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Podcast of the Journal of Clinical Sleep Medicine

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Welcome to the regular podcast of the *Journal of Clinical Sleep Medicine*. I am Dr. Stuart Quan, editor of the *Journal*. These podcasts are a regular feature of each issue of the *Journal* and can be downloaded at the *Journal's* website. Each podcast features summaries of important articles published in the current issue of the *Journal*, as well as occasional interviews with authors of these papers.

The lead article in this issue of the *Journal* is entitled, "Comparison Of Adjustable and Fixed Oral Appliances For the Treatment Of Obstructive Sleep Apnea," by Dr. Christopher Lettieri and colleagues from Walter Reed Army Medical Center in Washington, D.C. and the Uniform Services University in Bethesda, MD. Although continuous positive airway pressure remains the treatment of choice for individuals with clinically significant obstructive sleep apnea, oral appliances have been shown to be effective therapy for many individuals, especially those who are unable to tolerate use of continuous positive airway pressure. The most common oral appliance is a mandibular advancement device, which acts by protruding the mandible forward relative to the maxilla. It thus advances the tongue and decreases the propensity for airway collapse. Mandibular advancement devices are either fixed so that the degree of mandibular advancement cannot be adjusted or adjustable so that the degree of mandibular advancement can be varied. In this retrospective review of consecutive patients with obstructive sleep apnea who were treated either with adjustable or fixed mandibular advancement devices, the authors compared the effectiveness of adjustable versus fixed devices in 805 patients. 602, or 74.8%, had adjustable devices and 203, or 25.2%, had fixed devices. There was a broad spectrum of obstructive sleep apnea severity, ranging from 34.1% having mild obstructive sleep apnea to 36.8% having severe obstructive sleep apnea. The mean apnea-hypopnea index was 30.7 events per hour. The authors found that adjustable devices were more effective than fixed devices. Using a treatment success criterion of reduction of the apnea-hypopnea index to less than five, adjustable devices were successful in 56.8% versus 47% with fixed devices and when a criterion of less than 10 events per hour was used, adjustable devices were successful in 66.4% versus 44.9% with fixed devices. Success was more common in those who were younger, less obese and had less severe obstructive sleep apnea. It should be noted that the success rate for adjustable devices in those with severe obstructive sleep apnea was 60.1% to lower the apnea-hypopnea index less than 10. However, it was 86.1% to lower the apnea-hypopnea less than 10 in those with mild disease. Additionally, the effectiveness of adjustable and fixed devices in those with mild disease was equivalent.

In an editorial accompanying the paper by Lettieri and colleagues, Dr. Fernando Almeida from the University of British Columbia in Vancouver, Canada, emphasizes that future studies of treatment outcomes cannot combine fixed and adjustable mandibular advancement devices together because these therapies have different outcomes. In addition, she notes that although fixed devices were less effective they are also less expensive, and that a patient's economic status may be a factor in consideration of what treatment to offer.

The second paper to be reviewed in this podcast is entitled, "Long-term Use Of A Nasal Expiratory Positive Airway Pressure (EPAP) Device As A Treatment For Obstructive Sleep Apnea (OSA)," by Dr. Meir Kryger and colleagues from Gaylord Hospital, Wallingford, CT, University of Florida, Gainesville, FL and Chicago Sleep Group of Suburban Lung Associates, Elk Grove Village, IL. Recent studies have shown that use of expiratory positive airway pressure nasal valves may be an effective therapeutic option for some individuals with obstructive sleep apnea. The open-label and randomized-controlled studies published to date have been limited in duration to a maximum of three months. In the current study, the authors report a 12 month, open-label extension of the previously published three-month, randomized, double-blind, sham-controlled trial of the expiratory nasal valve. There were 51 eligible patients. All of these individuals had been participants in the expiratory positive airway pressure (EPAP) arm of the aforementioned randomized, controlled study. All of these participants had a greater than 50% reduction in the apnea-hypopnea index or an absolute reduction to less than 10 at the conclusion of the randomized trial. In addition, they had been required to use the EPAP device more than four hours per night and greater than five nights per week on average in the clinical trial. Of the 51 eligible patients, only 41 were enrolled in the extension trial. Of the 41 who were enrolled, 34 were still using the EPAP device at the end of 12 months. The median AHI was reduced from 15.7 to 4.7 events per hour, comparing the baseline PSG results to the month-12 results. In addition, the Epworth Sleepiness Scale was reduced from a mean of 11 to a mean of six. The authors conclude that use of the expiratory positive airway pressure nasal valve may be an additional treatment option in the long term for some patients with obstructive sleep apnea.

The third paper to be reviewed in this podcast is entitled, "Long Term Efficacy Of An Internet-based Intervention For Infant And Toddler Sleep Disturbances: One Year Follow Up,"

by Dr. Jodi Mindell and colleagues from Children's Hospital of Philadelphia, Philadelphia, PA, St. Joseph's University, Philadelphia, PA, The Adler's Center for Child Development and Psychpathology, Tel Aviv University, Tel Aviv, Israel and Johnson & Johnson Consumer Companies, Inc., Skillman, NJ. Previous research has demonstrated that sleep problems are highly prevalent in young children, with a rate of 20-30% in infants and toddlers. Behavioral-based sleep interventions are usually recommended but there is little data concerning long-term outcomes. Recently, internet-based interventions have been developed and in a previous publication by these authors an internet intervention was found to be effective in improving infant and toddler sleep after two weeks. The current study presents a one-year follow up of this aforementioned study. There were originally 264 mothers in the first study who had participated and who were assigned to one of two intervention groups: an algorithmic internet-based intervention, or a control group. The current study included 171, or 64.8%, of these mothers and their status was assessed with a short questionnaire which was administered one year after the internet intervention. The authors found that improvements in difficulty falling asleep, number and duration of nocturnal awakenings and longest, continuous sleep period were maintained at one year in comparison to those children in the control group. Interestingly, children in the control group also showed some improvement over the course of a year compared to their status at the beginning of the study. The authors conclude that there is a role for an internet-based intervention in the treatment of sleep disturbances in young children.

The final study to be reviewed in this podcast is entitled, "Association Of Current Work And Sleep Situations With Excessive Daytime Sleepiness And Medical Incidents Among Japanese Physicians," by Dr. Yoshitaka Kaneita and Takashi Ohida from Nihong University School of Medicine in Japan. Recently, several large studies have demonstrated that extended-duration work shifts among post-graduate medical trainees in the United States lead to an increase in medical errors. In addition, a recent study also demonstrated that decreasing the number of work hours among medical interns results in a decrease in serious medical errors in intensive care units. However, there are relatively few data on the effect of short sleep duration on the effectiveness of attending physicians. This current study extends the work done on trainee physicians to a large sample of attending physicians who are members of the Japan Medical Association. In this study, a self-administered questionnaire was sent to 4,500 randomly selected physicians with responses obtained from 3,486. The mean sleep duration was six hours and 36 minutes for men and six hours and eight minutes for women. 32.5% of the respondents endorsed a lack of rest due to sleep deprivation and 20% endorsed a complaint of insomnia. Respondents were also queried about "medical incidents". A "medical incident" in this study was defined as a case in which there was incorrect medical practice discovered before implementation or there was no adverse effect. 19% of the respondents endorsed at least one medical incident. The rate of medical incidents was higher in those respondents who slept less than six hours, complained of a lack of rest due to sleep deprivation or complained of insomnia. The lack of rest due to sleep deprivation and complaint of insomnia remained statistically significant after multi-variant analyses. The authors conclude that to improve medical safety, it is important to pay attention to physicians' work and sleep status.

I would also like to call the reader's attention to an important review article published in this issue of the *Journal* entitled, "Obstructive Sleep Apnea Devices For Out-Of-Center Testing: Technology Evaluation," by Drs. Nancy Collup and colleagues from Emory Sleep Center in Atlanta, GA, The American Academy of Sleep Medicine, University of Washington in Seattle, WA, Case-Western Reserve University in Cleveland, OH, Boswell Regional Health Center in Sedalia, MO, Cape Fear Valley Sleep Medicine Center in Fayetteville, NC and Clayton Louis University and Clayton Sleep Institute in St. Louis, MO. This review article presents a new classification for out-of-center sleep testing devices. It should be reviewed by all those sleep physicians who utilize out-of-sleep-center testing for sleep apnea.

Finally, I encourage the reader to review a supplement to this issue of the *Journal* entitled, "Finding A Research Path For the Identification Of Biomarkers Of Sleepiness." This supplement is a summary of the proceedings of a conference convened by the Division of Sleep Medicine at Harvard Medical School in Boston, MA, in which a number of prominent scientists discuss the status of identifying biomarkers of sleepiness used as either a means of evaluating whether a person is able to drive or work in a risky environment or as a marker of future health risk.

This concludes the regular podcast of the *Journal of Clinical Sleep Medicine*. The listener is encouraged to read the contents of the *Journal* for additional information regarding each of the articles summarized in this podcast, as well as other papers published in this issue of the *Journal*.