

## Weakened Health Outcomes Associated with Outpatient Cardiac Rehabilitation for Cardiovascular Patients with Sleep Apnea

Dear Editor,

Sleep apnea (SA) is one of the most common sleep disorders in general and clinical populations. SA is characterized by stopping and frequent breathing during sleep and is usually accompanied by frequent snoring, choking and breathing symptoms, sleepiness or daily fatigue, and morning headaches.<sup>[1,2]</sup> This disorder can lead to various consequences, including cardiovascular problems.<sup>[2]</sup> Conversely, in cardiovascular patients, SA can have adverse health outcomes and make a serious challenge to patients' recovery.<sup>[1]</sup> This disorder, which is common in 50–66% of cardiac rehabilitation (CR) patients, can lead to significant problems for patients during outpatient CR.<sup>[1,2]</sup> In the CR programs, patients receive 8–40 sessions of aerobic exercise. Patients with SA due to inadequate intake of oxygen during sleep and other symptoms mentioned above experience more fatigue during exercise and show poorer exercise performance.<sup>[2]</sup> Particularly, high-risk cardiac patients are more likely to be exposed to serious consequences from undiagnosed SA. These patients, who need to be fully supported by the CR team in a format of hospital-based delivery,<sup>[3]</sup> are vulnerable to both risk factors and comorbidities. Therefore, an undiagnosed SA in CR patients may have negative consequences.

The recent literature recommends that all patients, especially the high-risk cardiac patients, are screened for SA before the onset of the CR program.<sup>[4]</sup> Despite the access to multiple treatments, SA treatment with continuous positive airway pressure (CPAP) is associated with decreased blood pressure, improving left ventricular function, and improved central blood flow and oxygenation.<sup>[1]</sup> Mandibular advancement devices can also be used by dentists for patients who cannot tolerate CPAP.<sup>[5]</sup> This process can ensure the health consequences of CR and the quality of life in cardiac patients with SA.<sup>[4]</sup>

Based on these considerations, we recommend that all patients are screened for SA before the onset of the CR. Our experience in the Kermanshah CR shows that timely referral to a specialist and early treatment can be helpful. Patients can take the CPAP at a medical center and use it as a home-based non-invasive device. Add this screening program to the routine measurement procedures before exercise sessions will likely result in positive health outcomes for the patients.

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### Conflicts of interest

Nothing to declare.

Habibolah Khazaie<sup>1</sup>, Behzad Heydarpour<sup>2</sup>,  
Saeid Komasi<sup>3</sup>

<sup>1</sup>Sleep Disorders Research Center, Kermanshah University of Medical Sciences, Kermanshah, Iran, <sup>2</sup>Cardiac Rehabilitation Center, Imam Ali Hospital, Kermanshah University of Medical Sciences, Kermanshah, Iran, <sup>3</sup>Clinical Research Development Center, Imam Reza Hospital, Kermanshah University of Medical Sciences, Kermanshah, Iran

Address for correspondence:

Mr. Saeid Komasi,

Clinical Research Development Center, Imam Reza Hospital,  
Kermanshah University of Medical Sciences, Zakarya Razi

Boulevard, Kermanshah, Iran.

E-mail: [s\\_komasi63@yahoo.com](mailto:s_komasi63@yahoo.com)

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