

**Discussion** Despite difficulties to the practice of napping on the job, the promising results for both BP and BMI justify further investigations that could subsidise policies related to promoting adequate conditions for night workers to nap while on the job.

1602f **PRACTICAL GUIDELINES FOR LINKING BETTER WORKING TIME ARRANGEMENTS WITH STRESS PREVENTION AT WORK**

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**Introduction** Multifaceted work redesign is always involved in improving working time arrangements. Recent experiences in improving work systems with excessive work hours or overworking situations clearly show the need to link better working schedules with comprehensive measures to reduce stress at work. It is useful to know practical ways to facilitate joint changes or work schedules and job content.

**Methods** Typical types of improvements undertaken in participatory programmes for joint improvement of working time arrangements and job content for preventing stress at work were compared. The programmes studied included participatory occupational health activities of health care workers, local government employees and small enterprise workers. The common features of the participatory steps that facilitated the joint change process and the roles of trained facilitators were examined. The results were discussed to compile practical guidelines for linking better work schedules with other multifaceted stress-reducing improvements.

**Results** Multiple aspects addressed by the reviewed programmes commonly included team-based communication, work schedules, ergonomic work methods, physical environment and social support. Work schedule changes were usually combined with enhanced communication or improved work methods. It was found useful to utilise action-oriented tools such as action checklists reflecting local good practices and group work methods for proposing feasible improvements. New guidelines for organising participatory steps for the joint change of work schedules and job content were compiled with emphasis on simple group work procedures and the use of action-oriented checklists for proposing multifaceted actions.

**Conclusions** The participatory steps utilising action-oriented checklists and local good practices proved useful for facilitating planning and implementation of multifaceted improvements in work schedules and job content in the local context. It is suggested to organise participatory activities referring to the new guidelines compiling these positive features in linking working time arrangements and stress prevention at work.

1602g **SHIFTWORK, AUTOMATED VEHICLES, AND FUNCTIONAL IMPAIRMENTS IN TRANSPORTATION**

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**Introduction** Shiftwork has been linked to functional impairments such as fatigue and distraction that increase crash risk. Automated vehicles may decrease these risk factors. Simultaneously, automated vehicles will allow a broader range of

'drivers' to operate the vehicle such as those with cognitive and physical impairments, creating additional benefits and impacts to shiftworking drivers with such impairments. We have developed a conceptual model of how automation at all levels can be used to reduce the impacts of shiftwork on functional impairments in transportation.

**Methods** Over 100 articles were reviewed in the areas of shiftwork, automation, and functional impairment using established key words and recognised search domains. Central to the understanding of the relations among shiftwork, automation and functional impairments is knowledge of how drivers use, misuse, disuse and are abused by automation.

**Results** The result of the literature search and its analysis is a conceptual model which clarifies how shiftwork impacts the use, misuse and disuse of automation at each level, and how those impacts affect drivers with different types and levels of functional impairment. Existing research suggests that long shifts can lead to an increase in the misuse of automation, with fatigued and distracted drivers over-trusting automation. This effect will be magnified for those with cognitive impairments. However, systems are now deployed that can detect driver state such as fatigue and distraction, and could potentially communicate with an automatic driving suite and intervene when the driver is fatigued or distracted.

**Discussion** The conceptual model creates a roadmap for future research, applications and regulations that various stakeholders can use to improve the safety and well-being of shiftworkers.

332 **SHIFT WORK AS OCCUPATIONAL STRESS RISK FACTOR**

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The analyses of international and domestic publications shows that shift work is different professional groups occupational stress risk factor. From 2010 according IARC conclusion shift work is probable occupational cancer risk factor ('2A') primarily, breast cancer in women (nurses). The probability of association between shift work and increased of any other cancer and another occupations as well as connexion with frequency and duration of night shift work is discussed today.

There are bidirectional relationship between sleep disorders and work connected with psychosocial risks (style of work, high level of requirements and low level of control, working hours and shift mode, as well as imbalance between labour costs and remuneration Including). Desynchronosis in the shift mode, especially with rotation shifts, has negative stressful effect on physical and mental health, leading to increased risk of insomnia, restless leg syndrome, shift work sleep disorder, narcolepsy, cataplexy, obstructive sleep apnea syndrome, cardio-vascular disorders, metabolic syndrome, diabetes, and disorders of nervous system state and mental health.

The current hygienic classification in Russia makes it possible to assess the contribution of labour intensity as stress factor, including taking into account shifts. Analysis of shift work impact into risk of health disorders of law enforcement officers, doctors, nurses, railway workers data shows the dependence of its development probability on the of work experience with the rotation shifts, age and sex, primarily in the part of causal relationships between the work schedule and hypertension in conjunction with metabolic disorders development.