

PGI Device Wakes Up India Sleep Tech



THAPAR INSTITUTE
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Page: 16, Dated 08-03-2026

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Chandigarh: A breakthrough collaboration between medical and engineering scientists in North India has produced an affordable, home-based diagnostic tool for Obstructive Sleep Apnea (OSA), a condition estimated to affect up to 35% of the Indian population.

Researchers from the Post Graduate Institute of Medical Education and Research (PGIMER) and the Thapar Institute of Engineering and Technology (TIET) have developed a prototype that could slash the cost of diagnosis from six figures to just Rs 20,000.

Currently, the market for sleep diagnostic tools is dominated by expensive imports from the United States and Australia. Traditional hospital-based testing, known as polysomnography, remains inaccessible for the average citizen due to high costs and complex requirements.

The current imported devices cost about Rs 1.25 lakh.

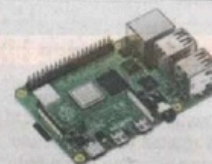
The hospital test fees are between Rs 5,000 and Rs 10,000 for each study. The PGI prototype was built for just Rs 20,000 in comparison, with retail prices expected to drop further. "Traditional tests require patients to be hooked up to complex machinery in a hospital setting," said Prof Sandeep Bansal, the study's principal investigator. "This prototype brings the sleep lab into the bedroom."

DREAMING CHEAP

The device, roughly the size of a large smartphone, utilizes custom algorithms and machine learning to detect exactly when a patient stops breathing during sleep. The team, led by Dr Bansal (PGIMER) and Dr Harpreet Singh (TIET), is currently refining the design to include wireless monitoring (allowing doctors to review patient data remotely), enhanced sensors (Tracking nasal airflow for deeper diagnostic insights), and AI integration (improving the accuracy of apnea detection over time).

HOW DOES IT WORK?

The Sensors: It uses small sensors to monitor your heart activity (ECG) and oxygen levels (SpO₂) in real-time.



The Brain: A tiny computer (a Raspberry Pi) processes these signals using custom software written in Python.

The Detection: By analyzing variations in your heart rate and oxygen, the device can pinpoint exactly when an "apnea event" (a breathing interruption) occurs.

