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

Safy Kaddah*

Pulmonology Department, Cairo University Kasr Alainy Faculty of Medicine, Egypt

Received: 10 January 2026

Accepted: 25 March 2026

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

DOI 10.5001/omj.2026.58

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 would like to congratulate the authors for addressing a relevant and underexplored topic in Middle Eastern populations where cultural and religious factors uniquely influence sleep behaviors. However, several methodological and clinical implications could be considered.

First, the 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 or risk progression over time.

Secondly, Framingham Risk Score (FRS) provides a practical tool predominantly for Caucasian population studies, which affects its accuracy in diverse groups, and underestimate CVD risk in some populations, particularly when lipid profile parameters are not included.[2] This limits the strength of the reported association between poor sleep quality and higher CVD risk.

Third, the exclusive reliance on self-reported sleep quality using the Pittsburgh Sleep Quality Index (PSQI) may introduce recall and reporting bias, particularly within culturally diverse populations where perceptions of adequate sleep vary.[3] Supplementation with objective measures such as actigraphy or home-based polysomnography would have provided a more accurate assessment of sleep architecture, sleep duration and distinguished between subjectively poor sleep and unrecognized sleep disorders, including obstructive sleep apnea, which was screened only by the STOP-Bang questionnaire.[4]

Finally, the absence of a significant association between sleep patterns and cardiovascular risk warrants the heterogeneity of sleep behaviors in Arab societies. Sleep timing, circadian alignment, and variability in sleep–wake behavior 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.

References

1. Alsiyabi A, Aljardani M, Alshidhani A, Alhinai Z. Alrashdi a, Al-Riyami H. Sleep Quality, Patterns, and Their Impact on Cardiovascular Disease Risk: A cross-sectional Study Among Omani Adults Attending Primary Healthcare in Muscat. Oman. Med J (Ft Sam Houst, Tex) 2025. doi:10.5001/omj.2025.

2. Tahla I, Elkhoudri N, Hilali A. Major limitations of cardiovascular risk scores. Cardovasc Ther. 2024; DOI 10.1155/2024/4133365.

3. Wang L, Wu Y-X, Lin Y-Q, et al. Reliability and validity of the Pittsburgh Sleep Quality Index among frontline COVID-19 health care workers using classical test theory and item response theory. J Clin Sleep Med 2022;18(2):541-551. doi:10.5664/jcsm.9658.

4. Chung F, Yegneswaran B, Liao P, Chung SA, Vairavanathan S, Islam S, et al. STOP questionnaire: A tool to screen patients for obstructive sleep apnea. Anesthesiology 2008; 108(5): 812-21.56. ALN.0b013e31816d83e4 https://doi.org/10.1097/

5. Yoshida A, Asakura K, Imamura H, Mori S, Sugimoto M, Michikawa T, et al. Relationship between working hours and sleep quality with consideration to effect modification by work style: a community-based cross-sectional study. Environ Health Prev Med 2024;29:19.