SINGAPORE SLEEP REVIEW

SINGAPORE SLEEP SOCIETY NEWSLETTER

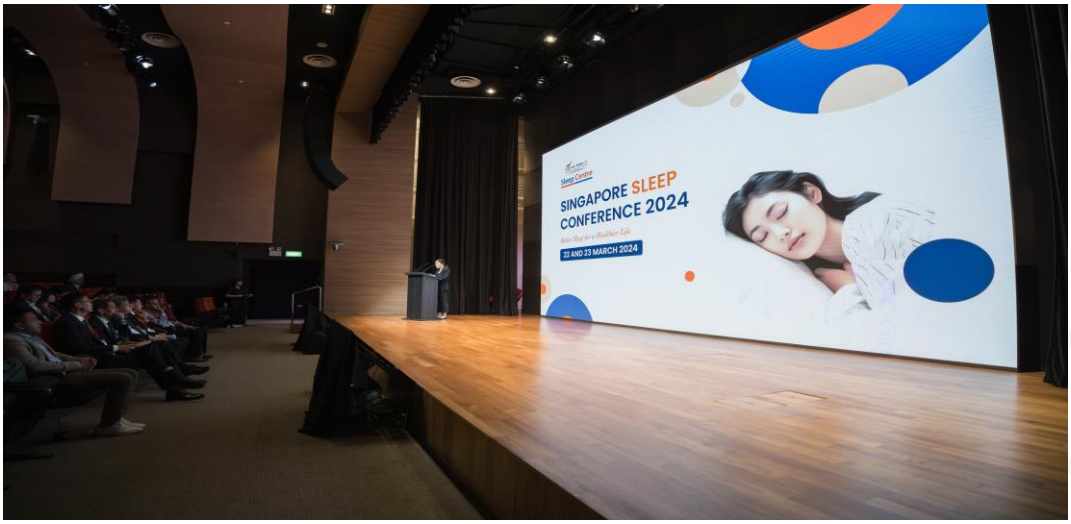
VOLUME 2 | ISSUE 2 | MAY | 2024

PRESIDENT'S MESSAGE

It is our pleasure to present the second issue of the Singapore Sleep Review of this year. Our writers have gathered a new selection of recent studies from leading international and Singapore research groups. In this issue, we highlight the interaction of sleep with hypertension, cognition, smartphone usage, and class start times.

Since the last issue, we look back on several successful events, with World Sleep Day webinars and forums, and a wonderful 2-day Singapore Sleep Conference. We thank our colleagues from the SingHealth/Duke-NUS Sleep Centre for their organization. We also look forward to some very exciting developments. The Singapore Sleep Society has joined the World Sleep Society as an Associate Society Member, and the World Sleep Congress 2025 will be hosted in Singapore. We hope to keep you informed about any related developments and contribute to the vibrant sleep community in Singapore.

Dr Sridhar Venkateswaran
President, Singapore Sleep Society



Impression of the Singapore Sleep Conference 2024

Singapore Sleep Society
Sleep Apnea Support Group

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Singapore Sleep Society

HYPERTENSION

OSA is a common risk factor for high blood pressure. A randomised trial tested the effects of mandibular advancement and CPAP treatment on blood pressure markers

SLEEP RESTRICTION

Recurrent cycles of sleep restriction and extension may affect performance depending on sleep duration variability

TECHNOLOGY

Self-perceived and objectively tracked smart phone usage show differential links with sleep and mental health

EDUCATION

Digital learning interactions reveal links between sleep academic outcomes

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Singapore Sleep Society joins the World Sleep Society

The World Sleep Society is a nonprofit, professional membership organization dedicated to advancing sleep health worldwide. It was founded in 2016 by a collaboration between World Sleep Federation (WSF) and the World Association of Sleep Medicine (WASM). Individual members and member societies from dozens of countries form the core of World Sleep Society.

The goal and purpose of World Sleep Society is to advance knowledge about sleep, circadian rhythms, sleep health, and sleep disorders worldwide, especially in those parts of the world where this knowledge has not advanced sufficiently. Currently, its members provide the world-class sleep medicine and science expertise needed to develop and guide programs like the biennial World Sleep congress, World Sleep Day, World Sleep Academy, and the International Sleep Research Training Program.

The Singapore Sleep Society has just joined the Word Sleep Society as an Associate Society Member. As such, we can keep you informed about the latest news, events, and courses from the World Sleep Society and its Associate Societies. SSS members will also enjoy reduced membership fees to join the WSS as an individual member, and online access to *Sleep Medicine*. By joining the WSS, we hope to serve the Singapore sleep community even better.

Visit the World Sleep Society at:
https://worldsleepsociety.org/

Singapore to host the World Sleep Congress 2025

From 5 to 10 September 2025, the World Sleep Congress will be held in Singapore. This will be the 18th global congress organized by the World Sleep Society. This 6-day event will attract sleep experts from all over the world and will provide a great opportunity for sleep professionals to learn, share, and network among the world's leading sleep clinicians and scientist.

The previous World Sleep Congress was held in 2023 in Rio de Janeiro, Brazil, and attracted over 3000 attendees from 71 countries. Selected presentations can be freely viewed from the World Sleep Society website. WSS members enjoy full on-demand access.

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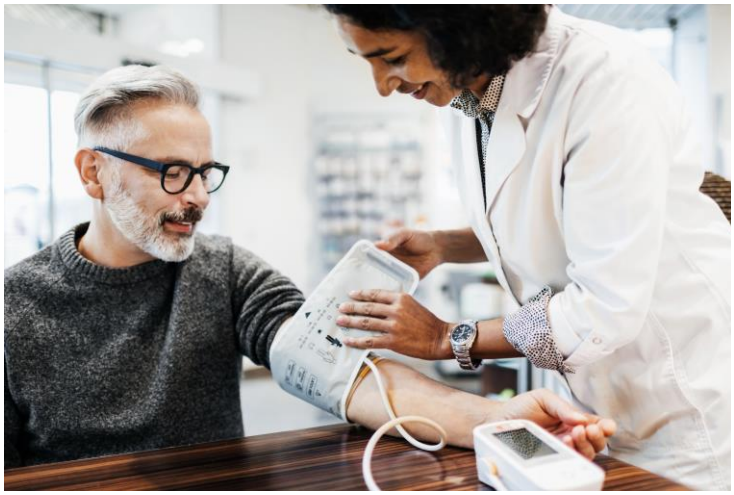
Mandibular advancement and CPAP treatment of OSA effects on hypertension



Reference: Ou, Yi-Hui, et al. (2024). Mandibular advancement vs CPAP for blood pressure reduction in patients with obstructive sleep apnea. Journal of the American College of Cardiology 83.18 (2024): 1760-1772. https://doi.org/10.1016/j.jacc.2024.03.359

OSA is a common risk factor for hypertension. Current guidelines recommend to screen for OSA when treating hypertension. The first-line treatment for OSA, CPAP, is not always well-tolerated and patient adherence can be challenging.

A recent randomized trial led by researchers from the National University of Singapore tested the efficacy of an alternative OSA treatment with a mandibular advancement device for blood pressure reduction. A total of 321 patients with high blood pressure were screened for OSA. Two-hundred and twenty-one patients were found to have moderate to severe OSA and were randomly assigned to mandibular advancement or CPAP treatment. Only patients who were not already treated for OSA were included to ensure all patients were unbiased to either treatment type. Patients randomized to the mandibular advancement arm were fitted with a personal mandibular advancement device (MAD) worn through the night to advance the lower jaw and reduce airway obstruction. Patients in the CPAP arm received auto-titrating continuous positive airway pressure treatment. After an acclimatization period, all patients received treatment for 6 months after which they paid a follow-up visit to assess clinical endpoints.

The primary aim of the study was to test for non-inferiority of MAD compared to CPAP treatment to lower blood pressure markers in hypertensive patients. As such, the 6-month follow-up results showed that the MAD group had significantly lowered 24-hour blood pressure, whereas the CPAP group showed no significant improvement. The improvements in the MAD group were particularly evident during the asleep blood pressure measurements. Both groups showed improved daytime sleepiness, with no differences between groups. Furthermore, no group differences in blood test-based cardiovascular biomarkers were found.

Importantly, 6-month adherence seemed to be slightly higher for the MAD group, with an average usage of 5.45 hours per night versus 4.98 hours per night for the CPAP group. On the other hand, CPAP seemed to be more effective in treating OSA-specific outcomes with a residual apnea-hypopnea index of 2.0 events per hour versus 10.8 events per hour for the MAD group. The MAD group also seemed to report fewer side effects than the CPAP group.

Conclusion

Treatment of OSA through mandibular advancement is non-inferior to CPAP in lowering blood pressure. MAD therefore may be a viable alternative for CPAP to treat OSA and high blood pressure in hypertensive patients.

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Sleep restriction with stable or variable sleep duration

Reference: Koa, Tiffany B., et al. "Neurobehavioral functions during recurrent periods of sleep restriction: effects of intra-individual variability in sleep duration." Sleep (2024): zsae010. https://doi.org/10.1093/sleep/zsae010

Weekend sleep extension is used by many to compensate for weekday sleep loss. However, previous adolescent studies suggest that it may be insufficient for the complete recovery of neurobehavioural impairments incurred from multiple nights of short sleep.

Most studies investigating this in young adults are limited to a single cycle of sleep restriction and extension and fail to consider what happens when such cycles are repeated. Furthermore, sleep extension is not only restricted to weekends and can also occur mid-week, which increases the night-to-night variability in sleep duration. Yet, it is still unclear how such sleep variability affects neurobehavioural functions.

Therefore, in a 16-day laboratory-based experiment, Koa et al. (2024) investigated how neurobehavioural functions change in young adults during two successive cycles of simulated weekday sleep restriction and weekend sleep extension, and whether a variable short sleep schedule results in different levels of neurobehavioural impairments relative to a stable schedule. They randomly assigned 52 healthy young adults to three different sleep schedules – stable short sleep, variable short sleep, and well-rested control, and assessed the participants' neurobehavioural functions five times a day.

They found that the stable short sleep group, but not the variable short sleep group, showed faster deterioration in their daily average vigilance performance during the second week of sleep restriction as compared to the first week. They also observed that both short sleep groups showed diminished subjective alertness and practice-based improvement in processing speed.

The authors therefore concluded that in young adults, more variable short sleep schedules that included days of prophylactic or recovery sleep may mitigate compounding vigilance deficits resulting from recurrent cycles of sleep restriction. However, both short sleep schedules still resulted in impairments to processing speed and subjective alertness. Thus, getting sufficient sleep on a consistent basis is the only way to ensure optimal neurobehavioural functioning.

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Night-time smartphone use, sleep, and mental health

Reference: Otte Andersen, et al. (2023). Nighttime smartphone use, sleep quality, and mental health: investigating a complex relationship, Sleep, Volume 46, Issue 12, zsad256, https://doi.org/10.1093/sleep/zsad256

In recent years, sleep advisory often strongly discourages the use of electronic screens before bedtime. Most evidence, however, comes from studies where participants self-report their screen and sleep habits. Only very few studies have included objectively measured screen usage.

The current paper, published in 2023, investigated the relationships between (1) nighttime smartphone use, (2) sleep quality, (3) and three indicators of mental health, analysing data from sensor-driven smartphone tracking, in-depth clinical examinations, nationwide health registries and a survey. In alignment with previous studies, individuals with the poorest self-reported sleep quality were shown to have 5 times higher odds of experiencing high perceived stress, 10 times higher odds of experiencing severe depressive symptoms, and 2 times higher odds of using psychotropic medication 1 year after the baseline study, as compared to those with good self-reported sleep quality. Those with the most frequent self-reported use of their smartphones during their sleep period had 2 times higher odds of experiencing high perceived stress and 3 times higher odds of experiencing severe depressive symptoms as compared to those with no nighttime smartphone use.

On the other hand, there were no significant associations between objectively tracked (objectively measured) smartphone use and any of the mental health indicators, except for 1 cluster (that used phones repeatedly throughout the sleep period) which had higher odds of severe depressive symptoms.

Class start-times, sleep, and academic performance

Reference: Yeo, et al. (2023). University students' diurnal learning-directed behavior is strongly influenced by school start times with implications for grades, Sleep, Volume 46, Issue 7, zsad141, https://doi.org/10.1093/sleep/zsad141

Class times often do not align with students' preferred schedules and create discrepancies in both their diurnal behaviour and sleep schedules. This can be detrimental for their general well-being as well as academic performance.

In this study, led by researchers from the Duke-NUS Medical School, (N = 33,345), students' online activity in the university's learning management system (LMS), such as Canvas and Moodle, represented diurnal learning behaviour. Comparisons between school and non-school days showed that most students (89.9%) had earlier login patterns on school days but preferred to study later in the day. The larger this behavioural desynchrony, the lower the GPA observed with effect sizes ranging from small to medium (d = -0.08 to -0.38). Students of the late LMS login chronotype (identified by their login behaviour on non-school days) tended to display the greatest behavioural desynchrony. As a result, such individuals are at the greatest learning disadvantage due to the structure of current education systems.

The authors propose to (1) optimize class times to minimize the observed circadian misalignment, (2) urge instructors to provide on-demand recorded lectures to allow for flexible learning schedules, and (3) utilize their methodological techniques to identify at-risk students with large misalignment.

CALENDAR

1-5 JUN

SLEEP 2024

The 38th annual meeting of the Association for Professional Sleep Societies

Houston, Texas, USA, www.sleepmeeting.org

24-27 SEP

ESRS 2024

The 27th Conference of the European Sleep Research Society

Seville, Spain, https://esrs.eu/sleep-congress/

16-19 OCT

Sleep DownUnder 2024

The 35th annual scientific meeting of the Australasian Sleep Association and the Australian and New Zealand Sleep Science Association

Queensland, Australia, https://sleep.org.au/Public/Public/Events/SDU2024.aspx

SAVE THE DATE

World Sleep 2025 (Singapore)

The 18th congress of the World Sleep Society

Date: 5-10 September 2025
https://worldsleepcongress.com/

Singapore Sleep Society

Membership Application and Fees

Ordinary members
$30/year – sleep professionals with a medical degree, PhD or equivalent.

Associate members:
$10/year – any person involved in the field of sleep disorders without the above qualification.

Supporting members:
Corporations and individuals supporting the society financially.

Complete the application form and email to:
singaporesleepsociety.sg@gmail.com

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