

A genetic predisposition may protect some night shift workers against sleep loss

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Does the eveningness chronotype make some people more resilient to the sleep penalties associated with night shift work?



LCDS researchers explored this using



Sample of 53,211 workers



Polygenic Risk Scores



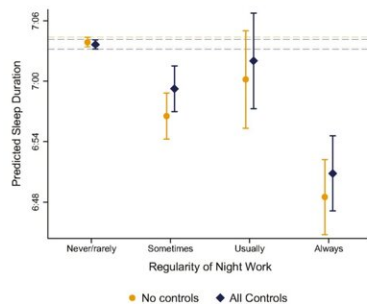
Self-reporting



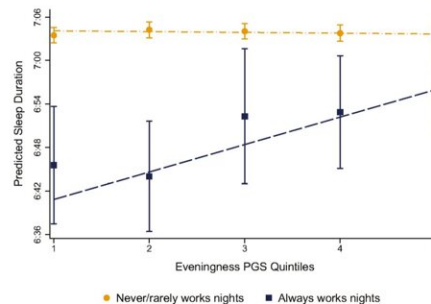
Accelerometer

Results

Regular night shift workers self-reported 13 mins less sleep a night relative to those who never work these hours



Eveningness chronotype has strong protective effect on night workers, most pronounced for those working the longest hours



Findings



Solutions to health consequences of night shift work should take individual differences in chronotype into account



Graphical Abstract. Credit: *Sleep* (2023). DOI: 10.1093/sleep/zsad023

Up to 25% of public sector employees in the UK do some form of night work. Similar numbers in other countries engage in shift work. But increasing evidence shows night work and persistent circadian rhythm disruption is a serious risk factor for health conditions, including depression, heart disease and type-2 diabetes.

Using the UK Biobank, researchers looked at 53,211 workers between 2006 and 2018, to investigate if they had a genetic propensity to "eveningness."

The study found, night work was associated with significant sleep penalties, the largest of which were observed for individuals who always work nights. According to the study, "This is given the fact that sleep plays an essential role for physical and [mental health](#)."

The CHRONO researchers found overall, those who more frequently worked nights slept less. Regular night shift workers self-reported 13 minutes less sleep a night, compared to those who never work these hours. But, the research shows, having a higher genetic propensity to 'eveningness' had a strong protective effect, reducing the sleep penalty by up to 28%.

Professor Melinda Mills, lead senior author, explains, "In this study, we conducted a Genome-Wide Association Study (GWAS) of eveningness, which allowed us to measure the genetic propensity of being an evening person."

Meanwhile, Dr. Evelina Akimova, the lead author, says, "What we found particularly exciting is that we were able to use multiple measures of eveningness including genetic, self-reported, and accelerometer measures to advance our knowledge of sleep penalties among night shift

workers."

Professor Mills adds, "There are health implications for night shift workers, but our study shows that these vary between individuals dependent on their chronotype, and that should be considered when designing interventions."

The paper is published in the journal *Sleep*.

More information: Evelina T Akimova et al, Gene-x-environment analysis supports protective effects of eveningness chronotype on self-reported and actigraphy-derived sleep duration among those who always work night shifts in the UK Biobank, *Sleep* (2023). [DOI: 10.1093/sleep/zsad023](https://doi.org/10.1093/sleep/zsad023)

Provided by University of Oxford

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