

# SINGAPORE SLEEP REVIEW

SINGAPORE SLEEP SOCIETY NEWSLETTER

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## PRESIDENT'S MESSAGE

We welcome you to the third issue of the Singapore Sleep Review. This issue marks the end of the first year in office for the current Executive Committee. We look back on an active and fulfilling year for the Singapore Sleep Society.



We are happy to continue the publication of our newsletter into the new year. With this newsletter, we intend to keep you informed about recent advances in sleep medicine and science, and keep you updated about relevant events, both locally and internationally. If you would like any research, events, or other news to be highlighted, let us know. The Singapore Sleep Society aims to promote the vibrant sleep scene in Singapore and the region.

Dr Sridhar Venkateswaran  
President, Singapore Sleep Society

## Night shift affects analgesic prescription

Reference: Choshen-Hillel, S., et al., 2022. Physicians prescribe fewer analgesics during night shifts than day shifts. *Proc Nat Acad of Sci*, 119(27), p.e2200047119. <https://doi.org/10.1073/pnas.2200047119>

A large-scale analysis of hospital discharge records of two Israeli and American hospital clusters found that A&E physicians were less likely to prescribe analgesic medication to patients suffering from pain, when they

presented during night-shift hours, compared to when they presented during the day. The analysis included 13,482 individual records taken over 7 years. For the same pain ratings, night shift physicians prescribed 31-35% less analgesics (opioid and non-opioid). This effect was clearest for moderate to severe pain, where opioid prescription is recommended according to WHO guidelines. The authors point towards a reduction in empathy for pain as a potential mechanism.



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## SHIFT WORK

Night shift work may reduce empathic sensitivity and affect medical decision making by A&E physicians

## SLEEP APNEA

Sleep discontinuity and OSA are associated with poorer cognitive function in middle aged and older adults

## OSA DIAGNOSIS

At-home assessment of OSA can help to speed up diagnosis and treatment and save costs

## INSOMNIA

A randomized clinical trial tests the efficacy of Mindfulness-Based Therapy for Insomnia in Singaporean older adults



# Sleep architecture, OSA, and cognitive function in adults

Reference: Pase MP, Harrison S, Misialek JR, et al. Sleep Architecture, Obstructive Sleep Apnea, and Cognitive Function in Adults. *JAMA Netw Open*. 2023;6(7):e2325152. <https://doi.org/10.1001/jamanetworkopen.2023.25152>

Poor sleep contributes to cognitive decline in adulthood. This study analysed data from 5 large-scale epidemiological cohorts. The cohorts sampled across a wide age range of middle aged and elderly adults.

A total of 5946 participants were included. All participants underwent overnight, home-based type II polysomnographic sleep study and at follow-up within 5 years underwent a cognitive assessment. A variety of cognitive tests was taken for each cohort, and a combined performance scores were used to calculate an estimate of "global cognition".

Across cohorts, higher sleep efficiency (percentage of the sleep period in which participants were actually asleep), and lower wake after sleep onset were associated with better global cognition. Persons with mild to severe OSA had poorer cognition scores. The contributions of specific sleep stages (N1, N2, N3, REM) were not associated with cognitive function. This lack of association is somewhat surprising since individual sleep stages (particularly REM and N3 slow wave sleep) have previously been found to affect cognitive decline and glymphatic clearance of the brain's amyloid burden.



When looking at specific cognitive domains, shorter total sleep time (< 6 hours) was associated with poorer attention and speed of processing, but not with memory and visuospatial performance. The strength of this study is that it combines large-scale samples across a wide age range with a uniform sleep study set up. The choice of cognitive tests, however, was not equal across all cohorts, and may affect the estimate of global cognition slightly.

## Conclusion

This study finds cross-sectional evidence for a relationship between sleep continuity (sleep efficiency, less wake after sleep onset) and OSA with cognitive function, in a large epidemiological sample.

  
Up to **67%** of women suffer from sleep issues<sup>1</sup>

  
Almost **40% higher** lifetime risk of insomnia than men<sup>2</sup>

  
**Sleep Apnea** in women is often underdiagnosed, and undertreated<sup>3</sup>

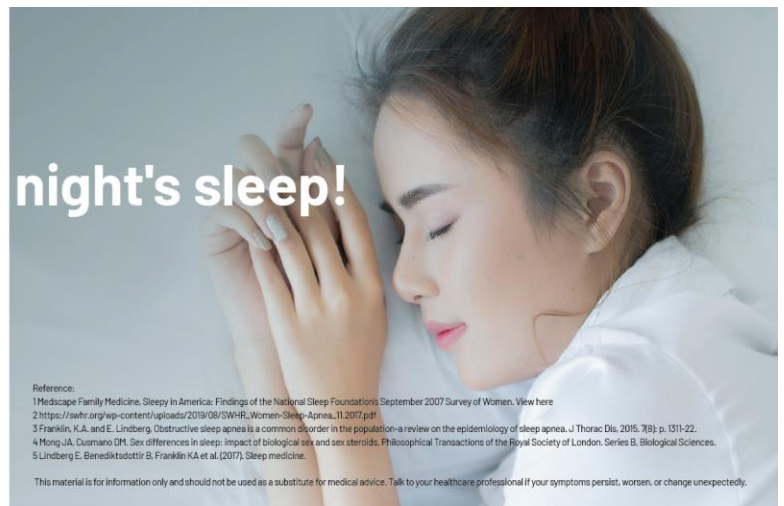
## Give women the gift of a good night's sleep!

Obstructive sleep apnea (OSA) affects nearly 1 in 5 women and has been linked to serious health risks like hypertension and heart failure<sup>4</sup>.

Resmed have been helping people with sleep apnea for over 30 years, join forces with us to improve women's overall sleep health today!



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[ap.resmed.com/join](https://ap.resmed.com/join)



Reference:  
1 Medscape Family Medicine. Sleepy in America: Findings of the National Sleep Foundation's September 2007 Survey of Women. View here  
2 [https://awhr.org/wp-content/uploads/2019/08/SWHR\\_Women-Sleep-Apnea\\_11.2017.pdf](https://awhr.org/wp-content/uploads/2019/08/SWHR_Women-Sleep-Apnea_11.2017.pdf)  
3 Franklin KA, and E. Lindberg. Obstructive sleep apnea is a common disorder in the population—a review on the epidemiology of sleep apnea. *J Thorac Dis*. 2015; 7(8): p. 1311-22.  
4 Hong JA, Cucciano DM. Sex differences in sleep: impact of biological risk and sex steroids. *Philosophical Transactions of the Royal Society of London. Series B, Biological Sciences*.  
5 Lindberg E, Benediktsson B, Franklin KA et al. (2017). Sleep medicine.

This material is for information only and should not be used as a substitute for medical advice. Talk to your healthcare professional if your symptoms persist, worsen, or change unexpectedly.

# Ambulatory diagnosis of OSA shortens time to diagnosis and treatment

Reference: Phua, C.Q., Jang, I.J., Tan, K.B. et al. Reducing cost and time to diagnosis and treatment of obstructive sleep apnea using ambulatory sleep study: a Singapore sleep centre experience. *Sleep Breath* 25, 281–288 (2021). <https://doi.org/10.1007/s11325-020-02115-z>

Traditional in-hospital polysomnography (PSG) is the gold standard for OSA diagnosis but is associated with long wait time owing to limited hospital beds availability. In addition, it is labour intensive and expensive.

Ambulatory sleep study, also known as home sleep apnea testing, offers a more accessible and potentially cost-effective alternative to hospital polysomnography. This study aimed to investigate if ambulatory sleep study (WatchPAT) reduces time to diagnosis and treatment of OSA in a tertiary healthcare setting. A secondary aim was to investigate the cost-benefit of an ambulatory sleep study. The authors evaluated all patients who underwent diagnostic sleep studies in a single tertiary institution from 2014 to 2017 in a retrospective review, where time to diagnosis and time to treatment with CPAP therapy was compared between patients who underwent PSG and patients who underwent ambulatory sleep study.

Findings of the study showed, of 1898 patients who had diagnostic sleep studies over a 4-year period, 1660 patients (88%) underwent PSG and 238 patients (12%) underwent ambulatory sleep study. Patients in the ambulatory group had a shorter time to diagnosis (21 days versus 79.8 days,  $p < 0.001$ ) and treatment (46.3 days versus 118.4 days,  $p < 0.001$ ) compared to the PSG group. Cost-benefit calculation showed that this earlier treatment led to cost-saving of US \$1179.50 per patient.



## Conclusion

This article emphasizes the potential of ambulatory sleep study to enhance the accessibility of sleep disorder diagnosis and treatment, particularly for patients with suspected OSA. The approach not only reduces the burden on healthcare facilities and resources but also improves the overall patient experience. In conclusion, the Singapore sleep centre's experience with ambulatory sleep study suggests that it can be a valuable tool in reducing the cost and time associated with the diagnosis and treatment of obstructive sleep apnea, benefiting both patients and healthcare providers.

**Disclaimer:** This publication is not intended as a replacement of regular medical education. The reviews are a summarized interpretation of the published studies and reflect the opinions of the writer rather than those of the original research group or the scientific journal. It is suggested that the reader reviews the full trial data before forming a final conclusion on its own merits.

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## Mindfulness-based therapy for insomnia in older adults

Reference: Perini, F., Wong, K., Lin, J., Hassirim, Z., Ong, J., Lo, J., . . . Lim, J. (2023). Mindfulness-based therapy for insomnia for older adults with sleep difficulties: A randomized clinical trial. *Psychological Medicine*, 53(3), 1038-1048. <https://doi.org/10.1017/S0033291721002476>

Behavioral sleep medicine aims to treat sleep problems that have no direct physical origin. Behavioral sleep problems like insomnia are prevalent globally and in the local population. While pharmacological treatment is often resorted to, behavioral therapy is the recommended first-line treatment for insomnia.

A recent clinical trial tested the efficacy of Mindfulness-Based Therapy for Insomnia (MBTI) to treat sleep complaints in a sample of elderly Singaporean adults. Mindfulness is a set of practices that aims to train conscious awareness of affective and bodily feelings, without casting judgement or immediately responding to those feelings. These practices have been found to reduce stress and ruminative thoughts and have been incorporated into therapy programmes treating a range of different psychiatric disorders. In the context of sleep, mindfulness can alleviate pre-sleep arousal and racing thoughts. This, in turn, can help to shorten the time needed to fall asleep, and reduce sleep disturbances. While several studies have found positive effects of mindfulness training on sleep problems, only few have incorporated training programmes that were specifically designed for sleep. Moreover, most studies lack objective measures of sleep (e.g. actigraphy or polysomnography) and can therefore less confidently pin point the physiological mechanism at play.

This randomized clinical trial included of 127 older adults (50-80 years old) with self-reported sleep problems. Participants were randomized into a Mindfulness-Based Therapy for Insomnia group (treatment) or a sleep education group (control), which lasted 8 weeks in both conditions. All participants were given weekly face-to-face classes with a trained therapist and were encouraged to practices the learned materials at home. Insomnia symptom severity and objective sleep measures (actigraphic and polysomnographic) were recorded prior to treatment and directly after the programme. Measures of sleep complaints, and pre-sleep arousal were further tested at 6-months follow-up.

After 8 weeks, both treatment groups reported improved sleep quality and reduced insomnia symptoms. The reduction in insomnia severity was stronger in the Mindfulness group than in the control group. Moreover, the mindfulness group showed a reduction in to taken to fall asleep (actigraphy-measured), and a reduction in wake after sleep onset (measured in actigraphy and polysomnography). These changes were not present for the control group. Overall, improvements in self-reported sleep quality persisted, even at 6-months follow up. Compliance rates were high, with participants in both arms completing an average of 7.4 out of 8 treatment sessions.

### Conclusion

Mindfulness Based Therapy for Insomnia can be an efficacious treatment method for sleep complaints. With high compliance rates, it may present an alternative or compliment to existing treatment.

## LOOKING FOR AN ALTERNATIVE CLINICALLY PROVEN TO TREAT OBSTRUCTIVE SLEEP APNEA

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- Effective
- Comfortable
- Patient Preferred Over CPAP

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## Insomnia and workplace productivity loss

Reference: Reynolds, et al. (2023), Insomnia and workplace productivity loss among young working adults: a prospective observational study of clinical sleep disorders in a community cohort. *Med J Aust*, 219: 107-112.  
<https://doi.org/10.5694/mja2.52014>

Sleep disorders can negatively impact our health and mental wellbeing. They can also affect our work performance and productivity. In many cases, however, sleep disorders remain undiagnosed.

In this prospective observational study, a sample of Australian working adults, recruited from population-representative birth-cohort, was followed for a year (at 22 years of age). 554 participants underwent an overnight polysomnographic sleep study and screening for sleep disorders. Following sleep study, they were queried every 3-months on their work productivity. The sleep screening showed that 120 participants had significant sleep disorders (90 insomnia, 30 OSA, 2 restless leg syndrome), only 17 of which were previously diagnosed. Workplace productivity loss was calculated as the number of hours a participant did not report to work (absenteeism) or did not at full capacity while at work (presenteeism). Over the year following the sleep study, people with sleep disorders had a median of 160 hours of workplace productivity loss, while people with no sleep disorders only missed 30 hours of productive work.

### Conclusion

Sleep disorders in young working adults are often undiagnosed and can lead to productivity loss. Insomnia was the most often found disorder followed by OSA.

## Working from home promotes sleep in working adults

Reference: Massar, et al. Working-from-home persistently influences sleep and physical activity two years after the COVID-19 pandemic onset. *Frontiers Psych*. 2023;14:1145893.  
<https://doi.org/10.3389/fpsyg.2023.1145893>

Three years after the pandemic onset, most offices have returned to fully in-person work. While there may be good reasons for promoting in-person interactions, there may be unseen benefits to working from home.

In the early pandemic, researchers have observed large and global shifts in sleep patterns. During home confinement, people tended to sleep later and longer. More people were able to obtain the recommended minimum of 7h sleep. In a recent study, similar shifts have been observed in the later pandemic period, when restrictions were more relaxed (2021-2022). While more people were returning to in-person work, a considerable portion of employees still worked from home. This study followed 225 Singaporean adults over a six-months period (from August 2021 to January 2022). On days on which participants worked from home, they were slept on average 20 minutes longer than on days when they worked in-person. This was about half of the time won from not having to commute when WFH. Physical activity, however, was reduced by 2500 steps per day on WFH days compared to in-person workdays.

### Conclusion

Singaporean working adults could benefit from continued WFH by gaining more sleep. Caution must be exercised to maintain physical activity levels.



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# Global differences in sleep duration and variability

Reference: Willoughby et al. (2023). Country differences in nocturnal sleep variability: Observations from a large-scale, long-term sleep wearable study. *Sleep Med*, 110:155-165. <https://doi.org/10.1016/j.sleep.2023.08.010>

A paper recently published by researchers in the Sleep and Cognition Lab at the NUS Yong Loo Lin School of Medicine has highlighted differences in sleep patterns across countries and global regions. The study analysed data from over 50 million night's sleep from over 220,000 Oura ring users across 35 countries (in Asia, North America, Europe, United Arab Emirates, and South Africa).

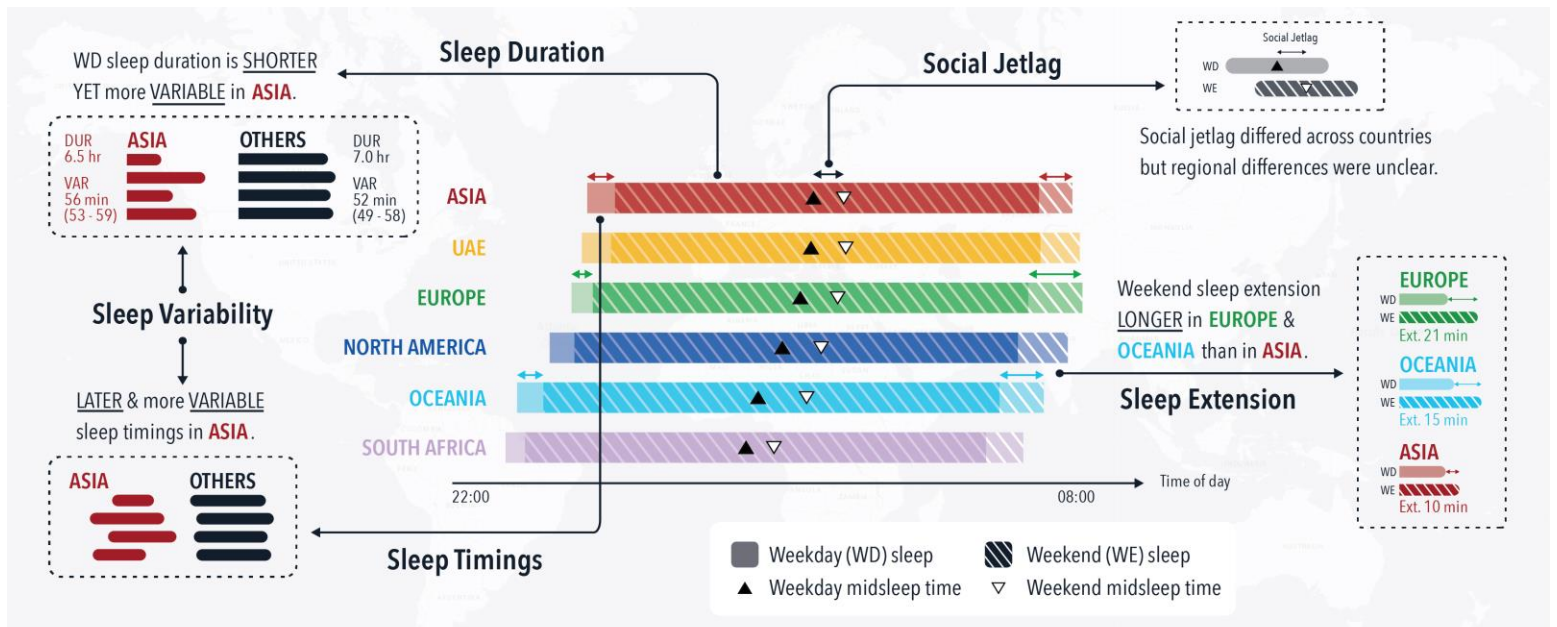
The results showed that people in Asia slept less than those in North America, who tended to sleep less than those in Europe. These differences in sleep duration were driven by later bedtimes rather than earlier rise times.

Beyond duration, there were also differences in sleep variability between countries. European countries showed much longer weekend sleep extension than those in the rest of the world; Asian Countries tended to show the least. Asian countries also showed more variability in their weekday sleep, both in terms of timing and duration.

The authors hypothesize that differences in working hours and work culture may go some way to explaining these differences in sleep patterns. Work culture in Europe (and to a lesser extent, the USA) has been influenced by a history of labour protection regulations. This means that people in Europe have shorter working hours and a clearer distinction between 'work' and 'non-work' time. In turn, this has resulted in different weekend behaviours in different countries; for example, weekends in Europe are for socializing with friends and family, often until late in the evening, resulting in long lie-ins in the morning. In contrast, people in Asia may continue to work at the weekends, or catch up on activities that they didn't have time for during the week, because of longer working hours, allowing less opportunity for sleeping in longer.

While future research is needed to test this hypothesis, and to investigate cultural differences in more detail, the results of this study suggest that differences in sleep patterns across countries can be quite significant, and that the effects of socio-cultural factors on sleep should not be neglected by sleep scientists.

**Conclusion**  
Large-scale wearable sleep tracker data reveals large global differences in sleep patterns. This highlights the importance of considering cultural factors in studying sleep across the world.



## CALENDAR

**23 AUG**

### **Singapore Sleep Society Annual General Meeting**

*Wednesday 23 August 2023, 6pm, Duke-NUS Medical School*

**01 SEPT**

### **SingHealth ENT Head & Neck Instructional Course**

*Polysomnography (PSG) workshop, Continuous Positive Airway pressure (CPAP) workshop, & Orofacial Myofunctional Therapy (OFMT) workshop*

Click [here](#) to register

**23 SEPT**

### **ESRS Online Sleep Medicine Exam**

*Sleep Medicine Exam for physicians, psychologists, sleep scientists, physician assistants and sleep technologists*

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**17-19 NOV**

### **ASPR 2023**

*27<sup>th</sup> Congress of the Asian Pacific Society of Respiriology*

Venue: Suntec Centre, Singapore

<https://apsr2023.sg/>

**10-13 DEC**

### **ASSM 2023**

*4<sup>th</sup> Congress of the Asian Society of Sleep Medicine, Bangkok, Thailand*

Including WSS Sleep Medicine Exam

<https://assm2023-bangkok.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.

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