Sleep as a new eighth measure of cardiovascular health

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The Life's Simple 7 and iterations of potential “Essential Eight” CVH scores that include sleep in relation to CVD risk. The AHA's LS7 score and 4 iterations of potential “Essential Eight” scores, that include the same LS7 metrics but additionally incorporate sleep, were evaluated in relation to CVD risk. The upper panel shows the LS7 and alternate CVH scores in relation to prevalent CVD using multivariable logistic models in 1920 adults in the MESA Sleep Study. The lower panel shows associations of the LS7 score and alternate CVH scores with risk of developing new CVD using multivariable Cox proportional hazards models. Models were adjusted for age, sex, race and ethnicity, education, health insurance, and alcohol use. AHA indicates American Heart Association; CVD, cardiovascular disease; CVH, cardiovascular health; HR, hazard ratio; LS7, Life's Simple 7; MESA, Multi?Ethnic Study of Atherosclerosis; and OR, odds ratio. Credit: Journal of the American Heart Association (2022). DOI: 10.1161/JAHA.122.025252

Researchers at Columbia University Mailman School of Public Health evaluated an expanded measure of cardiovascular health (CVH) that includes sleep as an eighth metric, in relation to cardiovascular disease risk. This represents the first examination of adding sleep to the American Heart Association's original Life's Simple 7 (LS7) metrics as a novel eighth metric of CVH. The study is published in the Journal of the American Heart Association.

The study sample consisted of ~2000 middle-aged to older adults from the Multi-Ethnic Study of Atherosclerosis (MESA), an ongoing U.S. study of CVD and CVD risk factors, who participated in a sleep exam and provided comprehensive data on their sleep characteristics.

The research evaluated multiple expanded cardiovascular health scores—including the American Heart Association's Life's Simple 7 (LS7) metrics—plus different sleep health measures, to evaluate which sleep parameters should be prioritized for CVD prevention. This study is the first to show that sleep metrics add independent predictive value for CVD events over and above the original 7 CVH metrics.

Importantly, cardiovascular health scores that included sleep duration only as a measure of overall sleep health as well as cardiovascular health scores that included multiple dimensions of sleep health (i.e. sleep duration, efficiency, and regularity, daytime sleepiness, and sleep disorders) were both predictive of future CVD. For the sleep duration metric, sleeping 7 hours or more but less than 9 hours each night was considered indicative of ideal sleep health.

"Our results demonstrate that sleep is an integral component of CVH. In our study, even a CVH score that includes only sleep duration, the most widely measured aspect of sleep health and the most feasible measure to obtain in a clinic or public health setting, predicted CVD incidence," said Nour Makarem, Ph.D., assistant professor of epidemiology at Columbia Mailman School of Public Health and lead author of the study.

"Notably, we also found that a CVH score that incorporated multiple dimensions of sleep health was also significantly associated with incident CVD.
Our results highlight the importance of embracing a holistic vision of sleep health that includes sleep behaviors and highly prevalent, mild sleep problems rather than strictly focusing on sleep disorders when assessing an individual's cardiovascular risk."

Overall, the study found that 63 percent of participants slept less than 7 hours per night and 30 percent slept less than 6 hours, while 39 percent and 25 percent had high night-to-night variability in sleep duration and sleep timing, respectively; 14 percent and 36 percent reported having excessive daytime sleepiness and high insomnia symptoms, respectively; and 47 percent had moderate-to-severe sleep apnea (OSA), where breathing repeatedly stops and starts.

According to Nour Makarem and colleagues, the finding that a sleep health score based solely on sleep duration as well as a sleep health score based on multiple sleep dimensions both enhanced the definition of cardiovascular health can be explained, at least in part, by the clustering of sleep problems.

The study showed that individuals with a short sleep duration had higher chances of having low sleep efficiency (}


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