



Work time control, sleep & accident risk

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Background

Work time control (WTC) reduces the risk of sleep disturbance among employees (Salo et al., 2014). Disturbed sleep is associated with increased accident risk (Uehli et al., 2014). The current study considers whether the beneficial impact of WTC on sleep leads to lower accident risk.

Method

Data was obtained from three waves (2010, 2012, 2014) of the Swedish Longitudinal Occupational Survey of Health, which is a nationally representative cohort survey. The survey questionnaires include established measures of WTC (Ala-Mursula et al., 2002), sleep disturbance (Åkerstedt et al., 2002; 2008), short sleeps, job characteristics and individual differences.



We used logistic regression to examine WTC in 2010 and 2012 as predictors of accidents occurring in the subsequent 2 years (as reported in 2012 and 2014, respectively). We also examined sleep disturbance and sleep duration in 2012 as potential mediators of the association between WTC in 2010 and accident risk in 2014. All analyses adjusted for age, sex, education, occupational category, weekly work hours, shiftwork status and perceived accident risk associated with the job. Analyses were restricted to participants working on each measurement occasion (N=5371, 4715 & 3981, respectively).

Results

Having WTC was associated with lower accident risk in the subsequent 2 years (see Table 1). Similar findings were observed when examining two subscales of WTC separately, namely Control Of Working Time (comprising items ‘influence over start and finish times’ and ‘influence over length of shift’) and Control Over Free Time (comprising items ‘influence over taking rest breaks’, ‘influence over taking paid leave’ and ‘influence over running private errands in work time’). Sleep disturbance in 2012 was identified as mediator of the association between WTC in 2010 and accident risk in 2014 (effect = -.010, Bootstrap 95%CI = -.022 – -.001), but frequency of short sleeps (< 6 hours) was not (effect = -.003, Bootstrap 95%CI = -.011 – .001)

Conclusions

WTC may enable individuals to manage their fatigue by allowing them to match their work schedules to their circadian preferences, and to the demands of their lives outside work. The reduced risk associated with enhanced WTC may benefit both workers and the public they serve.

Table 1

Logistic regression analyses examining Work Time Control and its two sub-scales as predictors of subsequent accident risk. Odds Ratios (OR) and 95% Confidence Intervals (CI)

	Accident risk in subsequent 2 years	
	OR	95%CI
Work Time Control in 2010	0.85	0.78-0.94
Control of Working Time in 2010	0.90	0.84-0.97
Control Over Free-Time in 2010	0.84	0.77-0.92
Work Time Control in 2012	0.80	0.73-0.89
Control of Working Time in 2012	0.88	0.81-0.95
Control Over Free-Time in 2012	0.79	0.72-0.88

References

Ala-Mursula, L., Vahtera, J., Kivimäki, M., Kivimäki, M. V., & Pentti, J. (2002). Employee control over working times: Associations with subjective health and sickness absences. *Journal of Epidemiology and Community Health*, 56(4), 272-8.

Salo, P., Ala-Mursula, L., Rod, N. H., Tucker, P., Pentti, J., Kivimäki, M., & Vahtera, J. (2014). Work time control and sleep disturbances: Prospective cohort study of Finnish public sector employees. *Sleep*, 37(7), 1217-25.

Uehli, K., Mehta, A. J., Miedinger, D., Hug, K., Schindler, C., Holsboer-Trachsler, E., Künzli, N. (2014). Sleep problems and work injuries: A systematic review and meta-analysis. *Sleep Medicine Reviews*, 18(1), 61-73.

Åkerstedt, T., Ingre, M., Broman, J. E., & Kecklund, G. (2008). Disturbed sleep in shift workers, day workers, and insomniacs. *Chronobiology International*, 25(2), 333-48.

Åkerstedt, T., Knutsson, A., Westerholm, P., Theorell, T., Alfredsson, L., & Kecklund, G. (2002). Sleep disturbances, work stress and work hours: A cross-sectional study. *Journal of Psychosomatic Research*, 53(3), 741-748.

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