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Decoding Sleep and Cardiovascular Risk: Methodological Insights and Bridging Culture Factors

Safy Kaddah*

Pulmonology Department, Kasr Al Ainy Faculty of Medicine, Cairo University, Cairo, Egypt

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Dear Editor,

We have read with great interest the original article entitled "Sleep Quality, Patterns, and Their Impact on Cardiovascular Disease Risk: A cross-sectional Study Among Omani Adults Attending Primary Healthcare in Muscat" by Alsiyabi et al.[1] We congratulate the authors for addressing a relevant and underexplored topic in Middle Eastern populations where cultural and religious factors may influence sleep behaviors. Several methodological and clinical implications merit further discussion.

First, as the authors acknowledge, the study's cross-sectional design limits causal interference between sleep quality and cardiovascular disease (CVD) risk. A prospective cohort study would provide stronger evidence by establishing temporal relationships between baseline sleep characteristics and incident CVD events.

Second, although practical, the Framingham Risk Score was derived from a predominantly White American population, and may require recalibration before being applied use to Middle Eastern populations, particularly when lipid profile parameters are not included.[2] This may limit the strength of the reported association between poor sleep quality and increased CVD risk in the studied population.

Third, relying exclusively on self-reported sleep quality using the Pittsburgh Sleep Quality Index may introduce recall and reporting bias, particularly within culturally diverse populations in which perceptions of adequate sleep may vary. As the authors have acknowledged, supplementation with objective measures, such as actigraphy, would have provided complementary information on sleep duration and regularity.[3] Polysomnography could also have provided a more accurate assessment of sleep architecture and duration, and could have distinguished between subjectively poor sleep and unrecognized sleep disorders, including obstructive sleep apnea, especially because participants with suspected obstructive sleep apnea were excluded on the basis of the STOP-Bang questionnaire rather than a diagnostic test.[4]

Finally, the lack of a significant association between sleep patterns and cardiovascular risk warrants consideration of the heterogeneity of sleep behaviors in Arab societies. Sleep timing, circadian alignment, and variability in sleep–wake patterns may exert physiological effects beyond those captured by categorical pattern classification.[5] Therefore, future longitudinal studies integrating chronotype assessment, objective sleep measurements, and relevant biomarkers are needed to clarify the complex pathways linking sleep, work timing, and cardiovascular outcomes in this population.

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*Corresponding author: ✉safykaddah@kasralainy.edi.eg

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