėtai kontroliuodavo ☐
19. Jums darė spaudimą nepasinaudoti Jums priklausančiomis teisėmis (imti nedarbingumo lapelį, naudotis atostogomis, kompensuoti kelionės išlaidas) ☐
20. Patyrėte pernelyg Jus erzinantį elgesį ir sarkazmą ☐
21. Jums būdavo kraunamos nepakeliamos užduotys darbe ☐
22. Jūs patyrėte grasinimus jėga, fiziniu susidorojimu ir konkrečius užgauliojančius veiksmus (iš mokinių ar jų artimųjų) ☐
23. Jūs patyrėte seksualinę prievartą arba bandymus ją panaudoti (iš mokinių ar kolegų) ☐
24. Jus įžeidinėjo dėl tautybės, lyties ☐
25. Jūs buvote verčiamas papildomai dirbti (viršvalandžiai, naktinis darbas, nepopuliarios užduotys) ☐
26. Jūsų darbe perdėtai ieškojo trūkumų ☐
27. Jus perkėlinėjo į kitą skyrių prieš Jūsų valią ☐

28. Ar Jūs patyrėte psichologinį terorą darbe? Psichologinis teroras darbe yra tokia situacija, kai vienas ar keli asmenys **pakartotinai** per tam tikrą laikotarpį patiria eilę negatyvaus elgesio aktų iš vieno ar kelių bendradarbių. Tai tokia situacija, kai psichologinio teroro auka neturi galimybės apginti savęs nuo negatyvaus elgesio išpuolių. **Vieną kartą** patirtas negatyvus elgesys **nėra** psichologinio teroro iš-raiška.

Naudodamiesi šiuo apibrėžimu, prašome atsakyti ar jūs patyrėte psichologinį terorą darbe **per paskutinius šešis mėnesius**? Teisingą atsakymą prašome pažymėti **kryželiu**.

1. Ne ☐
2. Taip, bet tik retai ☐
3. Taip, dabar ir kažkada ☐
4. Taip, keletą kartų per savaitę ☐
5. Taip, beveik kasdien ☐

29. Kiek laiko Jūs patiriate psichologinį terorą darbe?

1. Niekada nepatyriau ☐
2. Per paskutiniuosius 6 mėnesius ☐
3. Per paskutinius 6-12 mėnesių ☐
4. Jau 1-3 metus ☐
5. Patiriu 3-5 metus ☐
6. Daugiau kaip 5 metus ☐

30-34. **Kas iš Jūsų tyčiojosi**/diskriminavo Jus darbe?

30. Niekas nesityčiojo ☐
31. Vadovai/vedėjai ☐
32. Kolegos ☐
33. Pavaldiniai ☐
34. Mokiniai ☐

35-37. **Kiek asmenų terorizavo Jus** darbe?

35. Niekas neterorizavo ☐
36. Vyrų skaičius_____ ☐
37. Moterų skaičius___ ☐

38. Kiek asmenų patyrė terorą darbe?

1. Nepatyrė niekas ☐
2. Tiktai Jūs ☐
3. Jūs ir keletas Jūsų kolegų ☐
4. Dauguma Jūsų įstaigos narių ☐

39. Ar jaučiate, kad **priekabiavimas darbe** sutrikdė Jūsų **darbinę veiklą** ir turėjo neigiamos įtakos **santykiams** su artimais žmonėmis, draugais?

1. Niekada nejaučiau ☐
2. Kiek jaučiu ☐
3. Truputį jaučiu ☐
4. Labai jaučiu ☐
5. Ypatingai jaučiu ☐

40. Ar Jums teko **būti liudininku**, kai Jūsų darbe buvo terorizuojami kolegos per paskutiniuosius 6 mėn.?

1. Ne, niekada ☐
2. Taip, bet retai ☐
3. Taip, dabar ir kažkada ☐
4. Taip, dažnai ☐
5.

41-43. Jei Jūs patyrėte negatyvaus elgesio apraiškas darbe, ar Jums kas nors **padėjo, palaikė, išklausė**

41. Niekas nepadėjo ☐
42. Padėjo draugai ☐
43. Palaikė vadovai ☐

44. Stresas yra tokia situacija, kai asmuo jaučia įtampą, yra nuolat pavargęs, nervingas, nerimastingas, arba negali gerai išsimiegoti naktį, nes jį vargina neramios mintys. Ar Jūs jaučiate stresą šiuo metu?

1. Nejaučiu ☐
2. Labai mažai ☐
3. Kažkiek jaučiu ☐
4. Labai jaučiu ☐
5.

45. Keletas klausimų apie Jūsų darbą *(prašome pažymėti vieną atsakymą)*

	Dažnai	**Kartais**	**Retai**	**Niekada**
1.Ar Jūs priverstas dirbti greitai?	☐**4**	☐**3**	☐**2**	☐**1**
2. Ar Jūs dirbate įtemptai?	☐	☐	☐	☐
3. Ar Jūsų darbas reikalauja daug pastangų?	☐	☐	☐	☐
4. Ar užtenka laiko viską atlikti?	☐	☐	☐	☐
5. Ar dažni konfliktai darbe?	☐	☐	☐	☐
6. Ar Jūsų darbe yra galimybė išmokti naujų dalykų?	☐	☐	☐	☐
7. Ar Jūsų darbe reikalingi aukšto lygio įgūdžiai ir profesionalumas?	☐	☐	☐	☐
8. Ar Jūsų darbas reikalauja rodyti iniciatyvą?	☐	☐	☐	☐
9. Ar Jūsų darbas monotoniškas?	☐	☐	☐	☐
10. Ar Jūs galite pats pasirinkti KAIP Jums dirbti?	☐	☐	☐	☐
11. Ar Jūs galite pats pasirinkti KĄ Jums dirbti?	☐	☐	☐	☐
12. Ar Jūsų darbo vietoje yra maloni ir rami aplinka?	☐	☐	☐	☐
13. Ar Jūs gerai sutariate su bendradarbiais?	☐	☐	☐	☐
14. Ar Jūsų bendradarbiai Jums padeda?	☐	☐	☐	☐
15. Ar kiti supranta, jeigu Jums bloga diena?	☐	☐	☐	☐
16. Ar Jūs sutariate su savo viršininku?	☐	☐	☐	☐
17. Ar Jums patinka dirbti su bendradarbiais?	☐	☐	☐	☐
18. Ar Jums tenka dirbti fizinį darbą (kilnoti, nešioti, stumdyti, vežioti)	☐	☐	☐	☐
19. Ar Jums tenka dirbti naktimis?	☐	☐	☐	☐

Keletas klausimų **apie Jūsų sveikatą**. **Kaip Jūs vertinate savo sveikatą?**

46. Bendrai kalbant, **Jūsų sveikata yra:**

1. Labai gera ☐
2. Gera ☐
3. Vidutiniška ☐
4. Bloga ☐
5. Labai bloga ☐

47. Palyginus su **prieš metus buvusia sveikata**, kaip Jūs vertintumėte savo sveikatą **dabar**?

1. Žymiai geresnė dabar negu prieš metus ☐
2. Kiek geresnė dabar negu prieš metus ☐
3. Panaši kaip prieš metus ☐
4. Kiek blogesnė negu prieš metus ☐
5. Žymiai blogesnė negu prieš metus ☐

48. Dabar norėtume Jūsų paklausti keletą klausimų apie **Jūsų bendrąją sveikatą pastarosiomis savaitėmis**. Atsakykite, prašau, sekančius klausimus atsakymus pažymėdami tuos, kurie Jums labiausiai tinka.

Ar Jūs pastaruoju metu...	**Daug mažiau nei įprastai**	**Mažiau nei įprastai**	**Taip kaip visados**	**Daugiau nei įprastai**	**Daug labiau nei įprastai**
1. Sugebėjote susikoncentruoti, atlikdamas darbus?	☐**1**	☐**2**	☐**3**	☐**4**	☐**5**
2. Blogai miegojote dėl rūpesčių?	☐	☐	☐	☐	☐
3. Jautėte, kad esate svarbus atliekamajame darbe?	☐	☐	☐	☐	☐
4. Jautėtės sugebantis daryti sprendimus?	☐	☐	☐	☐	☐
5. Pastoviai jautėte įtampą?	☐	☐	☐	☐	☐
6. Jautėte, kad Jūs nesugebate įveikti sunkumų?	☐	☐	☐	☐	☐
7. Sugebate džiaugtis normalia kasdienine veikla?	☐	☐	☐	☐	☐
8. Sugebate drąsiai pasitikti gyvenimo problemas?	☐	☐	☐	☐	☐
9. Jautėte liūdesį ir depresiją?	☐	☐	☐	☐	☐
10. Jautėte, kad prarandate pasitikėjimą savimi?	☐	☐	☐	☐	☐
11. Galvojote apie save kaip apie nevertingą asmenį?	☐	☐	☐	☐	☐
12. Nepaisant visko, jautėtės laimingas?	☐	☐	☐	☐	☐

49. Kurie iš išvardintų **susirgimų** Jums buvo diagnozuoti arba gydyti per **paskutinius 12 mėnesių**?

1.Padidinto kraujospūdžio liga ☐	7. Radikulitas ☐	13. Prostatos ligos ☐
2. Miokardo infarktas ☐	8. Cukrinis diabetas ☐	14. Raumenų skausmas kojose ☐
3. Krūtinės angina (stenokardija) ☐	9. Migrena ☐	15. Plaštakos/rankos skausmai ☐
4. Širdies ligos ☐	10. Insultas ☐	16. Nealerginės kilmės odos ligos ☐
5. Bronchinė astma ☐	11. Depresija ☐	17. Sąnarių uždegimas ☐
6. Kaklo / peties skausmai ☐	12. Traumos, lūžiai, išniirmai, žaizdos, sužalojimai ☐	

50. Ar dažnai Jūsų kasdieniniame gyvenime atsitinka tai (situacijos, aplinkybės, reiškiniai), ką jums sunku suprasti?

1. Taip, dažnai ☐
2. Taip, kartais ☐
3. Ne ☐

51. Ar dažnai kasdieninis gyvenimas teikia Jums pasitenkinimą?

1. Taip, dažnai ☐
2. Taip, kartais ☐
3. Ne ☐

52. Ar randate išeitį iš padėties, kuri kitiems atrodo beviltiška?

1. Taip, dažnai ☐
2. Taip, kartais ☐
3. Ne ☐

53. Ar dažnai laisvalaikiu mankštinatės (**sportuojate, bėgiojate** ir pan.), mažiausiai 30 minučių taip, kad pagreitėtų kvėpavimas ir suprakaituotumėte? **?** (pažymėkite vieną langelį)

1. Kasdien ☐
2. 4-6 kartus per savaitę ☐
3. 2-3 kartus per savaitę ☐
4. Kartą per savaitę ☐
5. 2-3 kartus per mėnesį ☐
6. Kelis kartus per metus ir rečiau ☐
7. Negaliu mankštintis dėl ligos ☐

54. Prašome parašyti savo
ūgį (cm) ☐☐☐
savo **svorį (kg)** ☐☐

55. Ar Jūs **rūkote**? (Atidžiai perskaitykite ir pasirinkite vieną tinkantį atsakymą)

1. Ne ☐
2. Rūkau kasdien ☐
3. Rūkau atsitiktinai ☐
4. Rūkiau, bet mečiau prieš 1-2metus ☐
5. Rūkiau, bet mečiau prieš 3-5metus ☐
6. Šiemet pradėjau rūkyti ☐

56. Ar Jūs vartojate **alkoholinius gėrimus ?** (pažymėkite vieną langelį)

1. Nevartoju ☐
2. Vartoju 2-3 kartus/per metus ☐
3. Vartoju atsitiktinai ☐
4. Vartoju kas mėnesį ☐
5. Vartoju kas savaitę ir dažniau ☐
6. Vartoju kasdien ☐

57. **Ar Jūs patenkinta(as) savo darbu** (profesija)? **?** (pažymėkite vieną langelį)

1. Labai patenkinta(as) ☐
2. Patenkinta(as) ☐
3. Nei patenkintas, nei nepatenkintas ☐
4. Nepatenkinta(as) ☐
5. Labai nepatenkinta(as) ☐

58. Per metus išgyventos **kritinės situacijos šeimoje**

1. Nebuvo ☐
2. Skyrybos ☐
3. Artimo šeimos nario mirtis ar nepagydoma liga ☐
4. Sunki finansinė krizė šeimoje ☐

59. Patyrusieji negatyvų elgesį, priekabiavimą ar smurtą darbe neretai jaučia **išgyvenimus.** Prašome atidžiai perskaityti ir nurodyti, ar Jus vargino šie simptomai **per paskutinę savaitę** (prašome pažymėti tinkantį atsakymą)

Žemiau pateiktuose klausimuose sąvoka „*tai*“ reiškia negatyvų elgesį, priekabiavimą ar smurtą darbe.

Ar per paskutinę savaitę jautėte, kad...	**Niekada**	**Truputį**	**Vidutiniškai**	**Pakankamai stipriai**	**Labai stipriai**
1. Bet kokie prisiminimai apie *tai* man sukeldavo buvusius jausmus	□**1**	□**2**	□**3**	□**4**	□**5**
2. Vargino neramus miegas	□	□	□	□	□
3. Kiti dalykai neatitraukė mano minčių apie *tai*	□	□	□	□	□
4. Aš jaučiausi dirglus ir piktas	□	□	□	□	□
5. Stengiausi išvengti liūdnų minčių kai apie *tai*pagalvodavau arba kažkas primindavo	□	□	□	□	□
6. Mintys apie *tai* vis sugrįždavo, man nenorint	□	□	□	□	□
7. Man atrodė, lyg *tai* nebuvo atsitikę, ar lyg *tai* būtų nerealu	□	□	□	□	□
8. Aš vengiau prisiminimų apie *tai*	□	□	□	□	□
9. Vaizdai apie *tai* vis iškildavo mano atmintyje	□	□	□	□	□
10. Buvau dirglus ir lengvai išmušamas iš vėžių	□	□	□	□	□
11. Stengiausi apie *tai* negalvoti	□	□	□	□	□
12. Manyje kildavo nevaldomi jausmai apie *tai* ir aš nesusitvarkydavau su savimi	□	□	□	□	□
13. Jaučiau, kad tampu viskam abejingu	□	□	□	□	□
14. Vis susivokiu, kad mintimis ir jausmais sugrįžtu į tą traumuojančią situaciją	□	□	□	□	□
15. Man buvo sunku užmigti	□	□	□	□	□
16. Jaučiu stiprų jausmų antplūdį, pagalvojus apie *tai*	□	□	□	□	□
17. Stengiausi *tai* išbraukti iš savo atminties	□	□	□	□	□
18. Man buvo sunku susikoncentruoti	□	□	□	□	□
19. Prisiminimai apie *tai* iššaukia manyje fizines reakcijas (plaka širdis, išmuša prakaitas, dūstu, pykina ir pan.)	□	□	□	□	□
20. Aš sapnuodavau *tai*	□	□	□	□	□
21. Ėmiau viską kontroliuoti ir pasidariau įtarus	□	□	□	□	□
22. Stengiausi apie *tai* nekalbėti	□	□	□	□	□

60. Keletas klausimų apie tai, ***kaip Jūs jaučiatės po darbo*** (prašome pažymėti vieną tinkantį atsakymą)

	Dažnai	**Kartais**	**Retai**	**Niekada**
1.Po darbo dienos aš jaučiuosi labai pavargęs(usi)	**4**	**3**	**2**	**1**
2. Jaučiuosi pavargęs(usi) ryte, kai reikia atsikelti ir eiti į darbą				
3. Aš turiu labai sunkiai dirbti				
4. Aš jaučiuosi taip tarytum būčiau visiškai išsekęs(usi)				
5. Jaučiu, kad mano darbe tikrai yra perdaug įtampos				
6. Aš jaudinuosi dėl savo darbo netgi tada, kai pasibaigia darbo diena				

61. Ar jaučiatės patenkinta, kad reikia derinti apmokamą darbą su darbu namuose, šeimoje? (*pažymėkite vieną tinkantį atsakymą)*

1. Labai patenkintas(a) ☐
2. Patenkintas(a) ☐
3. Truputį patenkintas(a) ☐
4. Nei patenkintas(a), nei nepatenkintas(a) ☐
5. Truputį nepatenkintas(a) ☐
4. Nepatenkintas(a) ☐
5. Labai nepatenkintas(a) ☐

62. Jūsų šeiminė padėtis (*pažymėkite vieną tinkantį atsakymą)*

1. Vedęs (ištekėjusi) ☐
2. Išsiskyręs (usi) ☐
3. Nevedęs (netekėjusi) ☐
4. Gyvenu su drauge(u) ☐
5. Našlys(ė) ☐

63. Ar turite vaikų? (*pažymėkite vieną tinkantį atsakymą)*

1. Neturiu ☐
2. Turiu 1 vaiką ☐
3. Turiu 2-3 vaikus ☐
4. Turiu 4-5 vaikus ☐
5. Turiu daugiau nei 5 vaikųs ☐

Dėkojame už nuoširdžius atsakymus

Table 1. *Coefficients of Pearson correlations among adverse psychosocial job characteristics and health outcomes in the sample of family physicians*

	Age	Negative acts	Job demands	Job control	Social support	Job strain	Psychological distress	PTSS
Age	1							
Negative acts	0.009	1						
Job demands	-0.23**	0.222**	1					
Job control	0.102	-0.236**	-0.08	1				
Social support	0.059	-0.418**	-0.249**	0.443**	1			
Job strain	-0.196**	0.319**	0.674**	-0.758**	-0.462**	1		
Psychological distress	-0.095	0.215**	0.32**	-0.178**	-0.174**	0.343**	1	
PTSS	-0.101	0.33**	0.196**	-0.174**	-0.274**	0.253**	0.391**	1

[b] $p<0.05$; $^{**}p<0.01$; PTSS – post-traumatic stress symptoms.

Table 2. *Coefficients of Pearson correlations among adverse psychosocial job characteristics and health outcomes in the sample of nurses*

	Age	Negative acts	Job demands	Job control	Social support	Job strain	Psychological distress	PTSS
Age	1							
Negative acts	-0.189**	1						
Job demands	-0.77**	0.22**	1					
Job control	-0.036	-0.194**	0.15**	1				
Social support	0.174**	-0.288**	-0.356**	0.231**	1			
Job strain	-0.047	0.372**	0.612**	-0.656**	-0.454**	1		
Psychological distress	-0.044	0.219**	0.301**	-0.037	-0.379**	0.244**	1	
PTSS	-0.044	0.184**	0.331**	-0.107**	-0.37**	0.316**	0.455**	1

* $p<0.05$; **$p<0.01$; PTSS – post-traumatic stress symptoms.

Table 3. *Coefficients of Pearson correlations among adverse psychosocial job characteristics and health outcomes in the sample of teachers*

	Age	Negative acts	Job demands	Job control	Social support	Job strain	Psychological distress	PTSS
Age	1							
Negative acts	0.103*	1						
Job demands	0.040	0.198**	1					
Job control	0.023	-0.271**	-0.111*	1				
Social support	-0.029	-0.35**	-0.269**	0.451**	1			
Job strain	0.045	0.354**	0.801**	-0.654**	-0.468**	1		
Psychological distress	0.003	0.194**	0.349**	-0.148**	-0.342**	0.348**	1	
PTSS	0.117*	0.269**	0.339**	-0.249**	-0.42**	0.404**	0.374**	1

* $p<0.05$; **$p<0.01$; PTSS – post-traumatic stress symptoms.

Table 4. *Coefficients of Pearson correlations among adverse psychosocial job characteristics and health outcomes in the sample of waiters*

	Age	Negative acts	Job demands	Job control	Social support	Job strain	Psychological distress	PTSS
Age	1							
Negative acts	0.101	1						
Job demands	0.241**	0.276**	1					
Job control	-0.151	-0.261**	-0.202*	1				
Social support	-0.265**	-0.433**	-0.457**	0.459**	1			
Job strain	0.232**	0.334**	0.711**	-0.791**	-0.559**	1		
Psychological distress	0.181*	0.278**	0.282**	-0.308**	-0.215**	0.393**	1	
PTSS	0.17*	0.384**	0.237**	-0.232**	-0.199*	0.327**	0.487**	1

* $p<0.05$; **$p<0.01$; PTSS – post-traumatic stress symptoms.

Table 5. *Model representing direct associations between psychosocial work factors, psychological distress, and pain of neck and shoulders in a sample of family physicians (unstandardized parameter estimates)*

Parameter	Unstandardized estimate	Standard error	Two-tailed p-value
Pain of neck and shoulders on			
Psychological distress	0.21	0.1	**0.037**
Negative acts	0.13	0.111	0.255
Job demands	0.2	0.091	**0.029**
Job control	-0.04	0.078	0.608
Job strain	-0.06	0.072	0.37
Job support	-0.003	0.031	0.914
Age	-0.01	0.009	0.564
Psychological distress on			
Negative acts	0.27	0.102	**0.009**
Job demands	0.26	0.085	**0.002**
Job control	-0.19	0.079	**0.016**
Job strain	0.03	0.071	0.633
Job support	0.03	0.031	0.338
Age	-0.004	0.009	0.7
Negative acts on			
Job demands	0.22	0.046	**<0.001**
Job control	0.03	0.053	0.601
Job strain	0.01	0.041	0.892
Job support	-0.15	0.017	**<0.001**
Age	-0.01	0.005	**0.048**
Job demands on			
Age	-0.03	0.006	**<0.001**
Job control on			
Age	0.01	0.006	*0.059*
Job strain on			
Age	0.01	0.006	0.358
Job support on			
Age	0.02	0.019	0.296
Job demands with			
Job control	-0.06	0.054	0.302
Job strain	0.08	0.03	**0.006**
Job control with			
Job strain	-0.09	0.03	**0.002**
Job support with			
Job demands	-0.68	0.142	**<0.001**
Job control	1.25	0.179	**<0.001**
Job strain	-0.17	0.099	*0.081*
Residual variances			
Job demands	0.95	0.08	**<0.001**
Job control	1.0	0.083	**<0.001**
Job strain	0.9	0.043	**<0.001**
Job support	8.22	0.782	**<0.001**
Negative acts	0.58	0.049	**<0.001**
R-squared			

Pain of neck and shoulders	0.16	0.052	**0.002**
Psychological distress	0.18	0.051	**0.001**
Job demands	0.05	0.023	**0.022**
Job control	0.01	0.011	0.34
Job strain	0.002	0.005	0.646
Job support	0.004	0.007	0.599
Negative acts	0.33	0.044	**<0.001**

In Bold – significantly; in Italic – tendency.

Table 6. *Model representing direct associations between psychosocial work factors, psychological distress, and pain of neck and shoulders in a sample of nurses (unstandardized parameter estimates)*

Parameter	Unstandardized estimate	Standard error	Two-tailed p-value
Pain of neck and shoulders on			
Psychological distress	0.2	0.078	**0.012**
Negative acts	0.04	0.066	0.578
Job demands	0.17	0.062	**0.007**
Job control	0.02	0.056	0.792
Job strain	-0.06	0.042	0.16
Job support	0.01	0.029	0.623
Age	-0.01	0.006	0.241
Psychological distress on			
Negative acts	0.19	0.069	**0.005**
Job demands	0.31	0.06	**<0.001**
Job control	0.06	0.06	0.32
Job strain	-0.06	0.039	0.158
Job support	-0.16	0.03	**<0.001**
Age	0.01	0.006	0.371
Negative acts on			
Job demands	0.37	0.036	**<0.001**
Job control	-0.26	0.03	**<0.001**
Job strain	-0.01	0.016	0.497
Job support	-0.13	0.016	**<0.001**
Age	-0.01	0.003	**0.009**
Job demands on			
Age	-0.01	0.004	**0.028**
Job control on			
Age	-0.004	0.004	0.326
Job strain on			
Age	-0.02	0.005	**<0.001**
Job support on			
Age	0.05	0.009	**<0.001**
Job demands with			
Job control	0.13	0.033	**<0.001**
Job strain	-0.06	0.022	**0.006**
Job control with			
Job strain	-0.08	0.024	**0.001**
Job support with			
Job demands	-0.83	0.095	**<0.001**
Job control	0.57	0.088	**<0.001**
Job strain	-0.35	0.068	**<0.001**
Residual variances			
Job demands	0.99	0.062	**<0.001**
Job control	1.0	0.062	**<0.001**
Job strain	1.27	0.037	**<0.001**
Job support	5.43	0.282	**<0.001**
Negative acts	0.66	0.039	**<0.001**

R-square			
Pain of neck and shoulders	0.12	0.036	**0.001**
Psychological distress	0.32	0.04	**<0.001**
Job demands	0.01	0.005	0.271
Job control	0.001	0.003	0.623
Job strain	0.02	0.009	*0.067*
Job support	0.03	0.012	0.011
Negative acts	0.38	0.032	**<0.001**

In Bold – significantly; in Italic – tendency.

***Table 7**. Model representing direct associations between psychosocial work factors, psychological distress, and pain of neck and shoulders in a sample of teachers (unstandardized parameter estimates)*

Parameter	Estimate	Standard error	Two-tailed p-value
Pain of neck and shoulders on			
Psychological distress	0.21	0.089	**0.02**
Negative acts	0.11	0.072	0.122
Job demands	0.2	0.073	**0.006**
Job control	0.03	0.079	0.751
Job strain	-0.04	0.068	0.581
Job support	0.03	0.034	0.352
Age	-0.002	0.007	0.783
Psychological distress on			
Negative acts	0.11	0.074	0.13
Job demands	0.37	0.066	**<0.001**
Job control	-0.03	0.072	0.653
Job strain	0.14	0.06	**0.018**
Job support	-0.09	0.031	**0.006**
Age	-0.002	0.008	0.837
Negative acts on			
Job demands	0.23	0.041	**<0.001**
Job control	-0.12	0.049	**0.013**
Job strain	-0.02	0.027	0.406
Job support	-0.15	0.018	**<0.001**
Age	0.001	0.004	0.849
Job demands on			
Age	0.004	0.005	0.349
Job control on			
Age	0.002	0.005	0.611
Job strain on			
Age	0.01	0.005	**0.016**
Job support on			
Age	-0.01	0.012	0.531
Job demands with			
Job control	-0.1	0.039	**0.015**
Job strain	0.002	0.022	0.914
Job control with			
Job strain	0.07	0.013	**<0.001**
Job support with			
Job demands	-0.61	0.099	**<0.001**
Job control	1.02	0.101	**<0.001**
Job strain	-0.2	0.081	**0.014**
Residual variances			
Job demands	1.0	0.079	**<0.001**
Job control	1.0	0.054	**<0.001**
Job strain	1.21	0.027	**<0.001**
Job support	5.5	0.381	**<0.001**
Negative acts	0.79	0.067	**<0.001**

R-squared			
Pain of neck and shoulders	0.14	0.046	**0.004**
Psychological distress	0.24	0.049	**<0.001**
Job demands	0.002	0.003	0.639
Job control	0.001	0.002	0.799
Job strain	0.01	0.008	0.223
Job support	0.001	0.003	0.755
Negative acts	0.27	0.034	**<0.001**

In Bold – significantly.

Table 8. *Model representing direct associations between psychosocial work factors, psychological distress, and pain of neck and shoulders in a sample of waiters (unstandardized parameter estimates)*

Parameter	Unstandardized estimate	Standard error	Two-tailed p-value
Pain of neck and shoulders on			
Psychological distress	0.04	0.173	0.836
Negative acts	-0.03	0.175	0.882
Job demands	0.21	0.175	0.239
Job control	0.03	0.123	0.782
Job strain	0.14	0.132	0.296
Job support	-0.001	0.051	0.986
Age	0.04	0.038	0.343
Psychological distress on			
Negative acts	0.36	0.154	**0.019**
Job demands	0.11	0.134	0.433
Job control	-0.4	0.117	**0.001**
Job strain	-0.04	0.087	0.634
Job support	0.07	0.053	0.18
Age	0.06	0.034	*0.082*
Negative acts on			
Job demands	0.25	0.08	**0.002**
Job control	0.03	0.114	0.777
Job strain	-0.04	0.076	0.636
Job support	-0.17	0.036	**<0.001**
Age	-0.01	0.018	0.714
Job demands on			
Age	0.07	0.026	**0.01**
Job control on			
Age	-0.04	0.02	**0.038**
Job strain on			
Age	0.04	0.018	*0.062*
Job support on			
Age	-0.21	0.062	**0.001**
Job demands with			
Job control	-0.15	0.082	*0.059*
Job strain	-0.01	0.041	0.83
Job control with			
Job strain	-0.24	0.051	**<0.001**
Job support with			
Job demands	-1.11	0.234	**<0.001**
Job control	1.16	0.232	**<0.001**
Job strain	-0.57	0.204	**0.005**
Residual variances			
Job demands	0.94	0.106	**<0.001**
Job control	0.98	0.102	**<0.001**
Job strain	0.84	0.067	**<0.001**
Job support	7.6	1.004	**<0.001**
Negative acts	0.81	0.101	**<0.001**

R-square			
Pain of neck and shoulders	0.1	0.081	0.239
Psychological distress	0.29	0.087	**0.001**
Job demands	0.08	0.056	0.167
Job control	0.03	0.028	0.281
Job strain	0.02	0.026	0.358
Job support	0.09	0.049	*0.054*
Negative acts	0.32	0.071	**<0.001**

In Bold – significantly; in Italic – tendency.

Table 9. *Model representing direct associations between psychosocial work factors, post-traumatic stress symptoms and pain of neck and shoulders in a sample of family physicians (unstandardized parameter estimates)*

Parameter	Unstandardized estimate	Standard error	Two-tailed p-value
Pain of neck and shoulders on			
Post-traumatic stress symptoms	0.14	0.121	0.244
Negative acts	0.08	0.136	0.538
Job demands	0.24	0.088	**0.007**
Job control	-0.07	0.078	0.379
Job strain	-0.07	0.071	0.347
Job support	0.0001	0.032	0.995
Age	-0.01	0.009	0.512
Post-traumatic stress symptoms on			
Negative acts	0.68	0.099	**<0.001**
Job demands	0.09	0.108	0.389
Job control	-0.08	0.084	0.334
Job strain	0.07	0.067	0.287
Job support	0.02	0.033	0.511
Age	0.0001	0.012	0.916
Negative acts on			
Job demands	0.22	0.046	**<0.001**
Job control	0.03	0.053	0.568
Job strain	0.01	0.041	0.887
Job support	-0.15	0.017	**<0.001**
Age	-0.01	0.005	**0.047**
Job demands on			
Age	-0.03	0.006	**<0.001**
Job control on			
Age	0.01	0.006	*0.059*
Job strain on			
Age	0.01	0.006	0.358
Job support on			
Age	0.02	0.019	0.296
Job demands with			
Job control	-0.06	0.054	0.303
Job strain	0.08	0.03	**0.006**
Job control with			
Job strain	-0.09	0.03	**0.002**
Job support with			
Job demands	-0.68	0.142	**<0.001**
Job control	1.26	0.179	**<0.001**
Job strain	-0.17	0.099	*0.082*
Residual variances			
Job demands	0.95	0.08	**<0.001**
Job control	1.0	0.083	**<0.001**
Job strain	0.9	0.043	**<0.001**
Job support	8.22	0.782	**<0.001**
Negative acts	0.58	0.049	**<0.001**

R-square			
Pain of neck and shoulders	0.14	0.052	**0.006**
Post-traumatic stress symptoms	0.31	0.059	**<0.001**
Job demands	0.05	0.023	**0.022**
Job control	0.01	0.011	0.34
Job strain	0.002	0.005	0.646
Job support	0.004	0.007	0.599
Negative acts	0.33	0.044	**<0.001**

In Bold – significantly; in Italic – tendency.

Table 10. *Model representing the associations between psychosocial work factors, post-traumatic stress symptoms and pain of neck and shoulders in a sample of nurses (unstandardized parameter estimates)*

Parameter	Unstandardized estimate	Standard error	Two-tailed p-value
Pain of neck and shoulders on			
Post-traumatic stress symptoms	-0.19	0.097	*0.056*
Negative acts	0.18	0.089	**0.043**
Job demands	0.27	0.074	**<0.001**
Job control	0.05	0.059	0.364
Job strain	-0.09	0.045	**0.047**
Job support	-0.02	0.027	0.428
Age	-0.01	0.007	0.474
Post-traumatic stress symptoms on			
Negative acts	0.56	0.11	**<0.001**
Job demands	0.24	0.081	**0.003**
Job control	0.15	0.075	*0.051*
Job strain	-0.11	0.067	0.105
Job support	-0.02	0.032	0.483
Age	0.01	0.009	0.317
Negative acts on			
Job demands	0.37	0.036	**<0.001**
Job control	-0.26	0.03	**<0.001**
Job strain	-0.01	0.016	0.497
Job support	-0.13	0.016	**<0.001**
Age	-0.01	0.003	**0.009**
Job demands on			
Age	-0.01	0.004	**0.028**
Job control on			
Age	-0.004	0.004	0.326
Job strain on			
Age	-0.02	0.005	**<0.001**
Job support on			
Age	0.05	0.009	**<0.001**
Job demands with			
Job control	0.13	0.033	**<0.001**
Job strain	-0.06	0.022	**0.006**
Job control with			
Job strain	-0.08	0.024	**0.001**
Job support with			
Job demands	-0.83	0.095	**<0.001**
Job control	0.57	0.088	**<0.001**
Job strain	-0.35	0.068	**<0.001**
Residual variances			
Job demands	1.0	0.062	**<0.001**
Job control	1.0	0.062	**<0.001**
Job strain	1.27	0.037	**<0.001**
Job support	5.43	0.282	**<0.001**
Negative acts	0.67	0.039	**<0.001**

R-square			
Pain of neck and shoulders	0.12	0.041	**0.005**
Post-traumatic stress symptoms	0.35	0.051	**<0.001**
Job demands	0.01	0.005	0.271
Job control	0.001	0.003	0.623
Job strain	0.02	0.009	*0.067*
Job support	0.03	0.012	0.011
Negative acts	0.38	0.032	**<0.001**

In Bold – significantly; in Italic – tendency.

Table 11. *Model representing the associations between psychosocial work factors, post-traumatic stress symptoms and pain of neck and shoulders in a sample of teachers (unstandardized parameter estimates)*

Parameter	Estimate	Standard error	Two-tailed p-value
Pain of neck and shoulders on			
Post-traumatic stress symptoms	0.37	0.129	**0.004**
Negative acts	0.09	0.076	**0.213**
Job demands	0.18	0.082	**0.027**
Job control	0.1	0.089	0.268
Job strain	-0.07	0.074	0.382
Job support	0.06	0.036	0.122
Age	-0.01	0.009	0.298
Post-traumatic stress symptoms on			
Negative acts	0.13	0.09	0.131
Job demands	0.29	0.098	**0.003**
Job control	-0.22	0.083	**0.009**
Job strain	0.15	0.07	**0.03**
Job support	-0.1	0.035	**0.003**
Age	0.02	0.01	*0.091*
Negative acts on			
Job demands	0.23	0.041	**<0.001**
Job control	-0.12	0.049	**0.012**
Job strain	-0.02	0.027	0.412
Job support	-0.15	0.018	**<0.001**
Age	0.001	0.004	0.849
Job demands on			
Age	0.004	0.005	0.348
Job control on			
Age	0.002	0.005	0.611
Job strain on			
Age	0.01	0.005	**0.016**
Job support on			
Age	-0.01	0.012	0.531
Job demands with			
Job control	-0.1	0.039	**0.015**
Job strain	0.002	0.022	0.914
Job control with			
Job strain	0.07	0.013	**0.001**
Job support with			
Job demands	-0.61	0.099	**<0.001**
Job control	1.02	0.101	**<0.001**
Job strain	-0.2	0.081	**0.014**
Residual variances			
Job demands	1.0	0.079	**<0.001**
Job control	1.0	0.054	**<0.001**
Job strain	1.21	0.027	**<0.001**
Job support	5.5	0.381	**<0.001**
Negative acts	0.79	0.067	**<0.001**

R-square			
Pain of neck and shoulders	0.21	0.073	**0.004**
Post-traumatic stress symptoms	0.31	0.067	**<0.001**
Job demands	0.002	0.003	0.639
Job control	0.001	0.002	0.799
Job strain	0.01	0.008	0.223
Job support	0.001	0.003	0.755
Negative acts	0.26	0.034	**<0.001**

In Bold – significantly; in Italic - tendency.

Table 12. *Model representing direct associations between psychosocial work factors, post-traumatic stress symptoms and pain of neck and shoulders in a sample of waiters (unstandardized parameter estimates)*

Parameter	Unstandardized estimate	Standard error	Two-tailed p-value
Pain of neck and shoulders on			
Post-traumatic stress symptoms	0.5	0.334	0.133
Negative acts	-0.52	0.466	0.267
Job demands	0.24	0.236	0.31
Job control	0.1	0.144	0.503
Job strain	-0.02	0.186	0.896
Job support	-0.07	0.081	0.367
Age	-0.01	0.049	0.887
Post-traumatic stress symptoms on			
Negative acts	1.03	0.24	**<0.001**
Job demands	0.001	0.27	0.999
Job control	-0.17	0.171	0.337
Job strain	0.36	0.197	*0.071*
Job support	0.16	0.081	**0.044**
Age	0.1	0.056	*0.079*
Negative acts on			
Job demands	0.25	0.08	**0.002**
Job control	0.03	0.114	0.786
Job strain	-0.04	0.076	0.628
Job support	-0.17	0.036	**<0.001**
Age	-0.01	0.018	0.719
Job demands on			
Age	0.07	0.026	**0.01**
Job control on			
Age	-0.04	0.02	**0.038**
Job strain on			
Age	0.04	0.018	*0.062*
Job support on			
Age	-0.21	0.062	**0.001**
Job demands with			
Job control	-0.15	0.082	*0.059*
Job strain	-0.01	0.041	0.831
Job control with			
Job strain	-0.24	0.051	**0.001**
Job support with			
Job demands	-1.11	0.234	**<0.001**
Job control	1.16	0.232	**<0.001**
Job strain	-0.57	0.204	**0.005**
Residual variances			
Job demands	0.94	0.106	**<0.001**
Job control	1.0	0.102	**<0.001**
Job strain	0.84	0.067	**<0.001**
Job support	7.62	1.004	**<0.001**

Negative acts	0.81	0.101	**<0.001**
R-square			
Pain of neck and shoulders	0.28	0.21	0.188
Post-traumatic stress symptoms	0.57	0.119	**<0.001**
Job demands	0.08	0.056	0.167
Job control	0.03	0.028	0.281
Job strain	0.02	0.026	0.358
Job support	0.09	0.048	*0.054*
Negative acts	0.32	0.071	**<0.001**

In Bold – significantly; in Italic – tendency.

Table 13. *Model representing direct associations between psychosocial work factors (including workplace bullying as per self-labelling assessment) and psychological distress in a sample of teachers (unstandardized parameter estimates)*

Parameter	Unstandardized estimate	Standard error	Two-tailed p-value
Psychological distress on			
Bullying	0.29	0.102	**0.004**
Job demands	0.33	0.074	**<0.001**
Job control	-0.03	0.077	0.666
Job strain	0.15	0.062	**0.019**
Job support	-0.06	0.033	**0.05**
Age	-0.003	0.008	0.711
Bullying on			
Job demands	0.28	0.079	**<0.001**
Job control	-0.04	0.078	0.579
Job strain	-0.001	0.067	0.982
Job support	-0.15	0.031	**<0.001**
Age	0.01	0.012	0.682
Job demands on			
Age	0.004	0.005	0.348
Job control on			
Age	0.002	0.005	0.611
Job strain on			
Age	0.01	0.005	**0.016**
Job support on			
Age	-0.01	0.012	0.531
Job demands with			
Job control	-0.1	0.039	**0.015**
Job strain	0.002	0.02	0.913
Job control with			
Job strain	0.07	0.013	**<0.001**
Job support with			
Job demands	-0.61	0.099	**<0.001**
Job control	1.02	0.101	**<0.001**
Job strain	-0.2	0.081	**0.014**
Residual variance			
Job demands	1.0	0.079	**<0.001**
Job control	1.0	0.054	**<0.001**
Job strain	1.21	0.027	**<0.001**
Job support	5.5	0.381	**<0.001**
R-square			
Psychological distress	0.29	0.059	**<0.001**
Job demands	0.002	0.003	0.639
Job control	0.001	0.002	0.799
Job strain	0.01	0.008	0.223
Job support	0.001	0.003	0.755
Bullying	0.21	0.047	**<0.001**

In Bold – significantly.

Table 14. *Model representing direct associations between psychosocial work factors (including workplace bullying as per self-labelling assessment) and psychological distress in a sample of teachers (unstandardized parameter estimates)*

Parameter	Unstandardized estimate	Standard error	Two-tailed p-value
Psychological distress on			
Bullying	0.29	0.102	**0.004**
Job demands	0.33	0.074	**<0.001**
Job control	-0.03	0.077	0.666
Job strain	0.15	0.062	**0.019**
Job support	-0.06	0.033	**0.05**
Age	-0.003	0.008	0.711
Bullying on			
Job demands	0.28	0.079	**<0.001**
Job control	-0.04	0.078	0.579
Job strain	-0.001	0.067	0.982
Job support	-0.15	0.031	**<0.001**
Age	0.01	0.012	0.682
Job demands on			
Age	0.004	0.005	0.348
Job control on			
Age	0.002	0.005	0.611
Job strain on			
Age	0.01	0.005	**0.016**
Job support on			
Age	-0.01	0.012	0.531
Job demands with			
Job control	-0.1	0.039	**0.015**
Job strain	0.002	0.02	0.913
Job control with			
Job strain	0.07	0.013	**<0.001**
Job support with			
Job demands	-0.61	0.099	**<0.001**
Job control	1.02	0.101	**<0.001**
Job strain	-0.2	0.081	**0.014**
Residual variance			
Job demands	1.0	0.079	**<0.001**
Job control	1.0	0.054	**<0.001**
Job strain	1.21	0.027	**<0.001**
Job support	5.5	0.381	**<0.001**
R-square			
Psychological distress	0.29	0.059	**<0.001**
Job demands	0.002	0.003	0.639
Job control	0.001	0.002	0.799
Job strain	0.01	0.008	0.223
Job support	0.001	0.003	0.755
Bullying	0.21	0.047	**<0.001**

In Bold – significantly.

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