

Letter to the Editor: Severity of obstructive sleep apnea and its impact on coronary artery disease outcomes: A cross-sectional study in Egypt

Highlights

- STOP-BANG questionnaire provides highly effective (84.2% sensitivity and AUC – 0.83) detection of OSA in CAD patients, making it an ideal screening tool for primary care settings with limited access to sleep studies.
- With 34% of CAD patients having OSA, early identification using STOP-BANG can enable timely referral, risk stratification prevent CV complications.
- In resource-limited healthcare systems, the simple 2-minute tool empowers primary care providers to bridge the diagnostic gap and integrate OSA screening into standard CV prevention protocols
- Further studies should address several research questions raised from the study on OSA in CAD patients

Key words: STOP-BANG, sleep apnea, cardiovascular disease, screening tool, primary care

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Dear Editor,

I read with great interest the recent study by Hossam Eldin M. Mahmoud et al. (1) assessing the prevalence of obstructive sleep apnea (OSA) among patients with coronary artery disease (CAD), its association with CAD severity and cardiac function, and the diagnostic utility of the STOP-BANG questionnaire. As a pulmonologist, I commend the authors for their rigorous methodology and clinically significant findings, which reinforce the critical intersection between respiratory and cardiovascular (CV) health.

The study's finding that 34% of CAD patients had OSA, with 24% exhibiting moderate-to-severe disease (AHI =15), aligns with growing evidence that OSA is not merely a comorbid condition but a notable contributor to CV morbidity. This prevalence is substantially higher than the general population (estimated at 10–17% in middle-aged adults), underscoring the need for routine OSA screening in cardiac clinics (2). The strong association between OSA and elevated Gensini

scores—a quantitative measure of coronary atherosclerosis severity - further supports the role of chronic intermittent hypoxia, oxidative stress, and sympathetic overactivity in accelerating atherosclerotic progression (3).

Notably, the authors demonstrate that OSA is linked to both systolic and diastolic dysfunction, as evidenced by reduced left ventricular ejection fraction (LVEF), lower tricuspid annular plane systolic excursion (TAPSE), elevated pulmonary artery systolic pressure, and increased E/e' ratio. These echocardiographic abnormalities suggest that OSA contributes not only to myocardial ischemia but also to ventricular remodeling and pulmonary hypertension—key determinants of long-term prognosis in CAD patients. The negative correlation between oxygen desaturation index and LVEF/TAPSE highlights the direct impact of nocturnal hypoxemia on right and left ventricular performance, consistent with prior studies showing that repetitive hypoxic episodes induce endothelial dysfunction and myocardial strain (4).

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The study's validation of the STOP-BANG questionnaire as a screening tool is particularly valuable for clinical practice.

With a sensitivity of 84.2% and specificity of 77.4% (AUC 0.83), STOP-BANG proves to be a reliable instrument for identifying high-risk patients who warrant formal polysomnography. This is crucial given the limited accessibility of sleep studies in many healthcare settings.

Importantly, the simplicity and brevity of the STOP-BANG tool make it ideally suited for primary care and outpatient settings, where time is limited and resources are constrained. In general practice, emergency departments, or rural clinics, where access to polysomnography is often delayed or unavailable, STOP-BANG offers a practical, evidence-based solution for early risk stratification. A quick 2-minute assessment during a routine visit can identify patients at high risk for OSA, enabling timely referral and preventing complications. This is particularly vital in low- and middle-income countries, where sleep laboratories are scarce, and undiagnosed OSA contributes significantly to the burden of CV disease. By empowering primary care providers with validated screening tools like STOP-BANG, we can bridge the diagnostic gap and ensure that high-risk patients are not overlooked simply due to systemic limitations.

However, while the STOP-BANG score >3.5 shows strong diagnostic performance, it should not replace objective sleep testing, especially in high-risk cardiac populations. Polysomnography remains the gold standard, and existing data suggest that treatment of OSA with continuous positive airway pressure improves CV outcomes, including blood pressure control, arrhythmia burden, and even mortality in patients with ischemic heart disease (5). Therefore, integrating sleep screening into standard CAD management protocols—like lipid or hypertension assessment—could significantly enhance secondary prevention strategies.

Nevertheless, these findings raise several important questions regarding the optimal use of the STOP-BANG questionnaire in clinical practice. How effective is the integration of this tool into routine primary care protocols, particularly in resource-limited settings? Can the threshold score of STOP-BANG be adjusted to enhance its predictive accuracy specifically in patients with established coronary artery disease? What is the sensitivity and specificity of the questionnaire across different subpopulations—such as women, older adults, or individuals with obesity—where the clinical presentation of OSA may differ? Furthermore, it remains to be explored to what extent the systematic use of STOP-BANG during initial patient assessment facilitates earlier diagnosis, reduces time to confirmatory testing, and ultimately improves CV outcomes. Addressing these questions could support a more targeted integration of OSA screening into the comprehensive management of patients with CAD.

In conclusion, this well-conducted study provides compelling evidence that OSA is highly prevalent in CAD patients and

independently associated with worse cardiac structure and function. It reinforces the importance of a multidisciplinary approach involving cardiologists, pulmonologists, and sleep specialists. Raising awareness among clinicians and patients alike could transform outcomes in this high-risk population. As we continue to unravel the bidirectional relationship between sleep and heart health, proactive identification, and management of OSA may prove to be one of the most impactful yet underutilized strategies in modern cardiology.

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