

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 first paper to be summarized in this podcast is entitled, "Impact of Group Education on Continuous Positive Airway Pressure Adherence," by Dr. Christopher J. Lettieri and Dr. Robert J. Walter from the Pulmonary, Critical Care & Sleep Medicine Section, Walter Reed National Military Medical Center, Bethesda, MD, and the Department of Medicine, Uniform Services University of the Health Sciences, Bethesda, MD. Although continuous positive airway pressure (CPAP) is efficacious in the treatment of obstructive sleep apnea, only approximately two-thirds of individuals will use it on a long-term basis. Therefore, measures to improve CPAP adherence are greatly needed. In this paper, the authors conduct a retrospective review of patients who were prescribed CPAP therapy between January 2009, and July 2010. After exclusion of a small number of patients, they had a final cohort of 2,116 patients who were initiated with CPAP. Patients were then categorized as receiving either individual or group counseling with respect to CPAP education. Those who received individual counseling had a one-on-one session with a board-certified sleep physician. This session consisted of reviewing results of the polysomnograms, basic information related to sleep apnea, methods to improve sleep and the importance of treatment adherence. They also provided counseling by a registered respiratory therapist regarding the proper use and maintenance of their CPAP equipment and underwent an individual mask fitting. Patients that participated in group classes were members of a session that consisted of 15-20 patients. These were a 20 minute lecture given by a board-certified sleep physician regarding the basics of obstructive sleep apnea, the importance of adhering to treatment and other treatment options. The content of the lecture was similar to what was provided during the individual sessions. The 20-minute lecture was followed by a 10-15 minute lecture from the sleep clinic's nurses involving sleep hygiene, methods to improve sleep and reinforcement of the need to adhere to treatment. A respiratory therapist then instructed the patients on the proper use and maintenance of their equipment. This was followed by individual sessions to fit their CPAP mask. In comparison to the approximately 45 minutes used for each individual session, the group classes lasted two to two and one-half hours.

There were 1,084 individuals who received individual counseling and 1,032 who received group counseling. There were no differences between these groups in their age, gender distribution, body-mass index, apnea-hypopnea index or Epworth Sleepiness Scale scores. Importantly, those who received the group education had a greater use of CPAP, with usage on 67.2% of nights in comparison to 62.1% of nights in the individual counseling group. Furthermore, those who received group counseling used their CPAP 4.3 hours per night versus 3.7 hours per night in the individual group. The authors suggest that a group-educational setting to initiate CPAP therapy appears to be more effective both with respect to CPAP adherence and also with respect to resource utilization than individual counseling. They indicate that a randomized, controlled clinical trial is necessary to validate these results.

The next paper to be discussed in this podcast is entitled, "A Pilot Study of CPAP Adherence Promotion by Peer Buddies with Sleep Apnea," by Dr. Siram Parthasarathy and colleagues from Southern Arizona Veteran's Administration Healthcare System, Department of Medicine, Arizona Respiratory Center, Department of Psychiatry, University of Arizona, Tucson, AZ, and the Pittsburgh Veteran's Administration Medical Center and Department of Medicine, University of Pittsburgh, Pittsburgh, PA, and the Philadelphia Veteran's Administration Medical Center and Department of Medicine, University of Pennsylvania, Philadelphia, PA. In this study, another innovative intervention to improve CPAP adherence is described. Investigators hypothesized that pairing a newly initiated CPAP patient with someone experienced in using CPAP would lead to increased adherence. 39 subjects were randomized to either usual care following initiation of CPAP therapy or interaction with a buddy. The peer buddies were recruited from individuals in the general clinic population who adherent to CPAP therapy. During the three-month trial, patients who were paired with a peer buddy had ten in-person or telephone-based conversations over a three-month period during which time, peers shared their experiences on coping strategies, positive experiences and their knowledge regarding the complications of untreated sleep apnea. 22 patients were randomized to the intervention group and 17 to the usual care group. 91% of the patients in the intervention group were either very satisfied or satisfied with information provided by their peer buddies. Furthermore, CPAP adherence was greater in the peer-buddy group than in the usual-care group (5.2 hours per day versus 4 hours per day). The authors suggest that in this pilot study CPAP adherence might

be improved by a peer-driven intervention but a larger study is required to confirm these data.

The third study to be reviewed in this podcast is entitled, "Total Sleep Time and Other Sleep Characteristics Measured by Actigraphy Do Not Predict Incident Hypertension in a Cohort of Community-Dwelling Older Men," by Dr. Maple M. Fung and colleagues from the San Diego Veteran's Affairs Healthcare System, La Jolla, CA, University of California San Diego, San Diego, CA, California Pacific Medical Center Research Institute, San Francisco, CA, Brigham & Women's Hospital, Beth-Israel Deaconess Medical Center and Harvard Medical School, Boston, MA. A number of studies have tried to determine whether there is an association between short sleep duration and cardiovascular disease and mortality. These studies have been primarily observational and cross-sectional in design. In addition, the results have not been consistent with some studies showing a relation between short-sleep duration and cardiovascular disease and others finding no association. This study enrolled participants in the osteoporotic-fractures-in-men study, which is a cohort of community-dwelling elderly men. A subgroup of the original cohort had actigraphy performed and incident hypertension was evaluated at a follow-up visit on an average of 3.4 years later. There were 853 men with a mean age of 75.1 years. Their sleep time on actigraphy was 389 minutes with an estimated sleep efficiency of 84.1%. The average sleep latency was 28.7 minutes and the average wake-after-sleep-onset time was 70.7 minutes. Incident hypertension was observed in 264 men out of the original 854. However, there was no difference in total sleep time between those who had incident hypertension and those who did not. Furthermore, total sleep time less than six hours was not a predictor of incident hypertension after adjusting for a number of covariates. These data indicate that short sleep time is not a risk factor for the development of incident hypertension in older men. The authors suggest that this observation may be related to the high prevalence of hypertension in older men. It is also possible that any effect of short sleep duration is more apparent in younger individuals before the development of significant atherosclerosis.

The final study to be reviewed in this podcast is entitled, "Long-Term Continuous Positive Airway Pressure Therapy Normalizes High Exhaled Nitric Oxide Levels in Obstructive Sleep Apnea," by Dr. Ai-Ping Chua and colleagues from the Sleep Disorders Center, Neurology Institute, Lerner Research Institute, and the Respiratory Institute, Cleveland Clinic, Cleveland, OH. It has been hypothesized that upper-airway inflammation occurs as a result of recurrent episodes of upper airway obstruction in patients with obstructive sleep apnea. The release

of inflammatory mediators may play a role in development of cardiovascular complications associated with obstructive sleep apnea. The concentration of exhaled nitric oxide is a possible marker of airway inflammation and can be measured using exhaled breath techniques. In this study, patients with obstructive sleep apnea had measurements of exhaled nitric oxide before and after polysomnographic studies and within one to three months following application of continuous positive airway pressure. Exhaled nitric oxide levels in patients with obstructive sleep apnea, in comparison to patients without obstructive sleep apnea, were significantly elevated both before and after sleep. After CPAP titration, there was a decrease in exhaled nitric oxide with a persistent decline after ongoing treatment for one to three months. The authors conclude that exhaled nitric oxide levels are elevated in patients with obstructive sleep apnea and correlate with severity of disease. In addition, they decrease after use of CPAP. The authors suggest that these data support the role of upper airway inflammation in the pathogenesis of obstructive sleep apnea and further raise the possibility of using exhaled nitric oxide levels in monitoring patients for adherence to CPAP therapy.

I would also like to call the listener's attention to an editorial by Dr. Bradley A. Edwards and colleagues entitled, "PSGs: More Than Just the AHI." In this editorial, the authors argue that information contained on a PSG is more than just measuring the apnea-hypopnea index. They argue that careful study of inspiratory flow patterns may provide information regarding the location of upper airway collapse. Such information might be informative in determining the type of obstructive sleep apnea therapy provided to the patient. Further, while they agree that use of an all-night polysomnogram for CPAP titration is going to be less common in the future, use of an attended laboratory polysomnogram may be an opportunity to test both CPAP and non-CPAP therapies. The latter might include position therapy, oxygen, nasal insufflation or oral appliances.

I would also like to call you attention to a review paper by Drs. Erica L. Archer and Susan Pepin, entitled, "Obstructive Sleep Apnea and Nonarteritic Anterior Ischemic Optic Neuropathy: Evidence for an Association." This paper reviews the evidence that nonarteritic anterior ischemic optic neuropathy, a condition not well known to most sleep physicians, is associated with obstructive sleep apnea.

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*.