First Impressions Matter: Transforming CPAP from Efficacious to Effective Therapy for OSA

Commentary on Balachandran et al. A brief survey of patients' first impression after CPAP titration predicts future CPAP adherence: a pilot study. *J Clin Sleep Med* 2013;9:199-205.

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Continuous positive airway pressure (CPAP) is well established as the most efficacious therapy for obstructive sleep apnea (OSA), improving daytime sleepiness and quality of life,^{1,2} as well reducing cardiovascular morbidity and mortality.³ However, CPAP effectiveness is limited by adherence to the therapy. Nearly one in five patients refuse to initiate CPAP.⁴ Of those who do try, half do not use it enough to gain the symptom and cardiovascular benefits.⁵ Studies have demonstrated that usage patterns are established early, within the first week of therapy.^{6,7} By one year, half no longer use CPAP at all.⁸

The challenge to our field is to ensure that this potentially life-saving therapy is actually used by patients. Diagnosis of OSA and prescription of CPAP is easy; ensuring adherence to CPAP is the challenge. Early intervention in patients likely to fail arguably may have the highest potential for increasing success by removing barriers before they give up. Given the early establishment of usage pattern, identification of those at risk prior to or soon after initiation of home CPAP therapy is needed.

Despite extensive study, predicting which patients are at high risk for poor CPAP adherence remains challenging. Demographic factors such as race/ethnicity, marital status, socioeconomic status have been associated with adherence in some studies⁹⁻¹² but not uniformly. These factors may be markers of underlying neighborhood deprivation, social support, health literacy, cultural practices, and environmental challenges.¹³ Further research is needed to identify the mechanisms responsible for these associations and to tailor effective solutions.

New investigations using psychological constructs to understand health behaviors demonstrate promise in identifying modifiable factors. Self-efficacy (the patients' belief in their power to cause an effect or their perception of ability to use CPAP to treat their OSA), readiness to change, and decisional balance have all been shown to predict short and longer-term adherence when assessed in the first week after CPAP exposure^{14,15} as well as in experienced users.¹⁶ Health values and attitudes are also associated with CPAP use¹⁷ as well as perceived risk of OSA and expected outcome of CPAP prior to exposure.¹⁸ These cognitive behavioral factors are potentially modifiable targets for interventions to improve CPAP use. However, evaluating these factors currently requires detailed questionnaires using complex scoring which are not practical in a busy sleep clinic.

In this issue of the *Journal of Sleep Medicine*, the pilot study of Balachandran et al.¹⁹ evaluates a simple questionnaire assessing CPAP perception as a predictor of adherence behavior. This retrospective study examined 1-month adherence data for consecutive OSA patients with their first exposure to CPAP in the sleep laboratory. Eligible subjects underwent either a CPAP titration study or split-night study at the authors' sleep center, completed a 6-item questionnaire the morning after their study, and had adherence data. The questionnaire assessed the patients' initial experience with and impressions of CPAP. Questions addressed difficulty tolerating CPAP, much like Lewis who found that subjects reporting problems the first night wearing CPAP had lower CPAP use long-term.²⁰ Other questions utilized principles of self-efficacy and decisional balance, evaluating the likelihood of using CPAP and perceived benefit of CPAP. In their cohort of 403 patients, the authors found an association of the CPAP perception score, using 4 of the 6 questionnaire items, with 1-month adherence. Of those with a poor perception of CPAP (scores > 16), less than 40% used CPAP for 4 hours or more per night vs. 55% in the group with scores < 16. Those with a negative initial perception of CPAP from the sleep lab are likely to be less enthusiastic about using the device at home and perhaps have less motivation to troubleshoot and address problems. These patients would be ideal targets for early intervention to reform their first impression and improve adherence.

Though promising, the study has important limitations. The questionnaire has not yet undergone construct or content validation, reliability testing and may not have the same performance when prospectively applied in other groups. It is unclear whether all 4 items contributing to the score equally determine CPAP outcomes and whether a subset of the items would suffice. The study only includes patients from a single center, of which many were excluded due to lack of objective adherence data, raising the possibility of sampling bias. It is also unclear if the perception score would predict CPAP use in those who do not undergo in-lab CPAP titration. Further study is needed to determine if this instrument has adequate sensitivity and specificity to identify non-adherence.

If the instrument developed by Balachandran can function as a screening tool for non-adherence risk, this is an important initial step. Identification and implementation of interventions

which improve adherence in high-risk patients is the essential follow-up. The most obvious intervention is to remedy physical factors that may have led to poor tolerance such as mask discomfort, oral leak, and pressure intolerance, although these have not been shown to substantially improve adherence.²¹ Other interventions focusing on psychological, social, and educational strategies have been trialed. Intensive educational programs and close follow-up have had limited success.²² Cognitive behavioral therapy (CBT) interventions have shown potential, improving CPAP adherence by 1.5 to 3 hours in 3 studies²³⁻²⁵—a substantial clinical impact. CBT attempts to change expectations surrounding CPAP and the decisional balance toward favoring CPAP. CBT is promising but may be too expensive to administer to all comers. The instrument developed by Balachandran may facilitate targeting these interventions to those at highest risk of failure with the initial “wrong” and possibly modifiable impression of CPAP.

Sleep medicine is fortunate to have a highly efficacious treatment for OSA; we must focus research and energy into efforts to increase CPAP adherence to transform it into a highly effective therapy. A short simple questionnaire administered after initial exposure to CPAP that can predict long-term adherence would be an extremely useful tool in improving effectiveness. Such a tool would allow for targeted interventions during the critical period to improve patient experience and perceptions and ideally change use behavior. Though prospective validation studies in diverse clinic populations are needed, the current study presents a tool that has potential.

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