



Work Time Control Enhances Physicians' Sleep and Wellbeing



Physicians' work schedules are an important determinant of their own wellbeing and that of their patients. A new study published in *Applied Ergonomics* aimed to determine whether allowing physicians control over their work hours ameliorates the effects of demanding work schedules. Based on the results, optimising the balance between schedule flexibility and patient needs could enhance physicians' sleep when working the night shift, thereby reducing their levels of fatigue and enhancing patient care.

Following concerns regarding the long hours worked by physicians and the potentially negative effects on both their own wellbeing and that of their patients, the past decade has seen moves towards the standardisation of physicians' working conditions. These regulations stipulate limits such as maximum weekly work hours, maximum shift duration, maximum quantity of night work and minimum amount of rest opportunities (e.g., between shifts and days off per week).

A recent systematic review reported that the reduction of shifts over 16 hours was associated with improvements in patient safety, as well as physicians' quality of life, in most studies. For example, an intervention involving the total elimination of extended shifts (>24 hours) resulted not only in physicians getting more sleep, but also experiencing fewer attentional failures (i.e., microsleeps) and committing fewer medical errors.

However, it remains to be determined whether work time control can buffer the effects of other work schedule parameters, other than length of work hours, which are known to have an impact on fatigue, sleep and health. The current study aimed to address this gap in the literature by examining how the influence of five key working time parameters (frequency of long shifts, frequency of short intershift intervals — “quick returns”, frequency of weekend days that are worked, frequency of night duties and number hours of overtime worked per week) were moderated by work time control.

Materials and Method

A questionnaire was completed by hospital physicians in Sweden regarding their work hours (exposure to long shifts, short intershift intervals, weekend duties, night duties, unpaid overtime; and work time control), sleep (quantity and disturbance) and wellbeing (burnout, stress and fatigue). The questionnaire was sent to 3,000 physicians and 1,534 responses were received.

The current analyses focussed on a sub-sample of the respondents, chosen to provide a relatively homogeneous sample and thereby exclude several potential confounds. The criteria for selection of the sub-sample were based on job title (senior specialist/consultant or below), type of work place (hospital) and type of

organisation (regional public sector organisation), with a resulting sample of 799 participants. The number of participants who provided a full set of responses and could therefore be included in the analyses was 545 for the analyses of the sleep measures and 542 for the analyses of the wellbeing measures.

For the main analyses, two multivariate analyses of variance (MANOVA) were conducted, one for the sleep-related dependent variables (sleep disturbance and frequency of short sleeps) and one for the dependent variables related to wellbeing (burnout, stress and fatigue). Each analysis incorporated the four control variables (age, gender, medical specialty and job grade); the six working time parameters (work time control, frequency of shifts longer than 12 hours, frequency of intershift intervals <11 hours, frequency of weekend days worked, frequency of night shifts and number of unpaid weekly hours); and the five terms representing the interactions (between low work time control and each of the other five working time parameters).

Results and Discussion

Work time control moderated the negative impact that frequent night working had upon sleep quantity and sleep disturbance. For participants who never worked long shifts, work time control was associated with fewer short sleeps, but this was not the case for those who did work long shifts.

It is likely that physicians working at least some shifts that are longer than 12 hours will work longer shifts on average, compared to those who work none. It may be that working longer shifts restricts physicians' ability to effectively utilise work time control to improve the fit between their preferred and actual work hours (e.g., by varying start and finish times).

Higher amounts of unpaid overtime were associated with more sleep disturbance and more frequent short sleeps, as well as higher levels of stress and fatigue. It cannot be assumed that all those who worked a lot of unpaid overtime were necessarily working long weekly work hours, although it may be assumed that this was so in the majority of cases. In so far as this assumption is correct, the findings are broadly consistent with previous studies that have highlighted the risks of physicians working long hours.

Conclusions

The current findings show that work time control can buffer the impact that night work has upon sleep. This is in contrast to previous research that has tended to highlight the role of work time control as a moderator of effects on health. It was less clear that work time control mitigates the negative effects of other aspects of demanding work schedules (e.g., long shifts, short intershift intervals, weekend working, high levels of unpaid overtime). Indeed, in the analysis of long shifts, there was some suggestion that work time control is more beneficial for those working less demanding schedules.

While work time control appears to be salient in the management of physicians' sleep when working night shifts, it should be acknowledged that it is but one of a large range of influential factors. The results provide support for the practice of trying to match physicians' night work hours to their individual needs and preferences. This will be challenging in the complex work environment where effective cover needs to be maintained at all times. Nevertheless, imaginative solutions that optimise the balance between flexibility and patient needs have the potential to enhance physicians' sleep, thereby reducing their levels of fatigue on the night shift and enhancing patient care.

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Published on : Mon, 5 Jan 2015