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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 first paper to be highlighted in this podcast is entitled, "Impact of Windows and Daylight Exposure on Overall Health and Sleep Quality of Office Workers: A Case-Control Pilot Study," by Mohamed Bobekri and colleagues from the School of Architecture, University of Illinois, Urbana Champaign, Champaign, IL, Department of Neurology, Northwestern University, Chicago, IL, and the Department of Architecture, Hwa-Hsia Institute of Technology, Taipei, Taiwan. It seems self-evident that working in a environment that has no daylight would be detrimental. However, there have been few studies that have compared the work place environment and its impact on sleep in situations where there are no windows to those with availability of daylight. In this study, there were 27 workers who were employed in a windowless environment and 22 comparable workers who were working in an environment with significantly more daylight. The well being of both groups was assessed using the Short-Form 36 Quality of Life Measure, and their sleep was evaluated with the Pittsburgh Sleep Quality Index. In addition, a subset of the workers (10 in the windowless environment, and 11 in the environment that had windows) had actigraphy recordings to record light exposure, physical activity and sleep-wake patterns. With respect to the SF 36, workers in the windowless environment reported significantly lower measures of vitality, as well as role limitation due to physical problems in comparison to those who were working in a windowed environment. In addition, those individuals who were working in an environment without windows reported worse scores on the global assessment in the Pittsburgh Sleep Quality Index, as well as the sub-measures related to sleep disturbance, daytime dysfunction and sleep efficiency. In the smaller group, who underwent actigraphy, not unexpectedly those who were working in a windowless environment had much less light exposure during the working hours but also had significantly less total activity as well. Furthermore, there was a trend towards a 46 minute decrease in their total sleep time. These data suggest that designs of workplace environments should place greater emphasis on having greater exposure to daylight because such designs will improve workers' well being, as well as their sleep.

The second paper to be discussed is entitled, "The Effect of Continuous Positive Airway Pressure (CPAP) on Nightmares in Patients with Posttraumatic Stress Disorder (PTSD) and Obstructive Sleep Apnea (OSA)," by Sadeka Tamanna and colleagues from the G.V. (Sonny) Montgomery VA Medical Center, Jackson, MS, and the Departments of Medicine and Psychiatry, University of Mississippi Medical Center, Jackson, MS. With the wars in Iraq and Afghanistan in recent years, there has been increasing recognition that many returning soldiers suffer from post-traumatic stress disorder. One common manifestation of PTSD is recurring nightmares. In addition, there is an association with chronically disrupted sleep with these nightmares. The concurrent presence of sleep apnea also may be sleep disruptive and it is possible that if obstructive sleep apnea can be treated in those with PTSD, there may be an improvement in their PTSD symptoms, especially nightmares. The current study is a retrospective chart review of veterans who received care at a veteran's affairs medical center and who had both the diagnosis of PTSD as well as obstructive sleep apnea. There were 69 veterans who had the diagnosis of obstructive sleep apnea and PTSD. 34 of them had REM-related obstructive sleep apnea and 35 had non-REM related obstructive sleep apnea. The overall apnea-hypopnea index for all of the participants was 21 events per hour of total sleep time. The overall Epworth Sleepiness Scale was 15 and they had, on average, 10 nightmares per week at baseline. Overall, compliance was approximately 59% which represented the percentage of nights the veteran used their CPAP for at least four hours during the previous six months. In addition, the mean CPAP pressure was 11 cm of water. The results of the chart review revealed that there was a significant improvement in the nightmare frequency in both the REM and non-REM related obstructive sleep apnea participants. In the non-REM group, the mean number of nightmares decreased from approximately 10 per night to five per night and the same result was noted in the REM-only obstructive sleep apnea group. Although there may be significant difficulties in getting individuals with PTSD to use and adhere to CPAP, these data suggest that in those with obstructive sleep apnea and PTSD, CPAP therapy may result in an improvement in nightmare frequency. It suggests that those with PTSD should be screened for obstructive sleep apnea. Nevertheless, the listener should be cautioned that this was a retrospective study and the data were limited to those who had a diagnosis of obstructive sleep apnea and were symptomatic as manifested by their Epworth Sleepiness Scale scores. Those with lesser degrees

of sleep apnea or fewer sleep apnea symptoms may not be as amenable to CPAP therapy.

The final paper to be highlighted in this podcast is entitled, "Adaptive Servoventilation for Treatment of Opioid-Associated Central Sleep Apnea," by Shahrokh Javaheri and colleagues from Sleep-Core Diagnostics, Cincinnati, OH, and Heart & Vascular Center, Christ Hospital, Cincinnati, OH. With the increasing use of higher-dose opioids to treat individuals with chronic pain, there has been greater recognition that sleep disordered breathing and especially central sleep apnea is relatively common in these individuals. To date, there has been some controversy as to whether CPAP or bilevel PAP are effective treatment for their central sleep apnea. More recently, adaptive servoventilation has been utilized for these patients. The current paper is a case series of 20 individuals who were on chronic opioid therapy and had significant central sleep apnea present. They were then treated with adaptive servoventilation with good results. The mean age of these 20 patients was 53 years, with a mean body-mass index of 33 and an Epworth Sleepiness Scale score of 12. Common symptoms were excessive daytime sleepiness, habitual snoring, witnessed apnea, and unrefreshing sleep. A majority of the individuals also had hypertension and depression. The most common opioids used were oxycodone and morphine. The morphine equivalent range was 15-915 mg with a median of 118 mg. 16 of these patients were initially prescribed continuous positive airway pressure. However, all of them showed persistent central sleep apnea, despite its use. All patients then underwent a titration with an adaptive servoventilation device (ASV). The baseline apnea-hypopnea index was 61 events per hour of total sleep time. After use of ASV, this dropped to 23 events per hour of total sleep time. More impressively, however, was the reduction in the central apnea index from 32 events per hour of total sleep time to zero. In addition, the minimum oxygen desaturation improved from 83% at baseline to 90% after use of ASV. The follow-up time for those on ASV ranged from nine months to up to six years. Adherence was good, with a mean of 5.1 hours. As emphasized in an editorial by Drs. Lee-Iannotti and Parish from the Center for Sleep Medicine, Division of Pulmonary Medicine, Mayo Clinic Phoenix, there are three important points to the study by Javaheri, et al. First, fixed CPAP is not effective in the treatment of opioid-associated sleep apnea. Second, ASV is an effective therapy in the majority of patients. And, lastly that long-term adherence to ASV is quite good.

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*.