

Editorial

Are longitudinal changes in sleep patterns associated with future cardiovascular disease risk?

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Extract

In this issue of SLEEP, He et al.¹ investigated longitudinal changes in sleep patterns by considering early chronotype, 7–8 hours of sleep per day, absence of insomnia, no snoring, and no frequent excessive daytime sleepiness, and their association with cardiovascular disease (CVD) development.

Sleep health, alongside traditional lifestyle habits, plays a significant role in preventing CVD, including coronary heart disease (CHD) and stroke.^{2,3} However, numerous cohort studies have highlighted certain limitations in this association, often focusing solely on a single measurement of sleep patterns. There is growing interest in studies that utilize multidimensional sleep evaluations because it is now recognized that sleep encompasses various dimensions; comprehensive assessments provide a more detailed and richer understanding compared to single measures.^{4,5} Further research is needed to refine the definition and assessment of multidimensional sleep health.⁶ In this study,¹ the Healthy Sleep Score (HSS) was calculated using five self-reported sleep dimensions. Previous studies have shown that a composite measure of these dimensions is longitudinally associated with a range of cardiovascular events.^{7–9} Another limitation addressed in this study is that previous research has often relied on single time-point sleep assessments, overlooking the natural variability of sleep patterns over time.¹⁰

This study¹ is commendable within this context, utilizing extensive datasets from the UK Biobank. The HSS, ranging from 0 to 5, was derived from self-administered questionnaire data on recent sleep patterns collected from two surveys: the first (2006–2010) and the second (2012–2013). Participants were categorized into three sleep pattern groups: poor (1), intermediate (2–3), and healthy (4–5), and further divided into five profiles based on sleep pattern changes at two-time points (stable poor pattern, worsening sleep pattern, stable intermediate pattern, optimizing sleep pattern, and stable healthy pattern). The primary outcome was the incidence of CVD, including CHD and stroke. The participants' median age was in their early 60s when sleep

changes were assessed, and their association with CVD (CHD and stroke) development over a subsequent median of nine years was analyzed.

Compared to individuals with consistently poor sleep patterns, those adhering to optimized and stable healthy patterns demonstrated 26% and 32% reductions in CVD risk, respectively. Moreover, individuals with stable healthy sleep patterns experienced a 29% reduction in the risk of CHD and a 44% reduction in the risk of stroke compared with those with stable poor sleep patterns. An increase in the HSS by one longitudinal unit correlated with an 8% decrease in the risk of CVD and CHD. Conversely, individuals who experienced a decrease in the HSS had a 13% higher risk of developing CVD. In the stratified analysis, the relationship between changes in sleep patterns and CHD risk remained consistent across sex, age group, and lifestyle factors. However, an interaction with Body Mass Index (BMI) highlights the importance of BMI in modulating the effects of changes in sleep patterns on the risk of CHD. Utilizing a large sample, the researchers provided new insights into how changes in sleep behavior, when measured comprehensively, are related to the subsequent development of CVD. In addition, they conducted extensive statistical analyses and presented their results effectively.

The findings of this study represent a significant advancement over previous research linking sleep patterns to CVD incidence, underscoring the importance of consistent sleep practices by demonstrating that improved and sustained healthy sleep habits are associated with decreased CVD risk. These results suggest that optimizing sleep patterns is a viable strategy for mitigating the risk of CVD.

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