

## 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, "The Face of Sleepiness: Improvement in Appearance after Treatment of Sleep Apnea," by Dr. Ronald Chervin and colleagues from the Sleep Disorders Center and Department of Neurology, Craniofacial Anomalies Program and Division of Plastic Surgery, Department of Surgery, University of Michigan, Ann Arbor, MI, and Michigan Tech Research Institute, Michigan Technological University, Ann Arbor, MI. In this paper, the authors explored the hypothesis that treatment of sleep apnea with CPAP would result in an improvement in facial appearance. As background, the authors cite anecdotal observations that sleepiness results in dark, baggy or puffy circles around the eyes, as well as experimental data in which persons could distinguish both photographs, before and after experimental sleep deprivation. In this study, twenty individuals were recruited from a sleep disorders center, characterized by having excessive daytime sleepiness, a new diagnosis of obstructive sleep apnea and a plan for treating the sleep apnea with continuous positive airway pressure or bi-level positive airway pressure. As part of this study, facial images were obtained using specialized photographic equipment before and two to four months after using CPAP or bi-level PAP. The images were rated by 22 volunteers, who were blinded to whether the images were taken pre- or post-CPAP or bi-level PAP. For each pair of photographs, the grader was asked to determine which one was most alert, most youthful, and most attractive, as well as to determine which was the post-CPAP or bi-level PAP photo. In addition to the subjective analysis, quantitative analysis of the photographs was undertaken to evaluate the volume of the forehead surface, as well as the volume of the infra-orbital surface. A color analysis, in which the infra-orbital and cheek colors were assessed also was performed.

The results of the study indicate that approximately two-thirds of the raters correctly identified the post-CPAP or post-bi-level PAP photograph. Approximately the same percentage found that the post CPAP photograph was more alert, youthful and attractive. In addition, quantitative analysis of the forehead region showed a decrease in volume, although the infra-orbital region did not change. Additionally, luminosity decreased for

the infra-orbital and maxillary areas, especially in Caucasian subjects. There also appeared to be a decrease in facial redness. Finally, it appeared that increased percent of sleep time in Stage N3 had a tendency to predict improved post-treatment ratings for alertness and attractiveness.

These data are the first to show that visual appearance appears to be related to reductions in sleep and treatment of obstructive sleep apnea can improve facial appearance. This benefit may be useful in counseling patients to improve their CPAP adherence by indicating that they will appear more youthful and alert to their friends and family.

The next paper to be discussed is entitled, "Assessment of the Performance of Nasal Pillows at High CPAP Pressures," by Xueling Zhu and colleagues from Res Med Science Center, Sydney, Australia. Some patients who are treated with CPAP for their obstructive sleep apnea find that a nasal pillow interface is more comfortable than a standard nasal mask or a full-face mask. However, there is some controversy as to whether nasal pillow interfaces can be effective at high CPAP pressures because of concerns related to leak from the interface and inaccurate pressure delivery. In this study, twenty subjects with obstructive sleep apnea using nasal CPAP were recruited and randomized either to a nasal pillow interface or a standard nasal mask for seven consecutive nights in a prospective crossover trial. All of the participants were using CPAP at pressures greater than 12 cm of water and had not used a nasal pillow interface previously. The investigators found that there were no statistically significant differences in device usage for the nasal pillow interface versus the nasal mask. The average daily use for the nasal pillows was 7.4 hours in comparison to 7.2 hours for the nasal mask. Similarly, leak status was the same, with 28.6 liters per minute for the nasal pillows versus 27.9 liters per minute for the nasal mask. As for subjective ratings of mask performance, there were no differences between the two interfaces with respect to comfort, seal, stability, red marks or overall performance. However, nasal pillows were found to be significantly less obtrusive. There were no statistically significant differences with respect to adverse effects, specifically claustrophobia, feeling of pressure, dry mouth or throat, nasal symptoms, breathing comfort or eye irritation. With respect to mask preference, 50% of the subjects preferred the nasal pillows, 45% preferred the nasal mask and 5% did not find any difference between the devices. There were six subjects who had pressures greater than 15 cm of water and there were no significant differences in these six subjects with respect to air leak, residual apnea-hypopnea

index or subjective ratings of mask performance or adverse effects. However, average compliance with nasal pillows was 7.68 hours per night versus the nasal mask, which was 7.09 hours per night. These means were statistically different. The results of this study indicate that nasal pillows are a viable option for use in patients with severe obstructive sleep apnea requiring high CPAP pressures.

The final study to be summarized in this podcast is entitled, “The Prevalence and Severity of Obstructive Sleep Apnea in Severe Obesity: The Impact of Ethnicity,” by Dr. Wen Bun Leong and colleagues from the School of Clinical & Experimental Medicine, School of Health & Population Sciences, University of Birmingham, United Kingdom, Specialist Weight Management Services and the Academic Department of Sleep & Ventilation, Heart of England NHS Nation Trust, Birmingham, United Kingdom and Aston University, Aston Triangle, Birmingham, United Kingdom. A number of studies have suggested that there are ethnic differences in the prevalence and severity of obstructive sleep apnea. However, there are few studies comparing white Europeans to South Asians. For others disorders, South Asians residing in western countries, have a higher prevalence of Type II diabetes, dyslipidemia and cardiovascular disease. Thus, it is possible that they may have a higher prevalence of obstructive sleep apnea, as well. In this study, Europeans and South Asians were recruited from a specialized weight-management service and compared with respect to their severity of obstructive sleep apnea. There were 343 consecutive patients referred to the weight-management clinic, of which 308 had data that were available for analysis. In comparison to white Europeans, there were no differences in body-mass index, age or gender distribution. However, the prevalence of obstructive sleep apnea was significantly greater among the South Asians, with 85% of those individuals having an apnea-hypopnea index greater than five, in comparison to 66% among the white Europeans. Furthermore, the proportion of severe obstructive sleep apnea was greater among the South Asians, with 42.5% versus 21.6%. Surprisingly, the

apnea-hypopnea index was 24 events per hour amongst the South Asians and only nine events per hour among the white Europeans. In addition, South Asians had a greater number of co-morbidities, such as diabetes, hypertension or coronary artery disease. They were on more diabetic medications and had, on average, a higher hemoglobin A1C. In a multivariate model, South Asian ethnicity, age, male gender and body-mass index were all significant predictors of the apnea-hypopnea index. These data add to accumulating evidence that there are significant racial and ethnic differences with respect to the severity and prevalence of obstructive sleep apnea. For clinicians, suspicion of sleep apnea should be heightened for patients who have South Asian ancestry.

In an accompanying editorial, Drs. Namratha Kandula and Sanjay Patel, point out that South Asians have greater visceral adiposity, insulin resistance and diabetes mellitus at a lower body-mass index in comparison to Caucasians. They suggest that for BMI thresholds used on screening instruments for obstructive sleep apnea, race or ethnic norms may need to be applied. Further, the authors state that an important question is to determine whether the consequences of obstructive sleep apnea may differ by ethnicity or race. They suggest that longitudinal, multi-ethnic cohorts that include South Asians are needed to better understand casual pathways and the associations between obstructive sleep apnea and various cardio-metabolic outcomes.

In addition to the papers discussed in this podcast, I would like to highlight a review article on disrupted nighttime sleep in narcolepsy by Drs. Thomas Roth and colleagues. In addition, there is a new Journal Club review paper comparing mandibular advancement devices to CPAP in the treatment of obstructive sleep apnea with commentary by Dr. David White.

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*.