

Applicative Study on Work Related Stress in Transport Field

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Abstract. The paper presents some results of an applicative study on work related stress in transport activities. The premises of this research derived from a pilot study concerning psychosocial risk factors that could determine work related stress and effects on work behaviour and health state that was developed involving five fields of activity with high exposure on work related stress (education, health, transport, banks, financial consulting). The study aimed to identify the main psychosocial risk factors in transport field and to analyse the specific results in correlation with the outcomes of the pilot study. A complex ergonomic methodology was used, and one of the main instruments used to identify psychosocial factors was the Romanian version of Copenhagen Psychosocial Questionnaire (COPSOQ).

1 INTRODUCTION

The work place becomes in the 21st century a rapid, dynamic, highly incentive environment resulting in a great number of benefits and opportunities for workers. But, at the same time the continuous changing requirements of the working world give rise to several new psychosocial risks that can increase the work related stress level. [1]

The last decades have proved that occupational stress can have unwanted consequences both for the personnel's safety and organization's "health". [2]

The continuously changing world of work makes increase the requirements on workers; efforts and higher pressure between professional and extra-professional life are factors that contribute to stress at work.

Studies show that 50 to 60% of the total loss working days are due to stress. Preventing and managing stress at work require interventions at the organization level, the organization being the cause of stress. Beside the stress situations, the psychosocial risks are more and more present, such concept including every work context leading to various forms of individual and/or collective bad state, suffering at work and/or physical or mental pathology.

Thus, the necessity of initiating a reliable strategy and policy at the national level, adopting competent decisions to adapt/complete regulation in the safety and health at work area to allow organizations/companies implement measure to reduce/eliminate occupational risks of psychosocial nature and protect the personnel against their action. Such approach supposes the integration of the occupational stress management in the general company

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safety and health at work management, necessitating a national policy and an appropriate regulation framework. [3, 4, 5]

Working conditions and psychosocial work factors have acquired an important role explaining the well-being and performance of professional drivers, including those working in the field of public transport. [6].

Recently, some psychosocial work factors, such as driving stress, work overtime, and job strain, have acquired an important role explaining occupational health and safety problems in professional drivers population [7, 8]. Particularly, work stress is one of the factors more frequently associated with accidents or injuries at work [9, 10].

Driving is rather a less self-regulated task for professional drivers, because many different factors (e.g., time schedule, long working hours) increase their task demands. Professional driving has another distinct aspect: many organizational factors like a company's culture, safety policy and practices as well as safety climate largely determine how safely a professional driver drives. Moreover, a professional driver working in an organization has usually very limited possibility to influence these organizational factors [11]. All these issues might make the level and the sources of stress different for the professional and non-professional drivers [12].

The work activity in road transport remains severe in terms of working conditions, given an ever-increasing work intensification scenario. The need to follow production norms/meet strict deadlines or feeling exploited at work doubles the risk of stress and musculoskeletal disorders. Moreover, dealing with tense situations with the public, exposure to constant interruptions, and once again feeling exploited at work, are risk factors that increase, at least, four times as much the perception of generalized discouragement, anxiety or irritability [13, 14].

In this context, a study aiming to identify the main specific psychosocial risk factors in five fields of activity with high exposure to work related stress (education, health, transports, banking, financial consultancy) was carried out on five geographical regions (Ilfov, Sibiu, Cluj, Iași, Timiș), based on an investigation in relation to five fields of activity identified by the reports of the European Agency for Safety and Health at Work as fields in which staff is exposed more often and at a higher level, to psychosocial risk factors, also identified as stress factors.

The results emphasized the high levels of some psychosocial risk factors for transport field of activity, especially quantitative / temporal demands, temporal demands, sensory-perceptual demands, responsibility. Also, a subjective symptomatology has been noticed, like: muscular tension; irritability; hypertension; appetite disorders etc.

2 Methods

2.1 Aims

The present study is a sequence from a larger ergonomic one, which aims to highlight the risk and workload factors for public transport drivers and their main effects on health, the evaluation of workload, work related stress, and the establishment of prevention measures / reduction of identified risk factors. We also aimed to make a parallel analysis between the results of the pilot study at national level and the case study on a specific organization in transport field.

2.2 Methodology

The general methodology was complex, ergonomic and followed: technical-organizational and psychophysiological analysis of the activity for the studied groups and the conditions for carrying out the activity (environmental, organizational factors, work post ergonomics); evaluation of physical and neuropsychic work related effort, of the workloads and of the work related stress; identification of the risk factors, especially psychosocial, that can generate stress; analysis of the physical and mental health; establishment of prevention measures / reduction of risk factors and workloads.

Methods used: technical and technological documents study, job descriptions, analysis of developed activity / work task, work regime, working conditions (environmental factors, ergonomic analysis of work post) ; medical and psychological files analysis; analysis of the results of risk level per work post / activity evaluation.

The following techniques have been used for identification and evaluation of occupational psychosocial factors, as stress factors:

- Copenhagen Psychosocial Questionnaire (COPSOQ) – Romanian version;
- DATO Questionnaire, for evaluation of individual vulnerability to stress;
- JCQ Questionnaire („Karasek – Job Content Questionnaire”), for evaluation of workload content.

2.2.1 Participants

A group of 201 bus drivers, 127 tram drivers and 64 trolleybus drivers selected on age, gender, seniority and seniority at work criteria was analysed through a cross-sectional, prevalence study. Regarding the age of participants, the most consistent category was 41-50 years old in all three studied groups. Regarding the seniority, for the majority of participants it was between 20 and 30 years.

3 Results

In relation to the level and symptomatology of stress, as well as the level of psychosocial risk factors, identified through Copenhagen Questionnaire (COPSOQ) și JCQ Questionnaire, the situation is presented in the following table and figures (Table 1 and Fig. 1 and 2):

Among the most important stress risk factors can be noted: sensory-perceptual requirements (visual, auditory etc.); cognitive demands (attention, memory etc.); requirements coming from responsibilities in the activity; time demands (time pressure); emotional demands and to hide emotions (affective involvement in the activity).

Table 1. Levels of psychosocial risk factors (COPSOQ)

Symptomatology of stress	Level	
	Drivers in public transport	Transport field - Pilot national study
Work satisfaction	68.8	45
General health	57.6	31.2
Mental health	32.2	17.4
General vitality	42.8	22.8
Behavioral stress	58.6	31.6

Somatic stress	59.2	23.8
Cognitive stress	47.2	30
Psychosocial risk factors	Level	
	Drivers in public transport	Transport field - Pilot national study
Quantitative / temporal demands	69.2	70.6
Cognitive demands	89.6	77.8
Emotional demands	59.8	51
Hiding of emotions demands	55.0	46.6
Sensory-perceptual demands	86.0	88
Demands from responsibilities in activity	79.0	73.6
Influence in activity	57	58.4
Development possibilities	33.4	38.8
Degree of autonomy	49.6	55.6
Involvement in activity	22.8	44
Degree of information (consult)	59	36.6
Clarity of role	25.2	23.4
Conflicts of role	32.8	43.8
Management style	54.0	42.2
Social support (from fellows and superiors)	40.2	27.2
Feedback	45.8	24.4
Communication possibilities	34.4	40
Team spirit	30.0	24.4
Fear of unemployment	33.0	58

It should also be specified the "positive" factors, moderators of psychosocial risks, which weigh the effects of the stressful aspects of the activity on the state of health, the state of psycho-physical comfort and the activity performance of the staff: involvement in the activity / attachment in relation to the profession and workplace; role clarity; social support; team spirit.

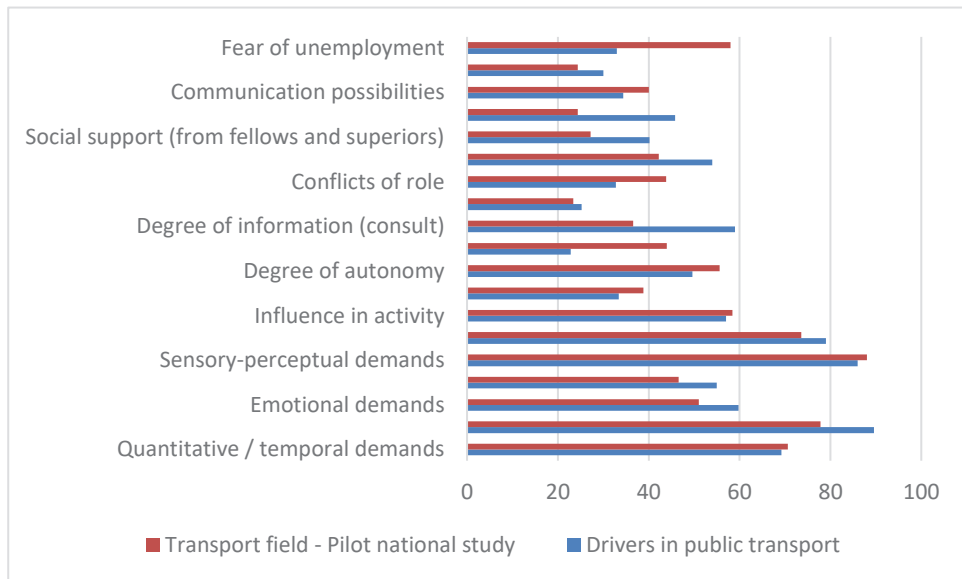


Fig. 1. Levels of psychosocial risk factors

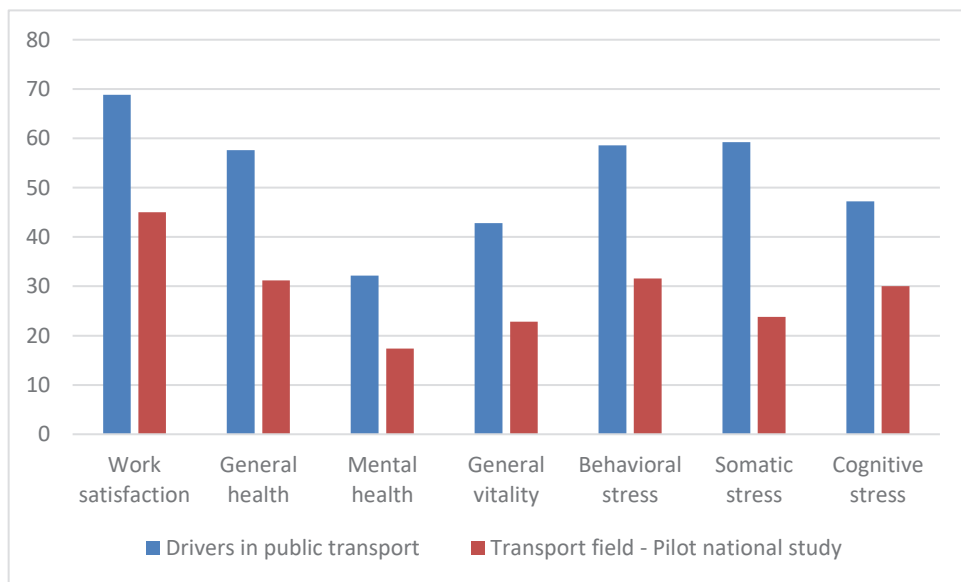


Fig. 2. Levels of stress symptoms

In relation to DATO stress questionnaire, that targets evaluation of individual vulnerability to stress factors, *in the plan of individual symptoms, needs and skills*, the following results have been obtained:

In relation to *individual symptomatology*, of a somatic nature (headaches, muscular tension, fatigue, appetite disorders, gastrointestinal disorders, tachycardia, hypertension, sleep disorders...) or of a psychic nature (attention disorders, irritability, nervousness,

hyperactivity, frustration, anger, anxiety, depression...) no pathological findings were recorded, neither in the pilot national study or in the case study.

However, a subjective symptomatology has been noticed. This symptomatology is situated in a normal range, the accused symptoms not exceeding average, hence the results are insignificant from a psychopathologic point of view: muscular tension; irritability; hypertension; appetite disorders etc.

Individual needs (nutrition, activity, rest, protection, stability, control, acceptance, approval, understanding, identity, commitment, responsibility, accomplishment, respect...) were reported by subjects as being satisfied at a moderate level, and in some cases, at a high level.

Individual skills (sensory-perceptual, cognitive, behavioral and emotional) were perceived by the majority of subjects as being at a level of development above average, regardless of the investigated field.

4 Conclusions and discussions

The investigated personnel are subject to the action of a number of risk factors and professional demands (injury and illness), respectively mechanical, electrical, thermal, physical, biological, ergonomic, psychosocial, psychophysiological, emotional, visual, auditory risks.

A first category of professional psychosocial risk factors in the case of the studied activities refers to the factors intrinsic to the workload, i.e. those that arise from its nature and determine a certain professional effort (predominantly neuropsychic - sensory, cognitive, emotional), which can be in professional risk factor when it leads to overload situations.

Other stressors:

- The sinusoidal evolution of the mobilization of professional effort (involving, for example, the variable evolution, during a work shift, of the level of concentration of attention, of its distribution in traffic tracking). This is due to fluctuating traffic volume and conditions.

- The request for a very high level of sensory-perceptual plans (especially visual and auditory), through the specifics of the vehicle driver's activity and the use of on-board equipment.

- The growing volume of traffic, from one year to another.

- Increased responsibility in relation to traffic safety, transported passengers and vehicle;

- The duration of the work shift perceived as too long; too long working week;

- Imbalance between work and extra-professional life (the work schedule is often out of balance with the family schedule);

- Fear of aggression (from travellers);

- Lack of autonomy at work;

- Improper break regime (too short or non-existent breaks, at the ends of lines; too short meal break);

Another series of psychosocial risk factors derives from the organization and management of activities, groups and the organization as a whole, factors of increasing importance in modern society.

Between professional stress and the individual reaction to stress, there are a series of moderating factors, among which the following were pointed out: the possibilities of capitalizing on professional training; support from colleagues; the clarity of the professional role. These factors can have a beneficial effect on staff.

Questionnaires used in the study were distributed to the participants, who were assured of the confidentiality of their answers to ensure greater accuracy of the study, thus eliminating elements of subjective variability.

References

1. Brun, C., *Risques psychosociaux... Stress, mal-être, souffrance. Guide pour une démarche de prévention pluridisciplinaire.* (ARACT Aquitaine, France, 2005)
2. Leka, S., Jain, A., Widerszal-Bazyl, M., Żołnierczyk-Zreda, D., Zwetsloot, G., *Developing a standard for psychosocial risk management: PAS 1010*, Safety Science, **49**, 7, 1047-1057, (2010)
3. Widerszal-Bazyl, M., Żołnierczyk-Zreda, D., Jain, A., PRIMA-EF. *Guidance on the European Framework Psychosocial Risk Management. Chapter 3: Standards Related to Psychosocial Risks at Work.* pp. 37-59, PRIMA-EF, Leka, S. and Cox, T. (Eds.), I-WHO Publications, Nottingham, UK (2008).
4. Buica G., Antonov A.E., Beiu C., Iorga I., *Environ. Eng. and Manag. Journal*, 72-79, (2012).
5. Rânjea C., Chivu O.R., Darabont D.- C., Feier A.I., Borda C., Gheorghe M., Nitoi D.F., Influence of the Thermal Environment on Occupational Health and Safety in Automotive Industry: A Case Study, *Int. J. Environ. Res. Public Health* **19**(14), 8572, (2022).
6. Useche S., Gomez V., Cendales B., Alonso, F.. *Working Conditions, Job Strain, and Traffic Safety among Three Groups of Public Transport Drivers*, Safety and Health at Work, **9**, 4, 454-461, (2017).
7. Rowden P., Matthews G., Watson B., Biggs H., *The relative impact of work-related stress, life stress and driving environment stress on driving outcomes*, Accid Anal Prev, **43**, pp. 1332-1340, (2011).
8. Du C.L., Lin M.C., Lu L., Tai J.J., Correlation of occupational stress index with 24-hour urine cortisol and serum DHEA sulfate among city bus drivers: a cross-sectional study, *Saf Health Work*, **2**, 169-175, (2011)
9. Fisher J., Greiner B., Krause N., Ragland D., *Objective stress factors, accidents, and absenteeism in transit operators: a theoretical framework and empirical evidence*, J Occup Health Psych, **3**, 130-146, (1998).
10. Öz B., Özkan T., Lajunen T., *Professional and non-professional drivers' stress reactions and risky driving*, Transport Res F Traffic, **13**, pp. 32-40, (2010).
11. Leka, S., Jain, A., Iavicoli, S., Vartia, M., Ertel, M., *The role of policy for the management of psychosocial risks at the workplace in the European Union.* In: *Safety Science*, **49**, 558-564, (2011)
12. Cheng, Y., *Regulation of psychosocial risk factors at work: An international overview.* In *Safety Science*, **49**, (2011).
13. Cunha L., Barros C., Baylina P., Silva D., *Work intensification in the road transport industry: An approach to new working scenarios with automated vehicles*, Work, **69**, 3, 847-857, (2021).
14. Ertel, M., Stijlijanow, U., Iavicoli, S., Natali, E., Jain, A., Leka, S. *European social dialogue on psychosocial risks at work: Benefits and challenges.* In: *European Journal of Industrial Relations*, vol. **16**, 2, 169-183 (June 2010)