

EDITORIAL

Sleep Disorders as an Emerging Cardiometabolic Risk Factor: Why Clinicians Must Take It Seriously

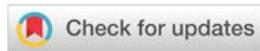
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Biological Pathways Linking Sleep and Cardiometabolic Disease

Multiple interrelated mechanisms explain how disrupted sleep contributes to cardiovascular and metabolic pathology¹⁰. Sleep fragmentation, intermittent hypoxia, and circadian misalignment elevate sympathetic nervous system activity, producing sustained increases in blood pressure and heart rate even during daytime¹¹. Poor sleep alters metabolic hormone balance by reducing insulin sensitivity, increasing glucose intolerance, and disrupting appetite-regulating hormones such as ghrelin and leptin¹². These changes promote visceral adiposity, weight gain, and insulin resistance, driving the development of metabolic syndrome¹³. Furthermore, sleep disorders elevate inflammatory cytokines including IL-6, TNF- α , and CRP, creating a persistent low-grade inflammatory state that accelerates endothelial injury and atherogenesis¹⁴. Intermittent hypoxia associated with obstructive sleep

INTRODUCTION

Sleep has traditionally been viewed as a passive physiological state; however, contemporary research now positions it as a central component of cardiometabolic health¹. Sleep disorders which include obstructive sleep apnea, insomnia, restless legs syndrome, circadian rhythm disturbances, and chronic sleep deprivation are increasingly recognized as independent risk factors contributing to metabolic syndrome, type 2 diabetes mellitus, hypertension, obesity, and cardiovascular morbidity². Despite this growing body of evidence, sleep is one of the most neglected aspects of routine clinical evaluation, particularly in cardiology, endocrinology, and primary care settings³. As cardiometabolic diseases continue to rise in South Asia and worldwide, sleep must be considered a vital variable in both prevention and disease modification⁴.

Sleep Disorders as the Missing Component in Cardiometabolic Assessment

Clinicians routinely focus on traditional risk determinants such as hypertension, dyslipidemia, smoking, sedentary lifestyle, hyperglycemia, and obesity⁵. However, sleep disturbances exert equally powerful effects on cardiometabolic physiology⁶. Many patients with poorly controlled hypertension, unexplained weight gain, or rapidly worsening metabolic syndrome often harbor unrecognized sleep disorders⁷. In South Asian clinical settings, sleep problems are under-screened primarily due to time constraints, lack of awareness, and insufficient integration into routine medical history-taking⁸. Yet, sleep disorders frequently precede or exacerbate metabolic dysfunction long before overt disease appears⁹.

apnea increases oxidative stress and impairs nitric oxide production, resulting in endothelial dysfunction¹⁵. These changes collectively disturb cardiac autonomic regulation, reducing heart rate variability and predisposing patients to arrhythmias, sudden cardiac events, and overall heightened cardiovascular risk¹².

Why Sleep Disorders Cannot Be Ignored in Clinical Practice

Ignoring sleep disorders leads to significant diagnostic and therapeutic gaps¹⁵. Many patients with resistant hypertension fail to respond to multiple antihypertensive agents simply because underlying obstructive sleep apnea has not been recognized¹¹. Similarly, patients with diabetes may struggle with glycemic control despite optimal pharmacotherapy because untreated sleep problems worsen insulin resistance¹³. Obesity becomes more difficult to manage when hormonal disturbances caused by poor sleep perpetuate increased appetite and reduced energy

expenditure⁵. Sleep disorders also increase the rate of myocardial infarction, stroke, and heart failure, making early recognition essential⁸. Clinically, identifying sleep disturbances is far easier and more cost-effective than managing long-term complications of cardiometabolic disease⁹, yet sleep remains an overlooked dimension¹⁰.

Integrating Sleep Into Routine Clinical Evaluation

There is a pressing need to embed sleep assessment as a core component of clinical evaluation¹⁴. A few focused questions regarding snoring, breathing pauses during sleep, excessive daytime sleepiness, morning headaches, insomnia symptoms, and sleep patterns can significantly improve early detection¹². Diagnostic pathways such as polysomnography, overnight oximetry, and actigraphy should be integrated into care protocols for high-risk patients, particularly those presenting with resistant hypertension, obesity, or metabolic syndrome¹⁵. Screening instruments such as the STOP-BANG questionnaire or the Epworth Sleepiness Scale provide rapid and clinically meaningful insights⁶. Incorporating sleep considerations into cardiometabolic risk stratification tools will improve diagnostic accuracy and allow clinicians to initiate earlier interventions¹³.

Therapeutic Importance of Addressing Sleep Disorders

Treating sleep disorders can yield profound metabolic and cardiovascular benefits¹¹. Continuous positive airway pressure (CPAP) therapy in obstructive sleep apnea reduces blood pressure, improves insulin sensitivity, enhances endothelial function, and lowers cardiovascular risk¹⁵. Non-pharmacological methods such as sleep hygiene training, cognitive behavioral therapy for insomnia, structured weight reduction programs, and circadian alignment strategies create long-term health improvements¹². Addressing sleep problems in shift-workers, who represent a growing population in urban South Asia, can dramatically improve metabolic parameters and reduce cardiovascular strain¹⁰. Integrating sleep into multidisciplinary cardiometabolic management alongside exercise, diet, and pharmacotherapy provides a more complete and biologically aligned therapeutic approach¹⁴.

CONCLUSION

Sleep disorders represent a rapidly emerging and clinically significant cardiometabolic risk factor¹³. The evidence linking sleep with cardiovascular and metabolic disease has

become unequivocal, yet clinical practice remains slow to adapt¹⁵. A paradigm shift is urgently needed⁹. Clinicians must treat sleep as a measurable and modifiable vital sign, deserving the same attention as blood pressure, glucose levels, and lipid panels¹¹. Early recognition, structured screening, and targeted therapy for sleep disorders can substantially reduce the burden of cardiometabolic diseases and improve patient outcomes¹⁴. The challenge now is not a lack of evidence, but the need for clinicians to translate this evidence into everyday practice¹⁵. Only by taking sleep seriously can we meaningfully advance cardiometabolic health and long-term disease prevention¹.

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