

PRESS RELEASE

2 DECEMBER 2025 | FOR IMMEDIATE RELEASE

Short and irregular weekday sleep disrupts glucose regulation even after weekend sleep recovery, NUS Medicine study reveals

The study underscores the importance of sleep adequacy and stability and offers new insights into how disrupted sleep patterns may contribute to long-term metabolic risk.

Singapore, 2 December 2025 — Researchers at the Yong Loo Lin School of Medicine, National University of Singapore (NUS Medicine), have found that insufficient weekday sleep significantly disrupts glucose metabolism even when weekend sleep is extended. Published in [SLEEP](#), the study provides insights into the impact of recurrent sleep curtailment on the body's ability to process glucose and type 2 diabetes mellitus risk.

The study, led by Assistant Professor June Chi-Yan Lo, Principal Investigator at the Centre for Sleep and Cognition, NUS Medicine, with co-author Adjunct Associate Professor Khoo Chin Meng, from the Department of Medicine at NUS Medicine, examined how consistent short sleep and irregular short sleep schedules affected the body's ability to manage glucose. In a controlled environment in the sleep lab, 48 healthy young adults aged 21 to 35 years started the study with two nights of adequate sleep to assess their blood glucose and insulin levels at a well-rested state with an Oral Glucose Tolerance Test (OGTT). In the next two weeks, they were assigned to sleep schedules that simulated “stable short sleep”, “variable short sleep”, or adequate “control” sleep on weekdays. An OGTT was also administered at the end of each weeknight period.

The stable short sleep group slept six hours on each weekday night and eight hours on each weekend night, mirroring a typical work or school week. The variable short sleep group also slept eight hours on weekend nights, but followed a fluctuating weekday schedule ranging from four to eight hours each night, with the same total duration of time in bed as the stable short sleep group. The control group was given eight hours to sleep each night during the entire study. All the meals were tailored to the participant's individual caloric and macronutrient needs throughout the study.

Despite two nights of sufficient sleep on the weekends, both short sleep groups exhibited impaired glucose tolerance.

- For those who consistently slept six hours each weekday, signs of insulin resistance

were observed. Their bodies produced more insulin in an attempt to stabilise blood sugar; however, their blood glucose levels remained elevated compared to that at a well-rested state.

- The group with variable short sleep experienced even more prominent increases in glucose concentrations. Crucially, they showed no significant compensatory insulin overproduction, suggesting possible early impairment of the pancreas's insulin-producing cells.

These findings collectively indicate an increased risk of developing type 2 diabetes mellitus for short-sleeping individuals.

In contrast, the control group, which consistently had adequate sleep every night, showed no significant change in blood glucose levels throughout the study. These findings underscore the critical role of consistent, adequate sleep in glucose regulation. Furthermore, they suggest that weekday short sleep has a detrimental impact on our bodies' ability to process glucose, increasing type 2 diabetes mellitus risk, even with catch-up sleep on weekends, and that the regularity of our weekday short sleep could affect the way this impairment develops, and possibly how severe it gets.

"Many people believe weekend sleep can 'reset' the body, but our findings show that weekend catch-up sleep may not be able to prevent increases in blood glucose levels induced by subsequent sleep curtailment on weekdays," said Asst Prof Lo. "Our study findings suggest vital links between sleep duration as well as regularity, and type 2 diabetes mellitus risk. Understanding how sleep patterns affect glucose regulation can help us provide more holistic treatment plans." Asst Prof Lo holds appointments at the Human Potential Translational Research Programme and the Department of Medicine, NUS Medicine.

Adj Assoc Prof Khoo is also Head and Senior Consultant at the Division of Endocrinology, Department of Medicine, National University Hospital.

Through this study, the researchers aim to guide both individuals and health professionals to understand the factors that contribute to type 2 diabetes mellitus risk, and consider adequate and regular sleep as a possible intervention component when addressing metabolic health conditions. Future research may focus on the sleep patterns in other demographics and patients with underlying risk factors for type 2 diabetes mellitus.

For media enquiries, please contact:

Olivia CHOO

Communications Executive

Yong Loo Lin School of Medicine,

National University of Singapore

DID: +65 9056 7410

Email: medv4000@partner.nus.edu.sg

About National University of Singapore (NUS)

The National University of Singapore (NUS) is Singapore's flagship university, which offers a global approach to education, research, and entrepreneurship, with a focus on Asian perspectives and expertise. We have 15 colleges, faculties, and schools across three campuses in Singapore, with more than 40,000 students from 100 countries enriching our vibrant and diverse campus community. We have also established more than 20 NUS Overseas Colleges entrepreneurial hubs around the world.

Our multidisciplinary and real-world approach to education, research and entrepreneurship enables us to work closely with industry, governments, and academia to address crucial and complex issues relevant to Asia and the world. Researchers in our faculties, research centres of excellence, corporate labs and more than 30 university-level research institutes focus on themes that include energy; environmental and urban sustainability; treatment and prevention of diseases; active ageing; advanced materials; risk management and resilience of financial systems; Asian studies; and Smart Nation capabilities such as artificial intelligence, data science, operations research, and cybersecurity.

For more information on NUS, please visit <http://www.nus.edu.sg/>

About the NUS Yong Loo Lin School of Medicine (NUS Medicine)

The NUS Yong Loo Lin School of Medicine is Singapore's first and largest medical school. Our enduring mission centres on nurturing highly competent, values-driven, and inspired healthcare professionals to transform the practice of medicine and improve health around the world.

Through a dynamic and future-oriented five-year curriculum that is inter-disciplinary and inter-professional in nature, our students undergo a holistic learning experience that exposes them to multiple facets of healthcare and prepares them to become visionary leaders and compassionate doctors and nurses of tomorrow. Since the School's founding in 1905, more than 12,000 graduates have passed through our doors.

In our pursuit of health for all, our strategic research programmes focus on innovative, cutting-edge biomedical research with collaborators around the world to deliver high impact solutions to benefit human lives.

The School is the oldest institution of higher learning in the National University of Singapore and a founding institutional member of the National University Health System. It is one of the leading medical schools in Asia and ranks among the best in the world (Times Higher Education World University Rankings 2025 by subject and the Quacquarelli Symonds (QS) World University Rankings by subject 2025).

For more information about NUS Medicine, please visit <https://medicine.nus.edu.sg/>

