- Insomnia / Blood pressure

The dangers of inadequate sleep

Teens with insomnia who lack sleep may be at risk of high blood pressure.

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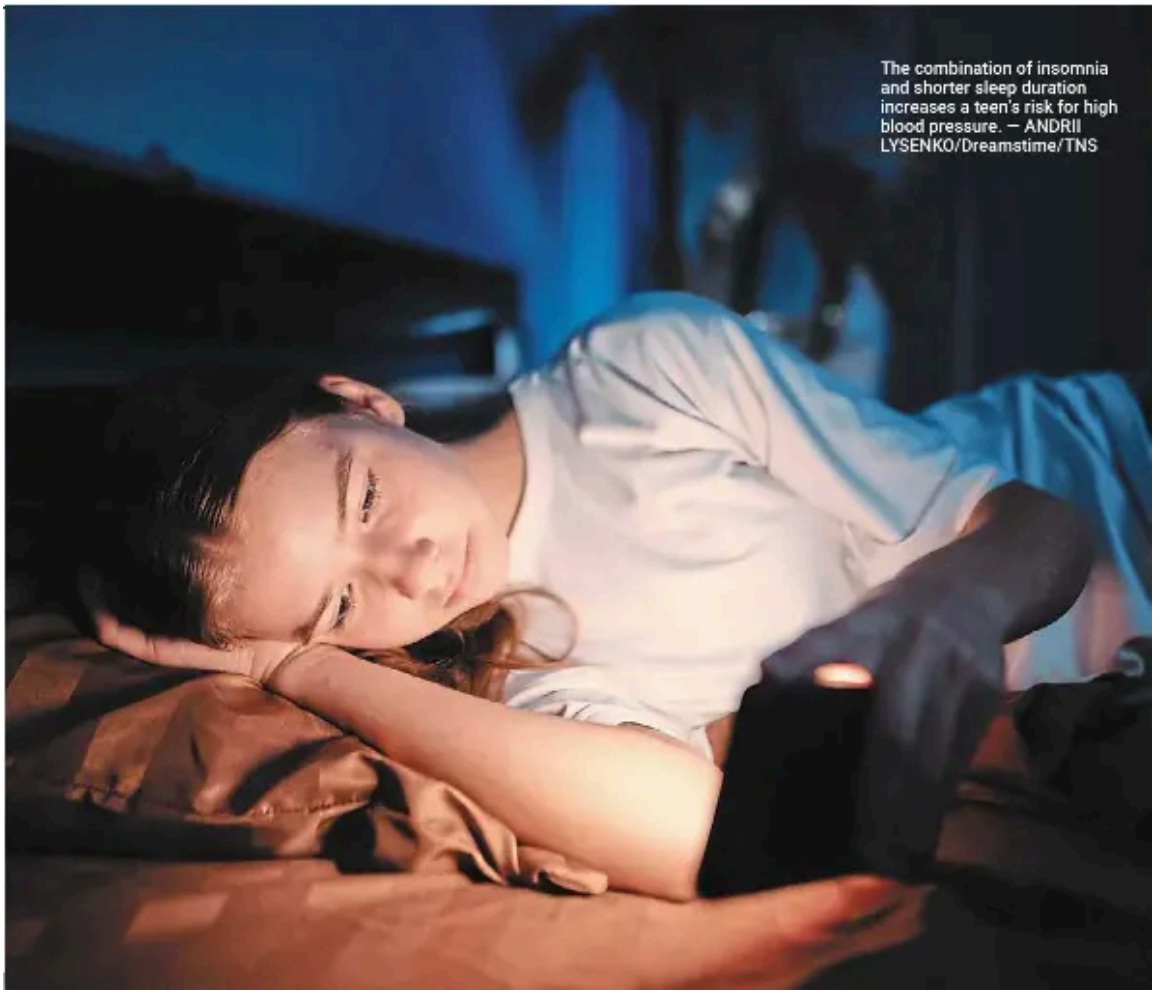
TEENAGERS who have trouble falling or staying asleep and sleep less than their peers may be five times more likely to have seriously high blood pressure, according to a new preliminary study.



The combination of insomnia and shorter sleep duration increases a teen's risk for high blood pressure. – ANDRII LYSENKO/Dreamstime/TNS

Even those without insomnia who slept less than 7.7 hours had a nearly threefold higher risk for elevated blood pressure than their better-rested counterparts, the study found.

The good news: Teens who complained of insomnia but were able to sleep at least 7.7 hours – the study group's median sleep time – had no higher risk of elevated or high blood pressure.

Dr Julio Fernandez-mendoza, the study's senior author, said he was surprised at how much the combination of insomnia and shorter sleep duration increased a teen's risk for high blood pressure, also known as hypertension.

"We came at the data thinking maybe we would find an association with elevated blood pressure," said Fernandezmendoza, director of the behavioural sleep medicine programme at Penn State Health Sleep Research and Treatment Center in Hershey, Pennsylvania.

Instead, "we found these kids actually are more likely to have clinical hypertension – a degree of high blood pressure that all paediatricians, clinicians and cardiologists would want

to treat."

The findings illustrate the importance of screening for and treating sleep problems in adolescents to help protect their cardiovascular health, he said.

While previous studies have found links between insomnia, insufficient sleep and cardiovascular effects in adults, the new research is believed to be the first focused on adolescents.

Most research into their poor sleep has focused on behavioural and mental health effects, Fernandez-mendoza said.

Cardiovascular risk factor

High blood pressure that is left untreated or undetected can raise the risk of heart attack, stroke and other serious health problems.

It damages blood vessels, causing them to accumulate plaque and become narrower, which blocks blood flow.

"We know that stage 2 hypertension is clearly a cardiovascular risk factor," Fernandez-mendoza said, "so these kids are left at risk of developing cardiovascular disease if it is not treated."

The study was presented at the American Heart Association's Epidemiology and Prevention/Lifestyle and Cardiometabolic Health Scientific Sessions in New Orleans.

The findings are considered preliminary until full results are published in a peer-reviewed journal.

The research comes amid growing awareness about the health effects of teenagers' sleep, both the quantity and quality.

Sleep has been at the centre of national debates about middle school and high school start times and the potential consequences of late-night scrolling on smartphones and tablets.

The American Heart Association

(AHA), American Academy of Sleep Medicine and American Academy of Pediatrics all recommend that children aged 13 to 18 get eight to 10 hours of sleep per night for optimal health.

Nearly one-third of adolescents complain of insomnia, Fernandezmendoza said, and about 14% have chronic insomnia disorder, meaning they've had trouble falling or staying asleep three or more times a week for at least three months.

Axel Robinson, the study's lead author, said he's all too familiar with sleep problems in young people.

The 17-year-old high school senior, who analysed the research data during an internship with Fernandez-mendoza last summer, said he sought coping strategies from a therapist for the insomnia he's had since elementary school.

"It's something that's really been with me my entire life," said Robinson, who lives just outside New York City in Westchester County. "I think it was just an overall fear about not being able to fall asleep."

Robinson said his friends who don't have insomnia often talk of being tired from staying up until 2am to finish homework before having to wake up at 7.30am for school.

Sleep analysis

He analysed sleep data collected from 421 adolescents from the Harrisburg, Pennsylvania, area who were an average 16 years old at the time and part of the Penn State Child Cohort.

These adolescents participated in a nine-hour overnight sleep study in the lab.

Those considered to have insomnia indicated they had trouble falling or staying asleep, though they were not asked how often or for how long, Fernandezmendoza said.

Compared to participants who slept at least 7.7 hours in the lab, those who slept less than 7.7 hours and reported having insomnia were five times more likely to have stage 2 hypertension, defined as an average systolic blood pressure – the top number – of at least 140 millimeters of mercury, or an average diastolic blood pressure – the bottom number – of at least 90 mmhg.

Dr Sarah Honaker, an associate professor of paediatrics at Indiana University School of Medicine in Indianapolis, said the study is significant because it shows the cardiovascular effects of the combination of insomnia and too little sleep in otherwise healthy teens.

“We already know that short sleep is associated with any number of negative health outcomes in adolescents,” said Honaker, who was not involved in the research. “But this study also shows us that insomnia is associated with added risk above and beyond insufficient sleep.”

It adds to the reasoning, Honaker said, that later school start times are important for teen health. Adolescents’ body clocks make it more difficult for many to fall asleep until later, even if they don’t have insomnia. Previous studies have found that participants in the Penn State Child Cohort who reported having insomnia and slept for a short time in the lab had higher levels of stress hormones, inflammation and other markers of “physiologic hyperarousal” associated with cardiovascular diseases, Fernandez-mendoza said.

Yet in those studies, participants who reported having insomnia but slept 7.7 hours or more in the lab did not show those physiological markers of hyperarousal.

That suggests their insomnia is associated with emotional or behavioural factors, such as poor sleep habits or a racing mind, he said.

Fernandez-mendoza said he hopes the new study will persuade teens and their parents to report sleep problems to a doctor, so they can get help.

“Don’t assume it’s just part of living,” he said. “It doesn’t have to be.”

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Dr Sarah Honaker