

## Sleep Apnea Patients Using Oral Appliance Therapy Show High Efficacy And Compliance

Mandibular advancement appliances (MAA) have been shown to safely and effectively treat mild to moderate obstructive sleep apnea (OSA). The aim of this study was to assess the efficacy of two different MAA over time from a previous comparative study (PCS). This Canada-based study included four women and 10 men who had participated in a PCS that tested two oral appliances in a randomized cross-over design. The participants were 52 years of age on average.

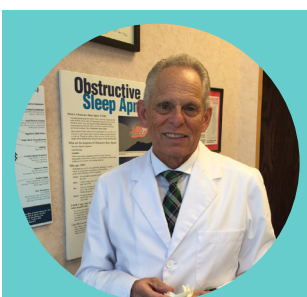
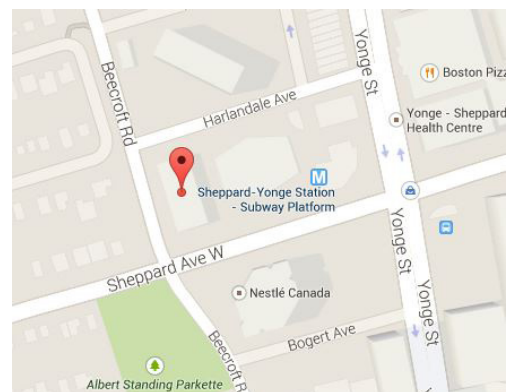
Each participant took three polysomnograms (PSG): one baseline from the PCS, a night with the appliance they selected at the end of the PCS, and a follow-up night. Results indicate that respiratory disturbance index (RDI) was significantly reduced from baseline ( $10.4 \pm 1.3$ ) to the night at the end of the PCS ( $5.7 \pm 1.1$ ) and remained low at follow-up ( $4.5 \pm 0.7$ ). Before each PSG, subjects completed the Epworth Sleepiness Scale (ESS), the fatigue severity scale (FSS), and a quality of life questionnaire (FOSQ). Questionnaire results revealed that the ESS, FSS, and FOSQ were all significantly improved from baseline to the night at the end of the PCS and remained improved at follow-up. Participants reported a high compliance, wearing their MAA 7.1 hours a night, 6.4 nights a week.

A second arm was added to fit a dorsal harness in an attempt to eliminate positional apnea. The addition of a dorsal harness was effective, although compliance was poor. Five subjects agreed to wear the harness. It was effective for four subjects, but only one agreed to wear it after a one-month trial.

“The study showed excellent long-term compliance with oral appliances as well as a high efficiency and a very positive effect on blood pressure and cardiac rhythm,” said lead author Luc Gauthier, DMD, MSc.

“Efficiency continued to improve even though, on average, the subjects had a higher body mass index during follow-up,” said Gauthier.

American Academy of Sleep Medicine. (2010, June 5). Sleep apnea patients using oral appliance therapy show high efficacy and compliance. ScienceDaily. Retrieved March 22, 2016 from [www.sciencedaily.com/releases/2010/06/100605112537.htm](http://www.sciencedaily.com/releases/2010/06/100605112537.htm)



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## CPAP May Not Improve Glycemic Control In People With Diabetes

People with type 2 diabetes and obstructive sleep apnea (OSA) may not experience improved glycemic control by using continuous positive airway pressure, or CPAP, as some studies have suggested, according to the results of a randomized, controlled trial published on-line ahead of print in the American Thoracic Society's American Journal of Respiratory and Critical Care Medicine.

"Many studies have indicated that OSA may contribute towards the development and progression of type 2 diabetes," said lead study author Jonathan Shaw, MD, associate professor and head of population health at Melbourne's Baker IDI Heart and Diabetes Institute

"However, proving that link, and determining if treating OSA could have benefits for glucose control, requires intervention studies. Some uncontrolled studies had reported improved glucose control after starting CPAP, but some small controlled trials did not support this."

In "The Effect of Treatment of Obstructive Sleep Apnea on Glycemic Control in Type 2 Diabetes," researchers in Australia and the U.S. randomly assigned 298 patients with "relatively well-controlled" type 2 diabetes and newly diagnosed OSA to either treat their sleep apnea with CPAP or receive usual care. In addition to measuring the change in glycemic control, researchers studied changes in blood pressure, daytime sleepiness and quality of life over six months. Researchers found that no difference between those receiving CPAP and the control group in change in glycated hemoglobin (HbA1c) at three and six months. Greater fall in diastolic blood pressure over six months in the CPAP group compared to controls -- a finding that was statistically significant only among those who used CPAP for at least four hours a night. Daytime sleepiness improved significantly among those using CPAP as measured by the Epworth Sleepiness Index. Quality of life between the two groups was not statistically significant overall as measured by the RAND 36-Item Short Form Health Survey. Among those using CPAP for at least four hours a night, there was a significant difference with controls on vitality and mental health subscores.

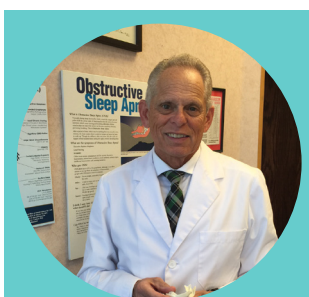
Authors offered several possible explanations for why participants using CPAP did not experience better glycemic control. OSA may play a bigger role in the development of diabetes than in the control of established diabetes. The bar for adherence to CPAP -- set at four hours a night -- may have been set too low. And, lastly, CPAP may only benefit those with severe OSA and/or poor glycemic control. Participants with those characteristics were not well represented in the study, the authors noted.

"OSA is common in people with type 2 diabetes, and although we did not find a glycemic benefit for its treatment, clinicians should have a high index of suspicion for its presence when patients experience daytime sleepiness, snoring and resistant hypertension," Dr. Shaw said.

"Identification and treatment of OSA in these patients may lead to clinically meaningful benefits."

Another study published recently on-line in the American Journal of Respiratory and Critical Care Medicine looked at CPAP and glucose control in patients whose diabetes was not well controlled. That study, also a six-month randomized controlled trial, found that CPAP significantly improved glycemic control at six months, but not three.

Jonathan E Shaw, Naresh M Punjabi, Matthew T. Naughton, Leslee Willes, Richard M Bergenstal, Peter A. Cistulli, Greg R Fulcher, Glenn N Richards, Paul Z Zimet. The Effect of Treatment of Obstructive Sleep Apnea on Glycemic Control in Type 2 Diabetes. American Journal of Respiratory and Critical Care Medicine, 2016; DOI: 10.1164/rccm.201511-2260OC



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## Trouble Sleeping? The Size Of Your Tongue, Tonsils Could Be Why

The best time to identify signs of obstructive sleep apnea may not be at night while snoozing in bed but, instead, while sitting in the dentist's chair. According to a new study led by University at Buffalo orthodontic researcher Thikriat Al-Jewair, dentists are in the unique position as health care professionals to pinpoint signs of obstructive sleep apnea (OSA), a disorder in which breathing repeatedly stops and starts during sleep due to blocked upper airways.

The research found that oversized tonsils and tongue indentations, which are teeth imprints along the tongue that indicate it is too large for the mouth, placed people at high risk for OSA. Obese patients were almost 10 times more likely to report OSA symptoms than non-obese patients.

Sleep apnea affects more than 18 million American adults, but many cases go undiagnosed, according to the National Sleep Foundation. Severe cases of the disorder are linked to cardiovascular disease, diabetes, depression, memory loss and more. Although dentists cannot diagnose the disorder, they can spot an enlarged tongue or tonsils and recommend a patient to a sleep medicine specialist.

"Dentists see into their patient's mouths more than physicians do and the signs are easy to identify," says Al-Jewair, clinical assistant professor in the UB School of Dental Medicine.

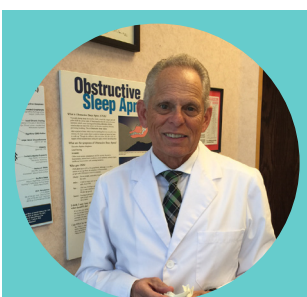
"We need to teach students about this condition before they get out in the field and educate dentists about the major role they play in identifying and treating patients with sleep-related disorders."

The study, "Prevalence and risks of habitual snoring and obstructive sleep apnea symptoms in adult dental patients," was published last month in the Saudi Medical Journal and funded by the Dean-ship of Scientific Research grant from the University of Dammam. Analyzing 200 patients at the dental clinics at the University of Dammam's College of Dentistry in the Kingdom of Saudi Arabia, the researchers tested participants for OSA using the Berlin Questionnaire, a validated assessment used to screen people for OSA.

Participants were then screened for potential risk factors of OSA, such as weight, neck circumference, blood pressure, and size of the tongue, tonsils and uvula- the tissue that hangs in the back of the throat. The results found that 23 percent of participants were at risk for OSA, of which nearly 80 percent were male.

The factors most common among people who were identified as high risk for OSA on the Berlin Questionnaire -- along with obesity -- were large tonsils, tongue indentations and a high Epworth Sleepiness Scale score, another questionnaire used to measure daytime sleepiness. Future research will expand the sample size to include various age groups and monitor participant sleep overnight to confirm the prevalence and severity of OSA, says Al-Jewair.

Thikriat Al-Jewair, Mohammed Nazir, Naif Al-Masoud, Nasser Alqahtani. Prevalence and risks of habitual snoring and obstructive sleep apnea symptoms in adult dental patients. Saudi Medical Journal, 2016; 37 (2): 183 DOI: 10.15537/smj.2016.2.12852



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## Obstructive Sleep Apnea: Study Finds Excellent Agreement Between Subjective And Objective Compliance With Oral Appliance Therapy

Results show that the objective mean wearing time in the whole group was 6.8 hours per night. Among 21 patients who filled out the subjective compliance diary, both the objective and subjective mean wearing times were 7.0 hours per night.

“The results of this study suggest that the use of an objective instrument to measure oral appliance compliance during treatment of obstructive sleep apnea is feasible and, therefore, should be implemented in future studies dealing with oral appliance therapy for obstructive sleep apnea,” said principal investigator and lead author Olivier M. Vanderveken, MD, PhD, a staff-member consultant ENT, head and neck surgeon at the Antwerp University Hospital, and faculty lecturer at the Faculty of Medicine of the University of Antwerp in Belgium.

“These results contrast with the finding in literature on compliance during CPAP treatment revealing that self-reported daily compliance with CPAP significantly overestimates the actual daily use of CPAP as assessed by objective measurement of CPAP compliance,” said Vanderveken.

This four-week clinical trial compared active measurement of Mandibular Repositioning Appliance (MRA) compliance with patients’ self-reports. The study involved 23 men and women with an established diagnosis of sleep-disordered breathing (SDB) who had an average apnea-hypopnea index (AHI) of 14.8 breathing pauses per hour of sleep. They had an average age of 47 years. Compliance was measured during MRA treatment by establishing a mean rate of use, using an active built-in micro-sensor thermometer (TheraMon®) with on-chip integrated read-out electronics. The sampling interval of the recording by the active micro-sensor was done at a rate of 1 measurement per 15 minutes (every 900 seconds). The subjects were unaware that their MRA use was being measured objectively.

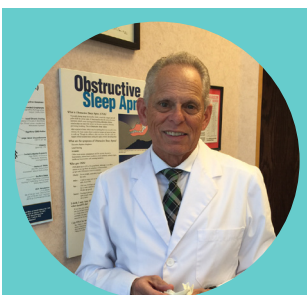
The read-out of the data was performed at a one-month interval. During the follow-up visit, patients were asked to fill out a questionnaire about MRA wear during the last four weeks (mean hours/night, mean nights/week). The objective measurement of MRA wear time was based on the assumption that the MRA has been worn when the chip records a temperature intra-orally > 89.6 °F. To compare the subjective estimates of the patients with the objective data from the micro-sensor, a Wilcoxon signed rank test was performed.

“The removable nature of an oral appliance warrants an objective assessment of the effective use and compliance with overnight oral appliance treatment for obstructive sleep apnea,” said Vanderveken. This abstract is receiving the Clinical Excellence Award and Clinical Research Award at the AADSM 20th Anniversary Meeting.

American Academy of Dental Sleep Medicine. (2011, June 13). Obstructive sleep apnea: Study finds excellent agreement between subjective and objective compliance with oral appliance therapy. ScienceDaily. Retrieved March 22, 2016 from [www.sciencedaily.com/releases/2011/06/110613094037.htm](http://www.sciencedaily.com/releases/2011/06/110613094037.htm)



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