

This oral appliance could help you (and your partner) sleep better

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The oral appliance is made of two parts that join together to bring the patient's jawbone forward. Credit: Department of Orthodontics and Craniofacial Developmental Biology/Hiroshima University Hospital

Researchers measured a novel treatment for sleep apnea developed at Hiroshima University Hospital with positive results. By measuring patients lying down flat, the researchers simulated sleep conditions and measured the patient's airways using 3-D imaging. The study confirmed that the treatment is effective at opening the airways and warrants further collaboration between dentists and doctors in treatment of sleep apnea.

Obstructive sleep [apnea](#) is a condition that causes throat muscles to relax and narrows the airways of those affected while they are asleep.

Snorting, choking or gasping while sleeping are the indicators of the condition. Usually the sufferers' partner notices before they do!

People with mild to moderate sleep apnea experience daily fatigue and a shortened attention span from lack of sleep. Sleep apnea can also have more serious consequences—people have died from very severe forms of the condition.

"Your eyes are closed, but you're not resting," explains Dr. Cynthia Concepción-Medina, Research Assistant at the Department of Orthodontics at Hiroshima University Hospital who contributed to the study with her colleagues Associate Professor Hiroshi Ueda and Dr. Yu Matsumura. Treatments include a [continuous positive airway pressure](#) (CPAP) machine (a mask worn by the patient that delivers air pressure throughout the night) or one-piece oral appliances.

The Department of Orthodontics at Hiroshima University Hospital developed an oral appliance to help [patients](#) with mild to moderate sleep apnea. This appliance brings the jawbone forward to enlarge the air passageways at the back of their mouth. Each appliance is custom made for each patient and allows jaw movement, so it doesn't affect patient's teeth or change the shape of their face.

"This is like when you have to use glasses, you have to wear them every time you want to see properly. Patients have to wear this appliance every time they want to sleep better," says Dr. Ueda.

To further investigate how well the appliance works the research team, led by Dr. Matsumura, scanned a group of patients with mild-to-moderate sleep apnea using multislice computed tomography (MSCT), a type of X-ray conducted by rotating the machine around an object, and taking a picture each time it rotates. This data is then combined to produce a 3-D image, and is a fast and precise method of scanning.

Previous research usually measured patients standing up, which does not simulate sleeping conditions. This study (published in *Sleep Disorders*, 2019) measured the change in [airway](#) space of 13 patients lying flat. The team found that the appliance had a [positive effect](#) on patients: wearing it almost halved the number of times the patients had [sleep apnea](#) episodes during the night and widened their airways to allow easier breathing.

"I think it's unique research because we are dentists, but we can contribute to improve the [patient's] sleep situation or breathing situation." says Dr. Ueda.

This study indicates promising effects of this treatment and the team hopes that they can continue this collaboration between the dental and the medical field.

More information: Yu Matsumura et al, Multislice Computed Tomography Assessment of Airway Patency Changes Associated with Mandibular Advancement Appliance Therapy in Supine Patients with Obstructive Sleep Apnea, *Sleep Disorders* (2019). [DOI: 10.1155/2019/8509820](#)

Provided by Hiroshima University

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