Mandibular Jaw Movement with the Sunrise device – Novel Parameters Beyond Home Polygraphy

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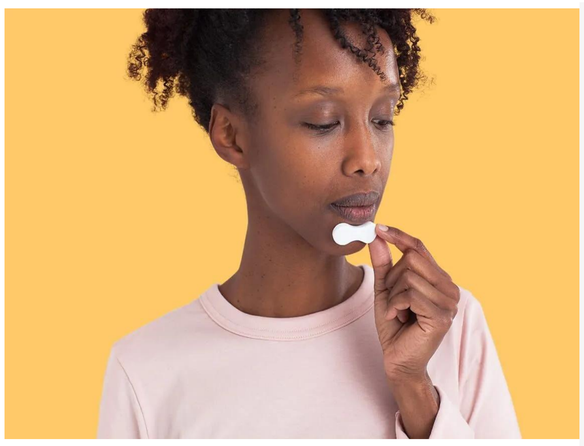
Introduction

Sunrise is a lightweight, 3-gram CE-marked sensor used during sleep to monitor mandibular jaw movements (MJM), indicative of sleep-disordered breathing (SDB). Worn on the chin (at home) Sunrise provides an automated report with sleep metrics, including the apnoea-hypopnea index (AHI), body mass index (BMI), Epworth sleepiness scale (ESS), insomnia severity index (ISI), total sleep time (TST), sleep stages, rhythmic masticatory muscle activity (RMMA), and sleep position. (1). A novel metric is the respiratory effort burden, representing the cumulative duration of obstructive events during sleep.



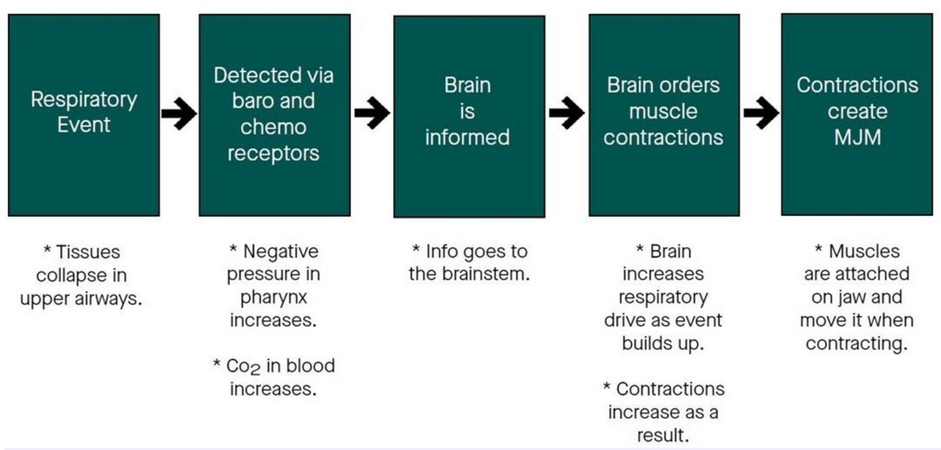
Aims

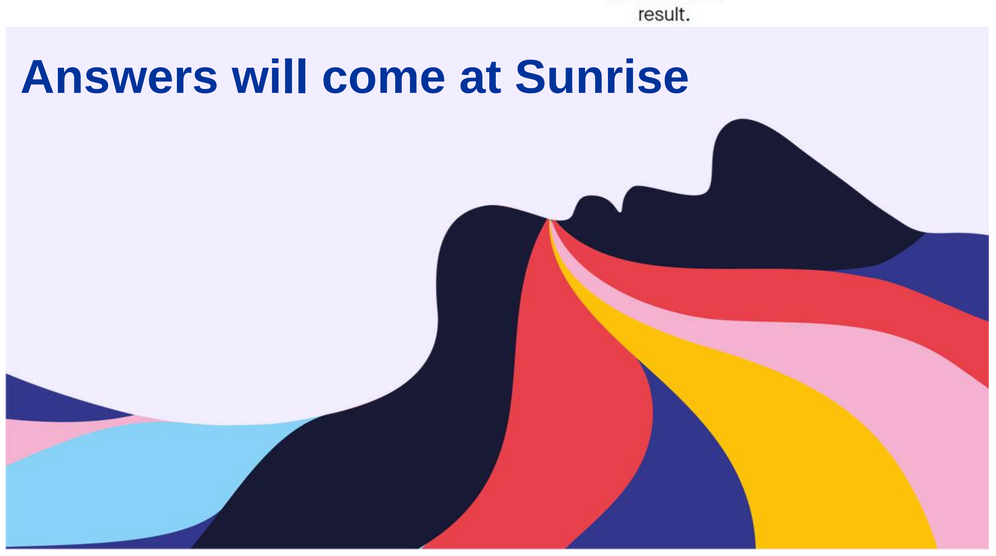
We aimed to conduct an audit evaluation of the first 25 cases referred to the service for consideration of a home sleep test with the sunrise device.

Methods

Methods: 25 adults referred from primary care with suspected SDB were included in this case series. Participants underwent a Sunrise test following a review by an Advanced Respiratory Nurse.

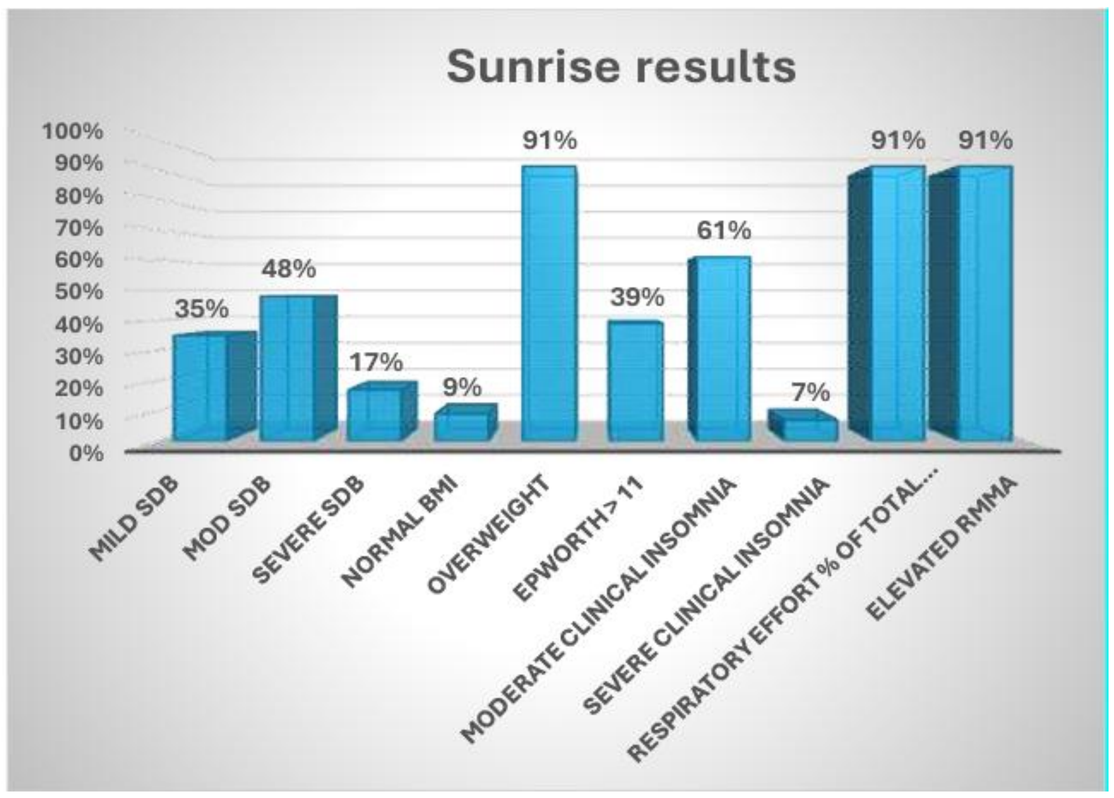
Physiology of Mandibular Jaw Movements





Results

25 (18 males, 7 females) completed the Sunrise test. Among these, 65% (18/25) showed moderate to severe SDB, while 88% (22/25) were overweight. An ESS score of 11 or higher was observed in 40% (10/25). Additionally, 68% (17/25) reported possible comorbid insomnia. Elevated RMMA, (bruxism episode index, BEI >4), was seen in 92% (23/25), Respiratory effort burden exceeded 30% of TST in 84% (21/25) of the Sunrise tests.



Conclusions

- The high prevalence of obesity observed in this series highlights the importance of weight management.
- The high prevalence of Co-morbid insomnia and excessive Sleep bruxism in this series warrants further investigation.
- Elevated respiratory effort burden is linked to increased risk of Type 2 diabetes (2) and hypertension (3).
- Respiratory effort burden is important due to its association with sympathetic overactivity and vascular changes common in sleep apnoea.
- Sunrise measures parameters beyond standard home polygraphy, providing advanced insights into SDB.
- By leveraging these insights, clinicians can potentially enhance and apply personalised treatment strategies for individuals with sleep-disordered breathing.

Bibliography

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2. Martinot, J.B., Le-Dong, N.N., Malhotra, A. and Pepin, J.L., 2023. Respiratory Effort During Sleep And Prevalent Diabetes In Obstructive Sleep Apnea.
3. Martinot, J.B., Le-Dong, N.N., Malhotra, A. and Pépin, J.L., 2023. Respiratory effort during sleep and prevalent hypertension in obstructive sleep apnoea. *European Respiratory Journal*, *61*(3).