

# Over 50% of women affected by menopausal sleep disorders: urgent need to integrate sleep management into menopause guidelines

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## Abstract

Despite the authoritative framework for hormone therapy provided by the 2025 European Society of Endocrinology Clinical Practice Guidelines for the Assessment and Management of Menopause and Perimenopause, there remains a notable absence of diagnostic and therapeutic protocols for sleep disorders. Given that sleep disorders affect 50%–55% of the perimenopausal population, they constitute an independent risk factor for severe adverse health outcomes. Leveraging landmark data from the 2024 Study of Women’s Health Across the Nation (SWAN), persistent insomnia symptoms are associated with a 71% increased incidence of cardiovascular events, independent of vasomotor symptoms. Furthermore, the unique female phenotype of obstructive sleep apnea frequently leads to misdiagnosis in endocrine clinical practice. The “tipping point” of late perimenopause presents a critical window for intervention. A more comprehensive approach—combining mandatory screening with tiered sleep interventions—can enhance daytime functioning, prevent misdiagnosis, and reduce long-term cardiovascular disease incidence. Future guidelines should explicitly address this intersection to support more personalized care for middle-aged women.

**Keywords** menopause, sleep disorder, hormone therapy, cardiovascular disease events

Dear Editor,

We read with great interest the recently released “European Society of Endocrinology Clinical Practice Guidelines for the Assessment and Management of Menopause and Perimenopause 2025.”<sup>1</sup> While the guidelines provide a comprehensive overview of hormonal and non-hormonal therapies for menopause, they unfortunately omit recommendations for evaluating and managing sleep disorders. This is a significant oversight, as up to 50%–55% of menopausal women experience sleep disturbances,<sup>2–4</sup> which independently increase cardiovascular risk.<sup>5</sup>

Menopausal sleep disorders represent an under-recognized public health issue rather than a mere accompaniment to menopause. Sleep complaints are among the most common symptoms during perimenopause and postmenopause, yet their prevalence and severity are frequently underestimated in clinical practice. A landmark 2024 prospective study from the Study of Women’s Health Across the Nation (SWAN), following 2964 mid-life women over 22 years, demonstrated clear longitudinal patterns of sleep and linked persistent insomnia symptoms to a 71% higher risk of cardiovascular disease (CVD) events (including

myocardial infarction, stroke, and heart failure; hazard ratio [HR] 1.71, 95% confidence interval [CI]: 1.19–2.46).<sup>5</sup> Women with persistent insomnia plus short sleep duration ( $\leq 5$  h) faced an even greater 75% increased risk (HR 1.75, 95% CI: 1.03–2.98).<sup>5</sup> Additional large-scale data confirm rising insomnia symptoms and abnormal sleep duration with advancing age in postmenopausal women.<sup>4</sup> A systematic review and meta-analysis of over 40 global studies reported overall prevalence of sleep disorders in postmenopausal women ranging from 51.6% (95% CI: 44.6%–58.5%) to 54.7% (95% CI: 47.2%–62.1%), varying by assessment tool (eg, Menopause Rating Scale, Pittsburgh Sleep Quality Index [PSQI], Insomnia Severity Index [ISI]) and region.<sup>3</sup> A 2025 meta-analysis of 11 928 perimenopausal women estimated prevalence at 50%–55%, with a 1.3–1.6-fold higher risk compared to premenopausal women.<sup>2,6</sup> Given this high burden, sleep disturbance constitutes a primary, not secondary, health concern affecting more than half of menopausal women worldwide and warrants routine evaluation.

The relationship between sleep disorders and menopause is bidirectional and multifaceted. While vasomotor symptoms

Received: January 26, 2026. Accepted: January 27, 2026

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(hot flashes, night sweats) and mood disturbances contribute, SWAN data show that associations between sleep disorders and CVD persist after adjustment for these factors, snoring, and depression—indicating sleep disturbance as an independent CVD risk factor.<sup>5</sup> Other contributors include depression (OR 2.73), hot flashes (OR 2.70), and chronic diseases (OR 1.39).<sup>2</sup> Notably, postmenopausal women face elevated risk of obstructive sleep apnea (OSA), with surgically menopausal women showing 26% higher risk than naturally menopausal counterparts.<sup>7</sup> Female OSA often presents atypically (insomnia, fatigue, mood changes rather than snoring), leading to misdiagnosis as anxiety or menopausal syndrome, underdiagnosis, and undertreatment.<sup>8-10</sup> Failure to address distinct mechanisms—such as hormonal fluctuations directly affecting sleep-regulatory centers and heightened primary sleep apnea risk—misses a modifiable target. Sleep-disordered breathing fragments sleep, impairs daytime function, and independently elevates risks for CVD and metabolic syndrome,<sup>11,12</sup> compounding menopause-related chronic disease burden.

Sleep quality changes dynamically across reproductive aging. Problems do not emerge abruptly at menopause but worsen progressively. A 4.9-year longitudinal study of 3305 midlife Korean women showed significant declines in PSQI scores—including subjective sleep quality, latency, disturbances, and daytime dysfunction—starting in late perimenopause, independent of chronological age.<sup>13</sup> This identifies a critical “inflection point” in late perimenopause as a prime window for prevention and early intervention.

We urge that future guideline revisions incorporate structured, actionable sleep management rather than a cursory mention. Key recommendations include:

1. Mandatory screening and differential diagnosis at initial menopause visits using validated tools (PSQI, ISI, STOP-Bang Questionnaire) to distinguish vasomotor-related sleep issues, primary insomnia, OSA, and restless legs syndrome. Prioritize OSA referral for patients with obesity, uncontrolled hypertension, or unexplained daytime fatigue/sleepiness.
2. Tiered management: Prioritize first-line behavioral interventions (Cognitive Behavioral Therapy for Insomnia, sleep hygiene) and menopause-tailored lifestyle adjustments.<sup>14</sup> For second-line, include evidence-based pharmacotherapy, such as dual orexin receptor antagonists like daridorexant, which Phase III trials (including subgroup analyses in women aged 47-55) demonstrated efficacy in improving sleep onset, maintenance, daytime function, and safety.<sup>15</sup>
3. Multidisciplinary pathways: Establish clear referral and collaboration between endocrinology/gynecology, sleep medicine, and psychiatry to ensure sleep disorders are properly addressed rather than dismissed as “normal” menopausal symptoms.
4. Clinician education on differential diagnosis, treatment, and referral to bridge knowledge gaps.
5. Long-term follow-up studies to evaluate sleep interventions' impact on menopausal health and update guidelines accordingly.

The high prevalence of sleep disorders in menopausal women and their established status as an independent CVD risk

factor, demand urgent integration into menopause guidelines. Formalizing screening, diagnosis, and evidence-based treatment pathways will enhance patient-centered, comprehensive care and improve long-term health outcomes.

## Authors' contributions

Ruiyu Huang (Conceptualization [equal], Methodology [equal], Writing—original draft [equal]), Wuchaonan Liu (Writing—review & editing [equal]), Yunhao Yi (Writing—review & editing [equal]), Dingxiang Li (Project administration [equal], Supervision [equal]), and Yihui Deng (Project administration [equal], Supervision [equal]).

## Conflict of interest

None declared.

## Funding

This research was funded by the project of Hunan Provincial Natural Science Foundation Committee (No.2025JJ50566) and the Innovative Research Group Project of Hunan Provincial Natural Science Foundation (No.2024JJ1007).

## References

1. Lumsden MA, Dekkers OM, Faubion SS, et al. European Society of Endocrinology clinical practice guideline for evaluation and management of menopause and the perimenopause. *Eur J Endocrinol.* 2025;193(4):G49-G81. <https://doi.org/10.1093/ejendo/lvaf206>
2. Zeng W, Xu J, Yang Y, Lv M, Chu X. Factors influencing sleep disorders in perimenopausal women: a systematic review and meta-analysis. *Front Neurol.* 2025;16:1460613. <https://doi.org/10.3389/fneur.2025.1460613>
3. Salari N, Hasheminezhad R, Hosseini-Far A, et al. Global prevalence of sleep disorders during menopause: a meta-analysis. *Sleep Breath.* 2023;27(5):1883-1897. <https://doi.org/10.1007/s11325-023-02793-5>
4. Beverly CM, Naughton MJ, Pennell ML, et al. Change in longitudinal trends in sleep quality and duration following breast cancer diagnosis: results from the Women's Health Initiative. *NPJ Breast Cancer.* 2018;4(1):15. <https://doi.org/10.1038/s41523-018-0065-7>
5. Thurston RC, Chang Y, Kline CE, et al. Trajectories of sleep over midlife and incident cardiovascular disease events in the study of Women's health across the nation. *Circulation.* 2024;149(7):545-555. <https://doi.org/10.1161/circulationaha.123.066491>
6. Xu M, Bélanger L, Ivers H, Guay B, Zhang J, Morin CM. Comparison of subjective and objective sleep quality in menopausal and non-menopausal women with insomnia. *Sleep Med.* 2011;12(1):65-69. <https://doi.org/10.1016/j.sleep.2010.09.003>
7. Huang T, Lin BM, Redline S, Curhan GC, Hu FB, Tworoger SS. Type of menopause, age at menopause, and risk of developing obstructive sleep apnea in postmenopausal women. *Am J*

- Epidemiol.* 2018;187(7):1370-1379. <https://doi.org/10.1093/aje/kwy011>
8. Lindberg E, Bonsignore MR, Polo-Kantola P. Role of menopause and hormone replacement therapy in sleep-disordered breathing. *Sleep Med Rev.* 2020;49:101225. <https://doi.org/10.1016/j.smr.2019.101225>
  9. Keenan BT, Kim J, Singh B, et al. Recognizable clinical subtypes of obstructive sleep apnea across international sleep centers: a cluster analysis. *Sleep.* 2018;41(3):zxx214. <https://doi.org/10.1093/sleep/zxx214>
  10. Basoglu OK, Tasbakan MS. Gender differences in clinical and polysomnographic features of obstructive sleep apnea: a clinical study of 2827 patients. *Sleep Breath.* 2018;22(1):241-249. <https://doi.org/10.1007/s11325-017-1482-9>
  11. Ren R, Zhang Y, Yang L, Shi Y, Covassin N, Tang X. Sleep fragmentation during rapid eye movement sleep and hypertension in obstructive sleep apnea. *J Hypertens.* 2023;41(2):310-315. <https://doi.org/10.1097/hjh.0000000000003332>
  12. McCullough LM, Mokhlesi B. Obstructive sleep apnea during REM sleep and hypertension: new findings from a clinical cohort. *Sleep.* 2023;46(3):zsad003. <https://doi.org/10.1093/sleep/zsad003>
  13. Jang Y, Chang Y, Park J, et al. Menopausal stage transitions and their associations with overall and individual sleep quality in middle-aged Korean women. *J Affect Disord.* 2025;368:82-89. <https://doi.org/10.1016/j.jad.2024.09.050>
  14. Moradi Farsani H, Afshari P, Sadeghniaat Haghighi K, Gholamzadeh Jefreh M, Abedi P, Haghighizadeh MH. The effect of group cognitive behavioural therapy for insomnia in postmenopausal women. *J Sleep Res.* 2021;30(5):e13345. <https://doi.org/10.1111/jsr.13345>
  15. Mignot E, Mayleben D, Fietze I, et al. Safety and efficacy of daridorexant in patients with insomnia disorder: results from two multicentre, randomised, double-blind, placebo-controlled, phase 3 trials. *Lancet Neurol.* 2022;21(2):125-139. [https://doi.org/10.1016/s1474-4422\(21\)00436-1](https://doi.org/10.1016/s1474-4422(21)00436-1)