An evening sleep before a night shift improves alertness and performance

Having an evening sleep before a night shift and having enhanced lighting during the second half of the shift improved the performance of shift workers over the age of 50, according to a recent US research study (Chinoy et al, 2016).

The long-term ill effects of shift work on health are well established: cardiovascular disease, cancer, early mortality and reduced quality of life, alertness and performance. The risks are greater for those in older age groups.

Strategies to minimise these risks have focused on using circadian rhythm measures such as manipulating sleep timing and exposure to light. For example, an evening sleep maintains the usual relationship between sleep and work (in which work begins shortly after waking). However, many shift workers traditionally sleep immediately after work.

**Study hypothesis**

This study tested the hypothesis that an evening sleep and enhanced lighting in the latter part of a night shift would improve alertness and performance compared with ad-lib sleep timing and usual lighting.

Because of the increased risks in older age groups, the researchers focused on older workers. Eighteen adults aged 50-65 years (average 57 years) were recruited and followed a protocol of four day shifts followed by three night shifts. Participants in the treatment group were instructed to sleep eight hours from lunchtime onwards and had enhanced lighting at work from 3-7am. Control group participants were allowed to sleep whenever they wanted in the day and did not have the enhanced lighting at night.

Participants had hourly cognitive and attention testing, and also self-rated their sleepiness during their night shifts. Bed and wake times were determined from voicemail call-ins and sleep diaries. Melatonin levels in saliva were measured.

**Results**

Compared with day-shift workers, alertness and attention declined in the first night shift for all participants. However, alertness and attention improved in the second and third night shifts in the treatment group while remaining lower in the control group. By the third night shift, alertness in the treatment group had improved to day-shift level but continued to decline in the control group.

The researchers said that night-shift workers would benefit from not sleeping immediately after work, sleeping instead in the afternoon. They noted that this pattern would be easier for older workers, as these are less likely to have family demands that would make it difficult.

The researchers called for further research to separate the factors of evening sleeping and enhanced lighting. Testing different evening sleep patterns would also help, as the length of the sleep in this study (eight hours) and its timing may be a barrier for some shift workers.

**What we already know**

- Shift work has long-term negative effects on health and quality of life
- Older age increases the risks
- Sleeping in the morning builds greater pressure to sleep
- Evening sleep and enhanced lighting improve alertness and performance in young adults

**What this research adds**

- Evening sleep and enhanced lighting improved alertness and performance in older adults
- Further research is needed to isolate the impact of individual factors and variations in sleep patterns

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