



# The Correlation Between Snoring and Sleep-related Breathing Disorders Using an Under-mattress Sleep Monitoring Device

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## Introduction

Snoring, often misunderstood as a sign of good sleep in some cultures, is a common but overlooked symptom of Sleep-related breathing disorders (SRBD), which are linked to cardiovascular and metabolic complications. This study was conducted to evaluate the correlation between snoring and SRBD, particularly Obstructive sleep apnea (OSA), using an under-mattress sleep study device (Sleeptracker-AI).

## Methods

We used a commercially-available home monitoring device (Sleeptracker-AI Monitor, Fullpower Technologies Inc., California, USA) that passively monitors sleep using piezo-electric sensors to analyze sleep-disordered breathing. Using validated sleep/respiratory parameters, de-identified data collected between August 15, 2023, and June 30, 2024 were analyzed following Stanford IRB review.

## Met Inclusion Criteria

155,441 participants  
84,183 men  
71,258 women  
mean age 47.9 ± 12.7 years  
27,708,834 recorded nights of data.

## Results

The association between snoring time and odds of OSA by age. The odds of having OSA increased with higher percentages of snoring time

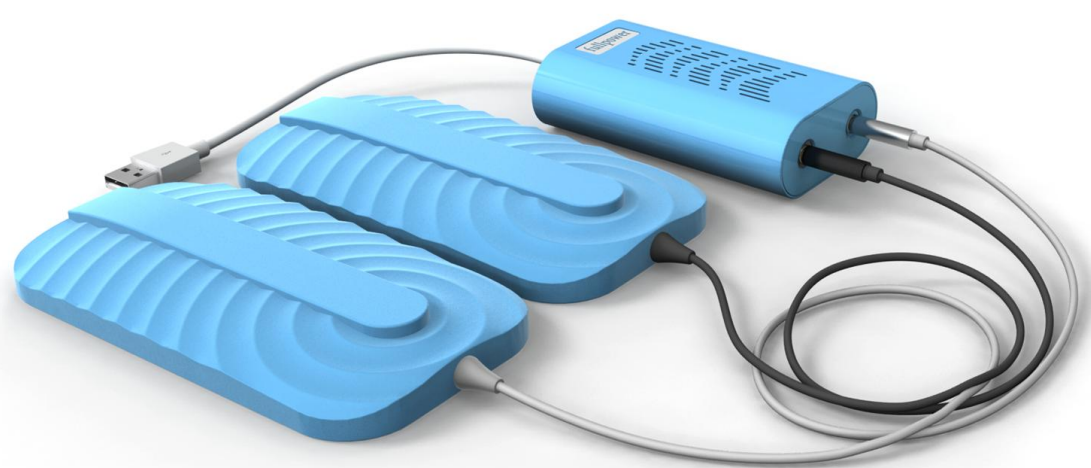
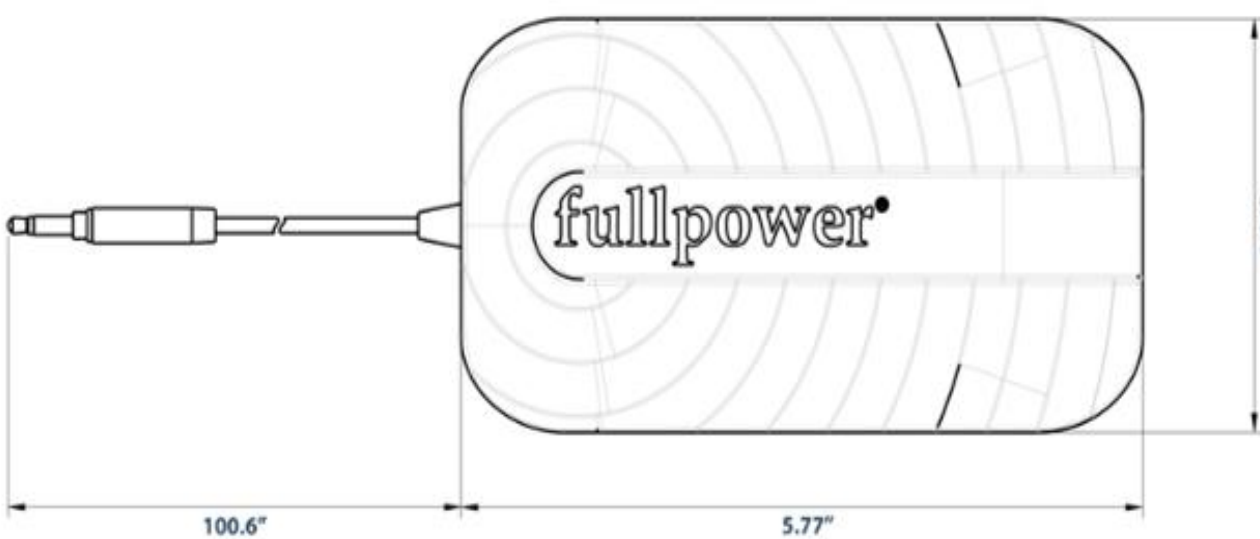
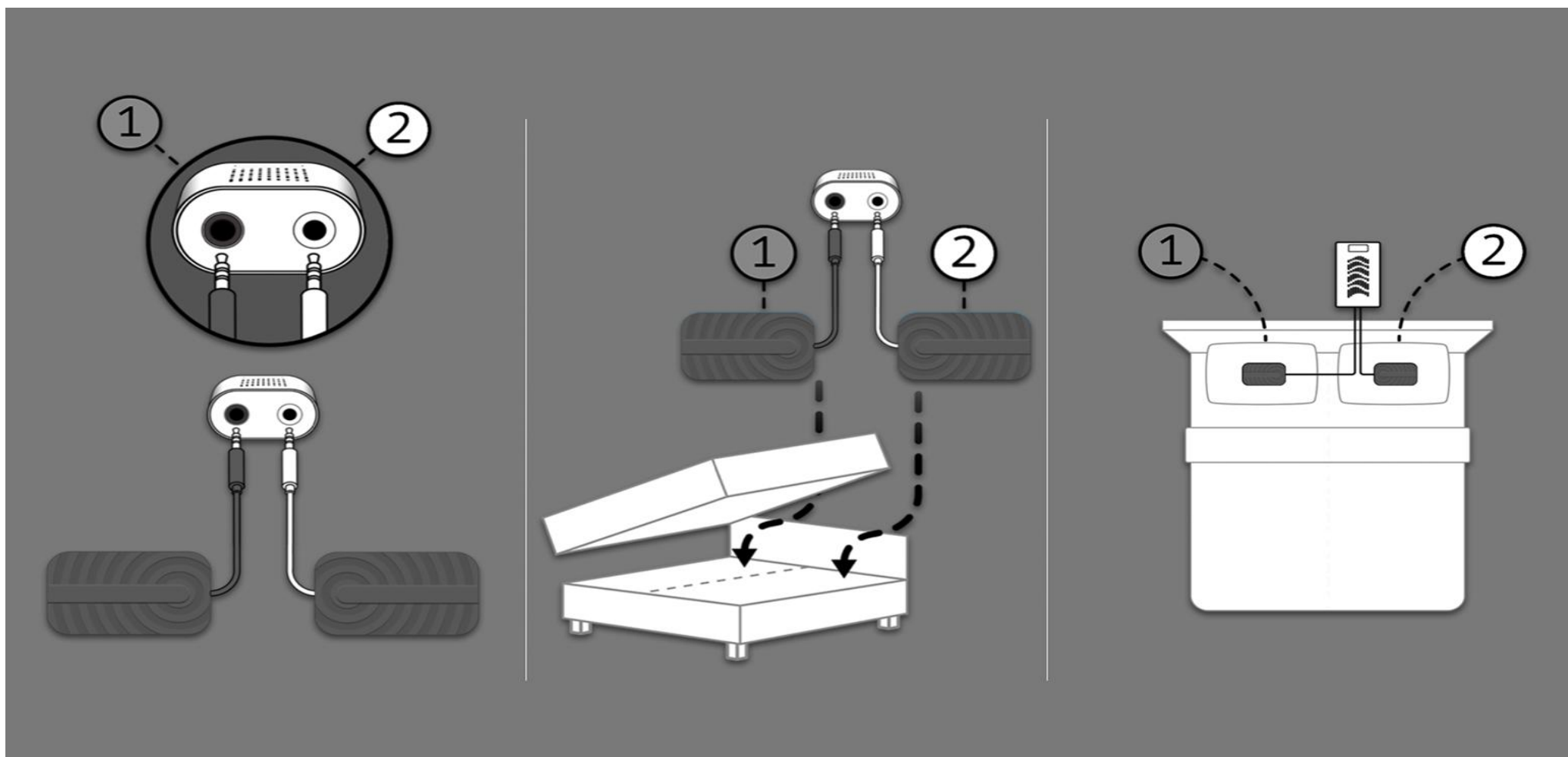
Odds ratio of OSA per 10 percentage point increase in snoring (as % of sleep time)		
Group	Odds Ratio	Conf Int
Overall	1.56	(1.55, 1.57)
Age: 30-49	1.77	(1.73, 1.81)
Age: 50-69	1.61	(1.59, 1.63)
Age: ≥70	1.45	(1.42, 1.47)

The odds ratios for OSA (AHI ≥ 5) associated with each 10-percentage-point increase in snoring, expressed as a percentage of total sleep time.

Percentile in dataset	Snoring as % of sleep time	Modeled probability of OSA
0th	0%	5.8%
25th	2.8%	6.6%
50th	8.6%	8.5%
75th	21.7%	15.2%
95th	55.2%	48.4%
99th	77.8%	74.1%

Interaction with sex was insignificant (p=0.54)

## Device Setup



## Conclusions

A large-scale analysis revealed a significant age-dependent association between snoring percentage of total sleep time and OSA prevalence across snoring frequency. Each 10% increase in snoring time elevated OSA odds with a stronger effect in younger individuals. Sex did not significantly modify this relationship.

## References

Ding F, Cotton-Clay A, Fava L, Easwar V, Kinsolving A, Kahn P, Rama A, Kushida C. Polysomnographic validation of an under-mattress monitoring device in estimating sleep architecture and obstructive sleep apnea in adults. Sleep Med. 2022 Apr 22;96:20-27. doi: 10.1016/j.sleep.2022.04.010. Epub ahead of print. PMID: 35576830.