



## **Editorial**

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### **Psychosocial work characteristics and sleep - a well-known but poorly understood association**

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## *Psychosocial work characteristics and sleep – a well-known but poorly understood association*

Practical tips for good sleep are a popular topic in monthly published magazines and tabloids. Despite the plethora of good advice, normal sleep length has been mostly on the decline during the past three decades, with sleep quality among the work-aged population decreasing the most (1–3). In addition to long working hours, work stress and shift work are among the primary culprits for the increase of sleep problems among the world's workers.

In this issue of the *Scandinavian Journal of Work, Environment & Health*, a systematic review examines the association between psychosocial work characteristics and sleep quality (4). While earlier research has often been cross-sectional and predominantly focused on work stress (5, 6), the current review took on the demanding task of analysing only longitudinal and intervention studies. The review is also valuable in its analysis of both the normal and reversed relations and its creation of valuable quality criteria for future studies on psychosocial work characteristics and sleep. Based on the review, consistent and strong evidence exists for a negative relationship between job demands and sleep quality as well as a positive relation between job control and sleep quality. However, the number of reviewed studies was too small to conclude on the association between other psychosocial work characteristics and sleep or the possible reversed relationship of sleep quality and work characteristics.

Considering the extensive evidence on the association of psychosocial work characteristics, work stress and sleep, the detection of only three high-quality longitudinal studies and a single high-quality intervention study from the original 2397 papers is most surprising. This is partly explained by the inclusion criteria applied and the strict quality criteria related to the study design, the validity of exposure and outcome measures, and the statistical analysis. However, none of the reviewed studies used objective sleep recordings although sleep quality was investigated validly by questionnaires in the high-quality studies. Jackowska et al (7) recently studied the role of psychosocial factors and affective responses with the discrepancies between subjective and objective measures of sleep. While objective sleep efficiency (based on actigraph recording) was unrelated to variation in both psychosocial work characteristics and negative affect, self-reported poor sleep efficiency was more prevalent among those overcommitted or with lower level of social support at work (7). If the evaluation of both work characteristics and insomnia are based on subjective estimations, the findings of cross-sectional associations between the two are not surprising. However, based on the obvious discrepancies between subjective and objective analysis of sleep, longitudinal studies that may indicate a time-related change in subjectively reported sleep quality due to a change in psychosocial work characteristics may not have any effects on objectively recorded sleep. If the link between psychosocial work and sleep quality is limited to only subjective reports, it has implications for how the relationship should be interpreted. One interpretation is that the relationship is moderated by other variables like depressive symptoms or is related to reporting biases.

Psychosocial work characteristics have been found to be associated with a moderate risk of coronary heart disease and some mental health problems (eg, 8, 9). Since disturbed sleep (based mostly on sleep length) is associated with several cardiovascular manifestations (eg, 10–12), and there are also potential mechanisms between the two based on experimental sleep restriction studies (eg, 13, 14), it would be interesting to know whether disturbed sleep due to work stress or unfavorable psychosocial work characteristics could be a pathway from work stress to cardiovascular diseases (15). It is possible but not plausible.

First, the present review (4) indicates that effects sizes for work demands and job control in relation

to sleep quality were only small to moderate based on the fully adjusted models. Second, the material did not allow for a qualitative estimation of the magnitude of the effects on sleep length. Studies measuring only sleep length were even excluded due to the focus on perceived sleep. Sleep follows a homeostatic regulation with the ability to adapt to small changes in sleep quality. Work stress is typically associated with increased sleep latency due to work rumination (5). It is also the degree of sleep deprivation – not the degree of perceived sleep quality – that correlates best with the biological and metabolic changes (16). The majority of the current knowledge on the association of sleep with health is still based on sleep length (10–12) even though the number of epidemiological studies on the association of sleep quality and health continues to increase (17).

Although sleep quality correlates with short sleep in the general population (18), the effects of unfavorable psychosocial work characteristics on sleep length among healthy subjects may only be minor. We recently studied the association of work stress with insomnia using both subjective and objective analysis of sleep (19, 20). The shift-working women were recruited from hospital wards that belonged to either the top or bottom job strain quartiles of the Job Content Questionnaire. High job strain was associated with difficulties initiating sleep (probably due to work rumination) and reduced psychomotor vigilance during the night shifts, but the average objective sleep duration and sleep efficiency did not differ between the groups. A detailed analysis of the working hours showed that the job strain-related differences in sleep and recovery were mostly attributable to differences in shift arrangements. While the sleep curtailment due to work stress was only 16–28 minutes during the working days, sleep length varied up to 2 hours due to changes in work shifts (18, 19).

In the second paper of this issue, Garde et al (21) examined if sleep duration is a risk indicator for ischemic heart disease (IHD) and all-cause mortality, and how perceived stress during work and leisure time and the use of hypnotics modified the association. As expected, short sleep (<6 compared to 6–8 hours) was a risk factor for IHD mortality. However, although perceived psychological pressures during work hours or leisure time were related with short sleep, they were not significant effect modifiers for the association between short sleep and IHD mortality. The results suggest a non-significant additional risk of work stress for IHD due to short sleep.

It is easy to agree with Van Laethem et al (4) on the needs for future research in the area. There is a lack of high-quality longitudinal and intervention study designs while better application of validated instruments is necessary to investigate sleep quality. The use of objective sleep registration methods would especially be welcome to estimate the effects of psychosocial work characteristics and perceived sleep on actual sleep length, sleep phases, and other objective sleep outcomes. Longitudinal cohort studies cannot replace intervention studies. The fact that only one good-quality intervention study was found in this area demonstrates that, although we know that changes in work demands and job control influence sleep quality, we have no idea yet whether it is possible or feasible to improve psychosocial work characteristics to improve sleep.

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