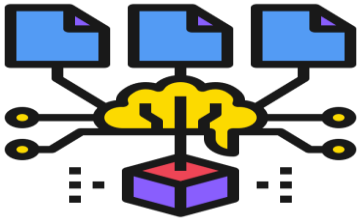


Dr. BreathE - Revolutionizing Sleep Apnea Care

Prediction



Air Pollution



Neuro-cognitive



AIoT



丰采睡眠-原氣醫生 Dr. BreathE

@drbreathe · 8860位訂閱者 · 38 部影片

加入官方LINE，立即線上諮詢：https://lin.ee/MFC2Zk6 >

lin.ee/MFC2Zk6 和另外 1 個連結

已訂閱

Dr. Wen Ta Liu: lion5835@gmail.com

Dr. Eric Ma: dr.ma@clinicperfectsmile.com

<https://www.youtube.com/@drbreathe>

Company Overview

- Established in 2023, Dr. BreathE innovates in sleep apnea total solution through a fusion of medical expertise and advanced technology.
- Founder: Dr. Ma Yongchang (Eric), Dental surgeon Taiwan, Harvard MBA, Chief of “Clinical Perfect Smile Dental Chain Clinics”.
- Founder: Dr. Liu Wen Te, a respiratory and sleep medicine expert, delegate to provide personalized care for sleep-related disorders.
- We specialize in custom 3D-printed oral appliances, AI-powered diagnostic tools, and patient-centric treatment approaches. Dr. BreathE stands as a vanguard in sleep health, transforming care for sleep apnea patients globally.

<https://www.clinicperfectsmile.com/>

<https://hub.tmu.edu.tw/en/persons/wen-te-liu>

Problem Statement

- Sleep apnea, especially Obstructive Sleep Apnea (OSA), affects over a billion globally, yet remains largely undiagnosed.
- It's most prevalent among older adults and those with obesity. In North America alone, up to 30% of males and 15% of females are affected.
- Current treatments often overlook the complex interplay of factors like dental and respiratory health.
- Dr. BreathE aims to address these gaps with personalized, technology-driven solutions for improved patient care.

Solution Overview

- 1. 3D-Printed Custom Oral Appliances:** Tailor-made for patient-specific needs using advanced 3D printing technology.
- 2. Sleep Assessment App:** A sophisticated app combining visual AI, NoSAS questionnaire, and AI-driven sleep sound analysis for accurate sleep apnea assessment.
- 3. Diagnostic Devices:** Innovative tools like Rhinomanometry and sleep head trackers, integrating Genius Holding's ultrasound technology for real-time data analysis.
- 4. Respiratory Equipment:** State-of-the-art devices such as ezOxygen and Try Breath, aiding in respiratory training and lung function assessments.
- 5. AI Integration:** Leveraging AI for personalized care and treatment plans, enhancing the overall quality of sleep apnea management.
- 6. Medical Education and Community Outreach:** Offering professional insights and sleep health education through channels like "丰采睡眠-原氣醫生 Dr. BreathE" on YouTube and other social media platforms.

Technology and Innovation

- 1.AI-Powered Solutions:** Our AI algorithms personalize treatment by analyzing facial structure, sleep sounds, and sleep patterns, enhancing diagnosis accuracy and patient outcomes.
- 2.Ultrasound Technology Integration:** In collaboration with Genius Holding, our use of ultrasound technology in diagnostics provides non-invasive, precise monitoring of sleep behavior and respiratory function.
- 3.Innovative Diagnostic Devices:** Our devices, like Rhinomanometry and sleep head trackers, use ultrasound for efficient, non-intrusive respiratory and sleep assessment.
- 4.Advanced Respiratory Equipment:** Our respiratory devices, developed with Genius Holding, leverage ultrasound for superior lung function evaluation and breathing training.

OpenAI Collaboration

- 1. Advanced AI Integration:** Partnering with OpenAI will enhance our sleep diagnostics and treatments through more sophisticated AI algorithms.
- 2. Data-Driven Insights:** Merging our patient data with OpenAI's AI models will enable deeper insights and more effective sleep disorder treatments.
- 3. Research and Development:** Collaboration with OpenAI will drive innovation in sleep medicine, using AI to develop new solutions and understand sleep patterns better.
- 4. Innovative Patient Care:** Utilizing OpenAI's capabilities can revolutionize patient interaction, offering personalized and intelligent care.
- 5. Global Impact:** Our partnership can make advanced sleep apnea management globally accessible, addressing a significant health challenge.

Market Potential & Competitive Advantage

Market Insights:

- 1. Expanding Market Size:** The Sleep Apnea Devices Market is estimated at USD 8.20 billion in 2024, with a growth trajectory to reach USD 11.68 billion by 2029, expanding at a CAGR of 7.33% (2024-2029).
- 2. Rising Prevalence:** Increasing incidence of sleep apnea, driven by aging populations and lifestyle factors, underpins this market growth.
- 3. Technological Advancements:** Innovations in sleep apnea devices, like those offered by Dr. BreathE, are key market drivers.

Dr. BreathE's Competitive Edge:

- 1. Innovative Approach:** Our integration of AI and ultrasound technology sets us apart, offering more precise and personalized care.
- 2. Comprehensive Solutions:** From custom oral appliances to advanced diagnostic devices, we provide a broader range of solutions than many competitors.
- 3. Focus on Patient Outcomes:** Our technology-driven approach leads to better patient outcomes, positioning us as a leader in sleep apnea care.

Business Model and Revenue Streams

- 1.Partnerships:** Technical support from Genius Holding for advanced ultrasound technology enhances our product offerings, creating value for both entities.
- 2.Sales:** Direct sales of personalized oral appliances, respiratory equipment, home-based sleep monitoring services, etc.
- 3.Subscriptions:** Our app offers tiered subscription plans for regular monitoring, data analysis, and AI-driven insights.(With OpenAI API for personal treatment)
- 4.Licensing:** We license our patented technologies to other specified partner in some regionals, providing an additional revenue stream.

Roadmap and Future Plans

- **2024 Q4:** Achieve FDA 510(k) clearance for our Sleep Head Tracking Diagnostic Device, capitalizing on the regulatory pathway forged by devices like the Sunrise Sleep Apnea Device.
- **2025 Q2:** FDA Approval for Rhinomanometry, setting a new standard for non-invasive sleep diagnostics.
- **Market Expansion:** Expand our reach in the North American market, leveraging FDA approvals to build consumer trust and adoption.
- **Product Development:** Introduce new AI-enhanced features and updates to our sleep assessment app, staying ahead of tech trends and user needs.
- **Strategic Collaborations:** Explore further collaborations with tech and healthcare entities, including OpenAI, to enhance our product ecosystem and data analysis capabilities.

Goals and Milestones:

- Position Dr. BreathE as a leader in sleep apnea diagnostics and management.
- Drive growth through continuous innovation and adherence to regulatory standards.
- Foster partnerships that align with our mission to revolutionize sleep apnea care.

Conclusion and Call to Action

- We invite OpenAI to join us in revolutionizing sleep medicine. Together, we can expand the North American market by integrating OpenAI's AI capabilities with our innovative products, mirroring the success of companies like SomnoMed, yet extending beyond to offer a full suite of AI-enhanced solutions for sleep disorders.
- Let's connect, create, and lead the future of sleep health.



Appendix: Oral Appliance IPO SomnoMed

- SomnoMed oral appliance is a public company that was founded in 2004 and listed on the Australian Stock Exchange in 2006. The company operates in 28 countries and has treated more than 715,000 patients with its oral appliances.
- The company's flagship products are SomnoDent® Avant™ and SomnoDent® Herbst Advance Elite™, which are custom-made devices that move the lower jaw forward to open the airway during sleep.
- The company's peak market capitalization of about \$83.5 million AUD (January 2022, SomnoMed's revenue for the fiscal year 2023 was \$72.6 million, up 16% from the previous year.
- The company is also developing Rest Assure®, the world's first technology-enabled oral appliance, which will provide data on the efficacy and compliance of the treatment⁸. The company expects to receive regulatory approval and launch the product in the US market in 2024.

1. [SomnoMed-announces-worlds-first-tehcnoology-enabled-oral-appliance-31.1.22.pdf](#)
2. [SomnoMed Limited Announces World First Technology Enabled Oral Appliance -January 30, 2022 at 05:50 pm EST | MarketScreener](#)
3. [SomnoMed Announces World's First Technology-Enabled Oral Appliance | SomnoMed US](#)
4. [SomnoMed posts record Q4 and delivers on FY22 revenue guidance \(prnewswire.com\)](#)
5. [Sleep Apnea Devices Market - Size & Outlook \(mordorintelligence.com\)](#)

SomnoMed Oral Appliance

SomnoDent-Fusion SomnoDent-Classic



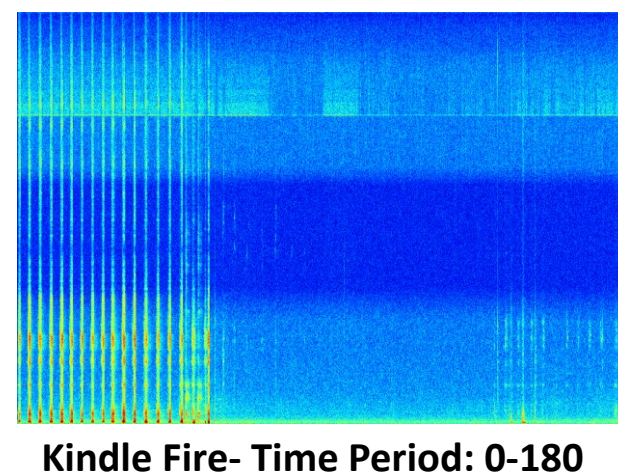
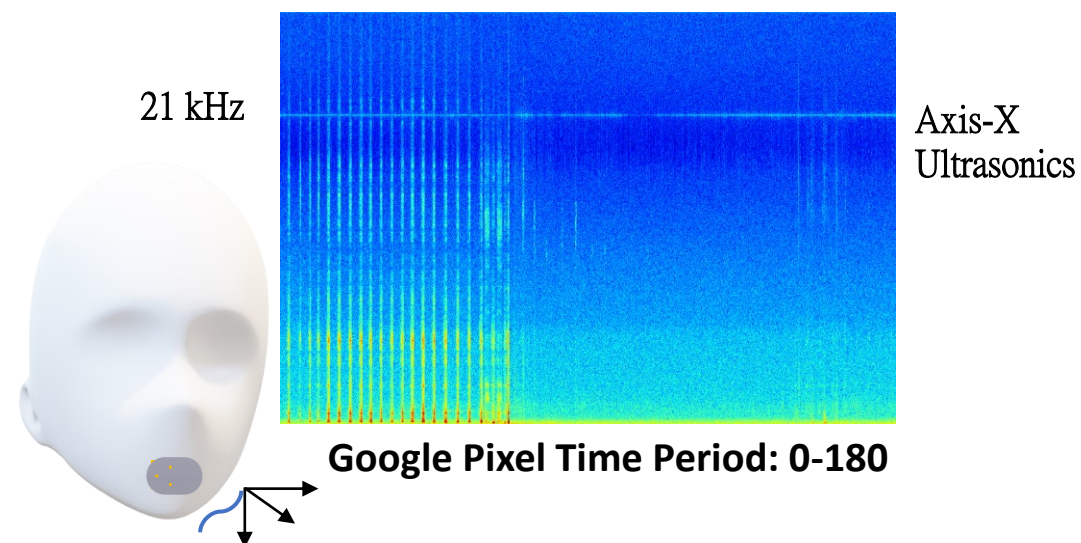
SomnoDent-Avant



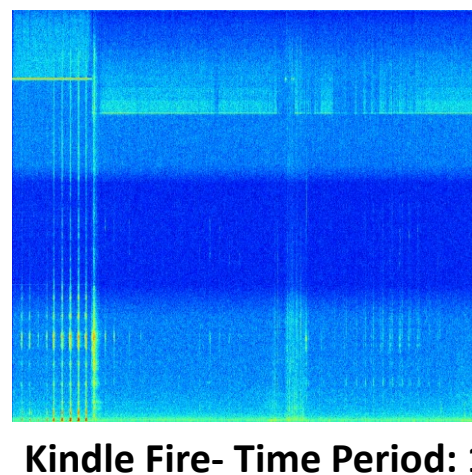
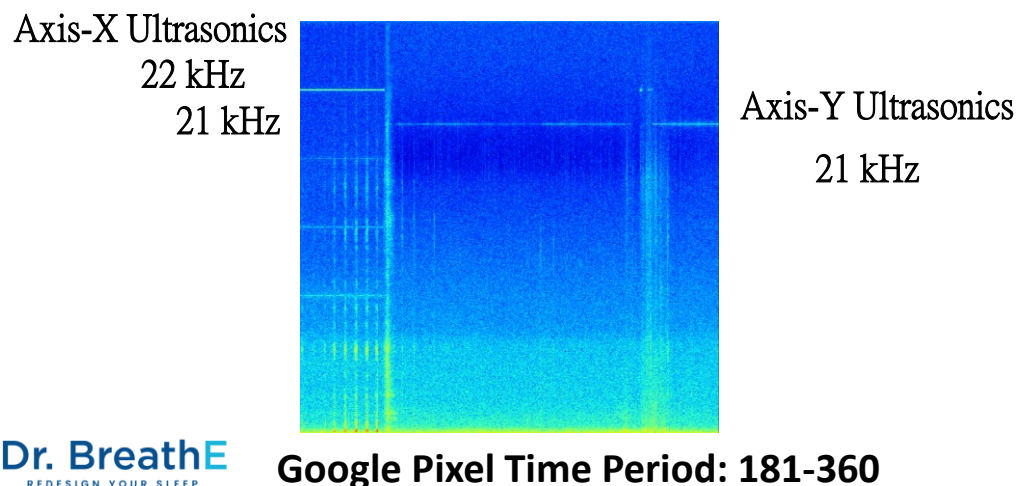
Herbst Advance



Different Smartphone Microphone Spectrograms

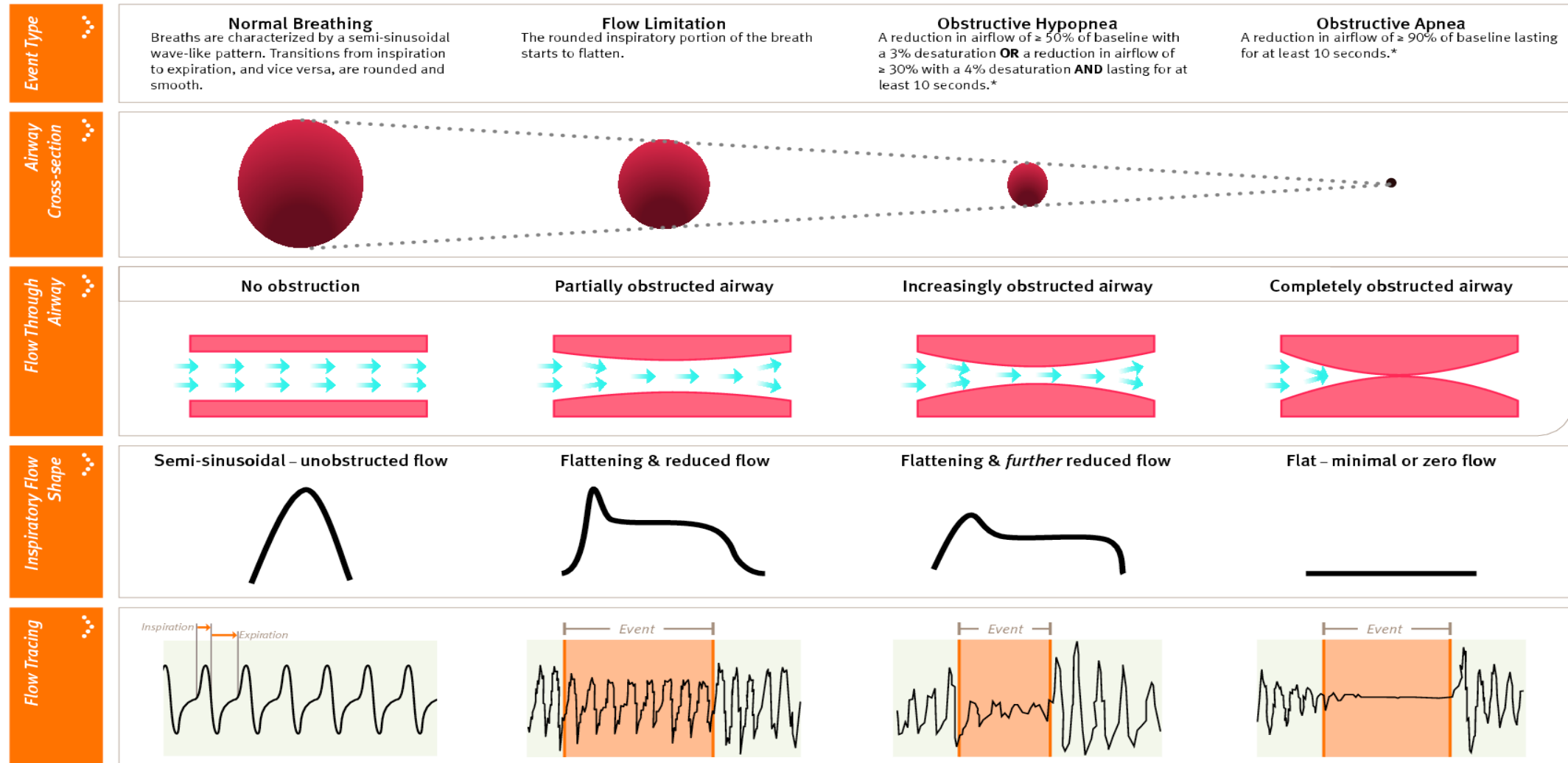


- Different smartphones microphones, and audio codecs both affect the sensitivity and intensity.
- The ultrasonics will also describe the motion within sleeping, and improve the accuracy of AI for audio analysis.



Spectrogram Parameter
Time Period: 180sec
Frequency Range: 0-24kHz

Fundamentals of Sleep & Obstructive Sleep Apnea



Normal

Hard Breathing

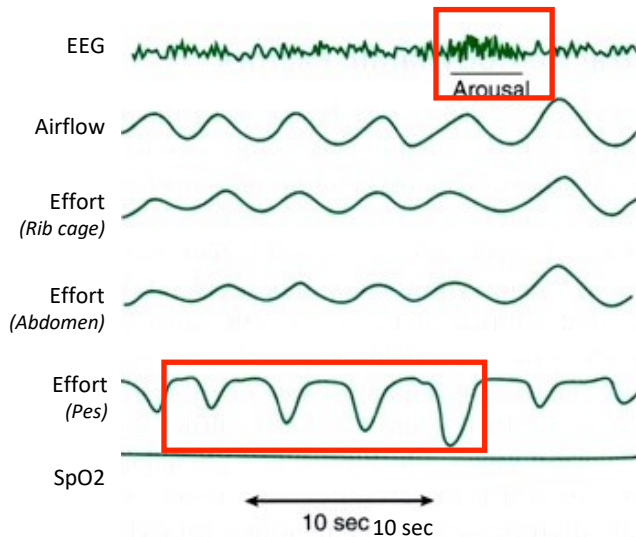
Hypopnea

Apnea

Sleep related breathing disorders

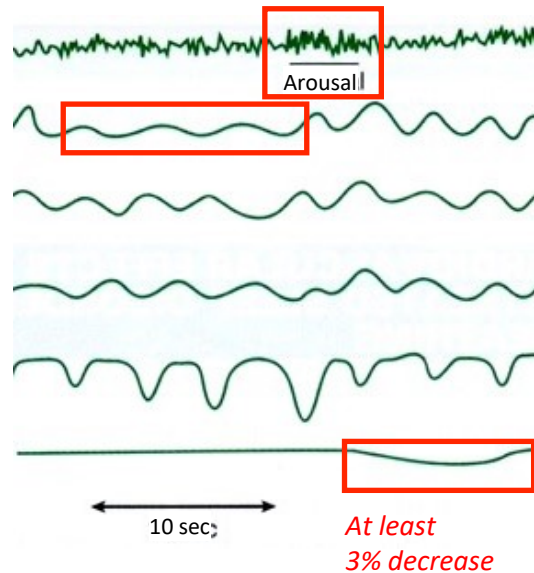
RERAs

(Respiratory Effort-Related Arousals)



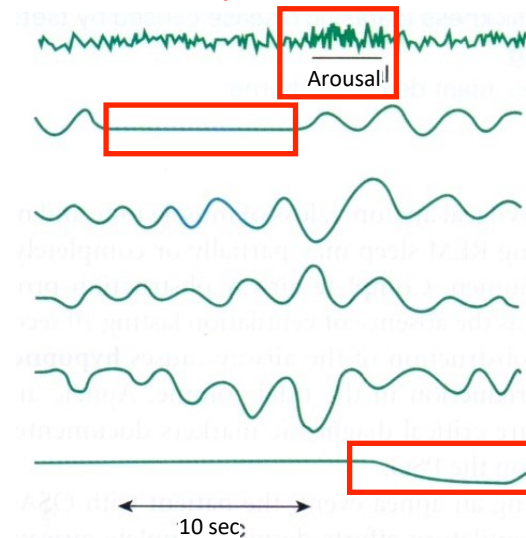
Hypopnea

10~70% of
baseline airflow



Apnea

< 10% of
baseline airflow

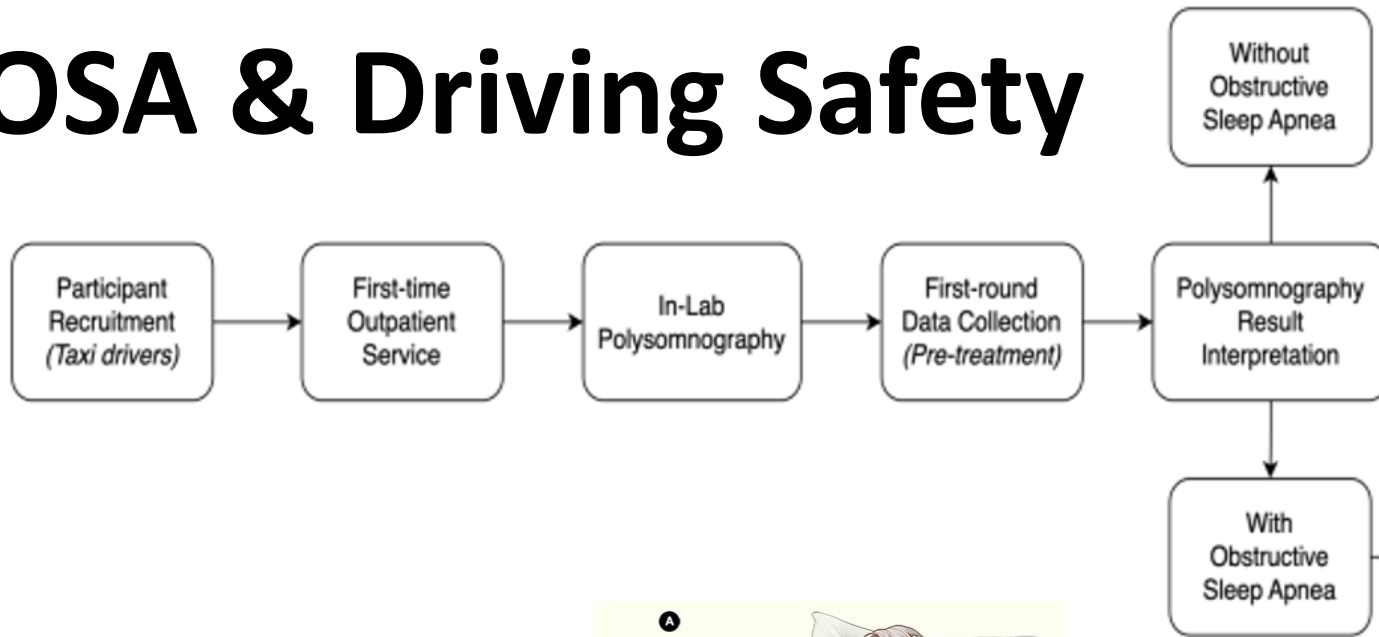


- **Apnea-Hypopnea Index, AHI:**
 - (Events of Apnea and Hypopnea)/hour
- **Respiratory Disturbance Index, RDI:**
 - (Events of Apnea, Hypopnea and RERAs)/hour

Sleep apnea severity

< 5	Normal
5-14.9	Mild
15-29.9	Moderate
≥30	Severe

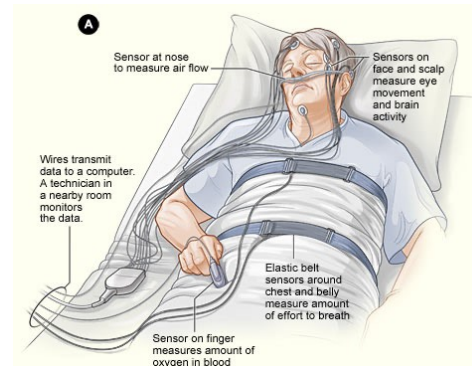
OSA & Driving Safety



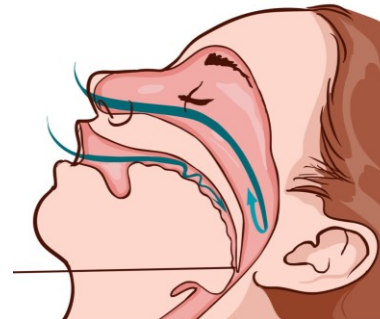
Taxi / Uber Drivers:

with/without OSA

CPAP or Conservative Treatment



Sleep apnea



OSA & Driving Safety

Table 6-4. Outcomes of self-reported driving fatigue among the recruited taxi drivers

Variables	Recruited taxi drivers (n=38)		<i>P</i>
	Drivers with severe OSA (n=22)	Drivers without severe OSA (n=16)	
Self-reported driving fatigue			
Feel fatigued during driving (per week)			<0.01
0 times	-	6 (15.79%)	
1-2 times	22 (58.89%)	10 (26.32%)	
Fall asleep during driving (per week)			0.36
0 times	3 (7.9%)	5 (13.16%)	
1-2 times	19 (50%)	11 (28.95%)	
Fatigue affecting driving (per week)			<0.01
0 times	5 (13.16%)	11 (28.95%)	
1-2 times	17 (44.74%)	5 (13.16%)	
Self-perceived reason for fatigue			0.49
Sleep deficiency	15 (39.47%)	8 (21.05%)	
Excessive driving hours	5 (13.16%)	5 (13.16%)	
Monotonous environment	2 (5.26%)	3 (7.9%)	

Abbreviation: OSA, obstructive sleep apnea.

Data are expressed as number (percentage).

Chi-square test is applied for statistical analysis (P-value).

With / Without Severe OSA:

Feel fatigued during driving

Fatigue affecting driving