

Challenge: Undiagnosed Obstructive Sleep Apnea

12% of American Adults have Obstructive Sleep Apnea (OSA) and 80% of those have moderate or severe cases that are undiagnosed.⁽¹⁾ Sleep apnea has significant medical implications and there is a high prevalence of OSA in many cardiovascular diseases.⁽²⁾ Screening all subjects with heart disease via polysomnography (PSG) is costly and resource limited.⁽³⁾

Solution: A reliable non-invasive method would be valuable for the screening of this condition in ambulatory patients. Holter-based software may constitute an accessible tool on initial suspicion of OSA.⁴⁽³⁾

Details: The underdiagnosis and under treatment of OSA is draining the US healthcare system of billions of dollars, while millions of patients suffer the chronic effects of this sleep disorder.⁽³⁾ Older adults with undiagnosed obstructive sleep apnea utilize more health care than those without ⁽⁶⁾and are heavy users of health care 5 to 10 years before diagnosis.⁽⁷⁾

Solution Requirements: A sleep apnea analysis option determines sleep apneic periods from standard or 12-lead Holter recordings. Apneic periods divided by the number of hours of sleep is represented in an Apnea Hypopnea Index or AHI.⁽⁸⁾

Post Implementation: A correlated AHI (Alpha Hypopnea Index) is then produced with supporting graphs and trends. This can be for one sleep period or multiple sleep periods if a 7-day recording is analyzed.

Analysis: Researchers at University of Washington were able to identify all patients who did not have sleep apnea with 100% sensitivity thus making it an effective tool for ruling out OSA. Overall, they were able to identify correctly 33% of all patients with a Polysomnographic (PSG) diagnosis of sleep Apnea using an overnight Holter.⁽⁹⁾

Result: For OSA-positive patients based on the Holter screening, Polysomnography (PSG) or Home Sleep Test (HST) can be further performed to confirm the diagnosis and determine the severity of the disease. Early diagnosis and treatment of OSA would improve the quality of life and functional ability in older adults as well as reduce the health care utilization costs of many OSA patients.⁽⁷⁾

Research indicates that the US would save over \$11 billion if all sleep apnea sufferers were treated however actual medical costs savings with treatment are yet to be determined.⁽¹⁰⁾

- References and Impact:**
1. [31 Important Sleep Apnea Statistics You Should Know in 2022 \(disturbmenot.co\)](https://disturbmenot.co)
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 4. [Reliability of a Holter-based methodology for evaluation of sleep apnoea syndrome - PubMed \(nih.gov\)](https://pubmed.ncbi.nlm.nih.gov/31111111/)
 5. [Cost Savings a Major Benefit of Treating Sleep Apnea in Employees | Sleep Review \(sleepreviewmag.com\)](https://sleepreviewmag.com)
 6. [Older adult US Medicare beneficiaries with untreated obstructive sleep apnea are heavier users of health care than matched control patients | Journal of Clinical Sleep Medicine \(aasm.org\)](https://aasm.org)
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 10. [The medical cost of undiagnosed sleep apnea - PubMed \(nih.gov\)](https://pubmed.ncbi.nlm.nih.gov/31111111/)