Sex Differences in CPAP Initiation and Sleep Surgery Need Across the Menopausal Transition: A Real-World Analysis

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Introduction

- **Hormonal Dynamics:** Menopause involves significant estrogen and progesterone decline, predisposing women to collapsible upper airways and altered body fat distribution that may impact obstructive sleep apnea risk.[1]
- **Clinical Gap:** While post-menopausal AHI elevation is recognized, the real-world longitudinal treatment utilization (CPAP initiation & surgical intervention) remains unquantified.[2]
- **The Current Literature:** Prior studies have shown worsening apnea-hypopnea index and higher odds of OSA after menopause.[3-4]
- The clinical impact of menopause on OSA severity and treatment need remains poorly quantified.
- This study evaluates CPAP initiation and sleep surgery uptake across the menopausal decade in a large real-world cohort.

Question

Does OSA treatment utilization increase more rapidly in women than men across the menopausal transition?

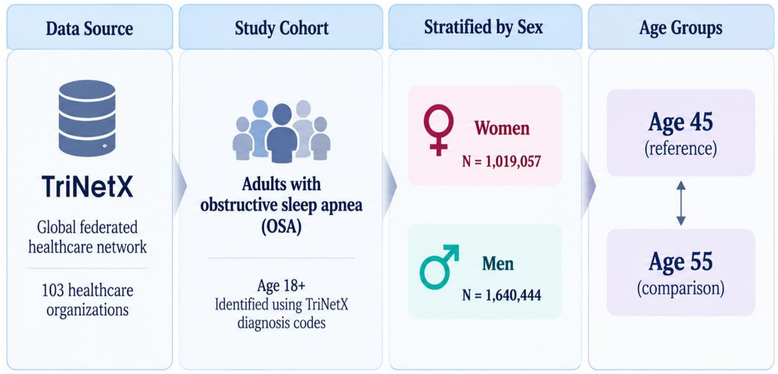
Hypothesis

Women with OSA will demonstrate a steeper rise in CPAP initiation and sleep surgery utilization across ages 40-55 than propensity-matched men.

Methods

- Retrospective cohort study using the TriNetx US Global Collaborative Network.
- Adults diagnosed with OSA were identified.
- Two cohorts were constructed: women diagnosed with OSA at age 40 and men diagnosed with OSA at age 40.
- Cohorts were propensity score matched for demographics, comorbidities, and disease severity.
- Kaplan-Meier curves followed patients for up to 20 years.
- Outcomes: CPAP initiation and receipt of sleep surgery.
- Sex-specific probabilities and relative changes in treatment utilization were compared across ages 45-55.

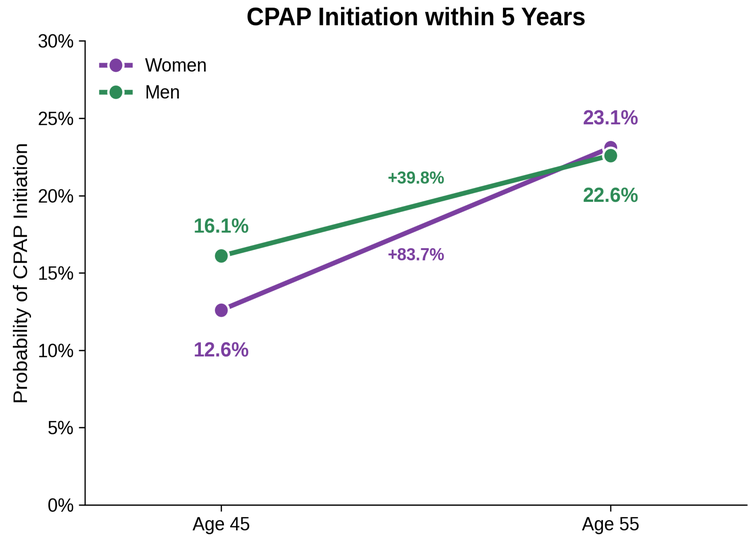
Results

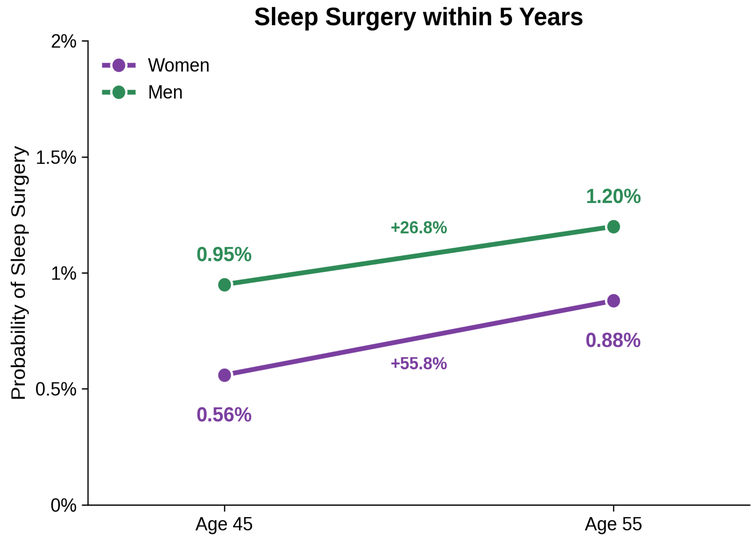


A total of **2,659,501 adults with OSA** were included (**1,019,057 women; 1,640,444 men**)

- From age 45 to 55, **CPAP initiation increased more sharply in women** than men (**83.7% vs 39.8% relative increase**)
- **Sleep surgery demonstrated a similar pattern**, with a **55.8% increase in women vs 26.8% in men**

2.1x greater relative increase in women vs men for both CPAP initiation and sleep surgery





Discussion

- **Accelerated Disease Window:** Menopause marks a distinct biological window triggering a rapid surge in female OSA clinical severity.
- **Catch-up Trajectory:** Despite lower baseline utilization at age 40, female treatment need equals and exceeds male rates by age 55.
- **Clinical Action:** Proactive OSA screening and timely treatment are essential for women presenting with midlife sleep or metabolic symptoms.

Limitations

- Retrospective observational design.
- Potential residual confounding despite propensity matching.
- EHR coding and treatment capture limitations.
- Treatment utilization is a surrogate for clinical need.
- Association does not establish causation.

References

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