

Introduction

Sleep apnea affects more than 40 million people in the United States. Yet, more than 80% of the affected individuals are undiagnosed and untreated due to a number of factors including: polysomnography cost, inconvenience of testing, and fear of being watched in the sleep lab ¹. As such, home sleep testing may be a preferred diagnostic option for the diagnosis of sleep apnea due to convenience and cost effectiveness.

Home Sleep Testing (HST) can generate high quality recordings, is roughly one fourth the cost and is done in the comfort of the patient's home. Furthermore, HST can be initiated from settings other than a sleep lab including, Nurse Practitioner-owned Family Practices; thus, offering more options to the patient which may speed up the diagnostic and treatment process. In addition, those who may have gone undiagnosed may now have additional options for testing.

Prior to this study, the success of HST in NP-owned family practices has not been evaluated yet. The purpose of this study is to identify the feasibility of HST in NP owned clinics.

Methods

A HST program was developed and tested in two (2) NP-owned settings, both in New Hampshire.

The program screened patients using Epworth Sleepiness Screening questionnaires (ESS), BMI, and clinical evaluation. Patients suspected of Obstructive Sleep Apnea (OSA) were trained on sensor hookup during the office visit and dispensed a monitor for self-administration in the home. The monitor channel set was consistent with American Academy of Sleep Medicine (AASM) guidelines for portable monitoring.

Once received by the practice, data from the monitor was uploaded to a webportal where studies were scored by a registered polysomnographic technologist (RPSGT) and interpreted by a sleep physician licensed in NH. Results were then communicated to the Nurse Practitioner in a secure, password protected webportal.

With a formal diagnosis in hand, the NP reviewed results with the patient and referred him/her to a sleep specialist, either NP or MD trained in sleep medicine, to initiate more extensive workup or implement treatment planning as outlined in the sleep diagnostic report.

Results

Preliminary analysis from 15 tests showed positive OSA for all patients: 7 mild, 4 moderate, 4 severe. Population sample characteristics are shown in Table 1. Average Apnea-Hypopnea Index and BMI across all patients showed moderate disease severity (AHI = 26) and considerable obesity (BMI = 31.9). Total sleep time, as estimated by the monitor, was nearly 6.5 hours and sleep efficiency was high (92%), which shows the device was not obtrusive during sleep.

Average turnaround time for patient diagnosis was 3.1 days, suggesting a very efficient and convenient patient screening, intake and diagnostic process at the NP practice. There were no studies that required repeat in-lab confirmation.

There were two additional studies that could not be scored; one was due to short recording duration and the other due to sensor disconnection. This shows a relatively low rate of incomplete studies (2/17), especially when one considers that the program is in its inception at the practices.

Conclusions

Our preliminary experience shows that HST in NP-owned practices is successful and can improve access to sleep apnea diagnosis and treatment. This research found that patients can effectively self-administer the monitor at home and NP's were able to quickly incorporate the diagnostic process within their normal workflow.

We believe that sleep apnea diagnosis and treatment can be a natural extension to other disease management programs like diabetes, hypertension, obesity and heart disease; thus, allowing family practices to play a bigger role in improving the delivery of care. Barriers that limit access to sleep apnea diagnosis and treatment may be reduced with the initiation of a HST program within primary care practices.

Table 1 – Sample Characteristics

Subjects (N)	15
Gender (M,F)	8,7
Age, yr. (mean ±sd)	56.8 ±12.8
BMI (mean ±sd)	31.9 ±10.4
AHI, events/hr. (mean ±sd)	26 ±27.9
ESS (mean ±sd)	8.3 ± 5.5
Total rec. time, min (mean ±sd)	417 ± 135
Total sleep time, min (mean ±sd)	385 ± 127
Number of OSA positive	15
Number of OSA negative	0
Overall turnaround time, days (avg.)	3.1

Literature cited

- 1) US Sleep Apnea Diagnostic and Therapeutic Devices Markets, N66F-56, Frost and Sullivan report, 2010
- 2) Young T. et al. Estimation of the clinically diagnosed proportion of sleep apnea syndrome in middle-aged men and women. Sleep, 1997; 20:705-6.
- 3) Collop N, et al. Clinical Guidelines for the Use of Unattended Portable Monitors In the Diagnosis of Obstructive Sleep Apnea in Adult Patients. Journal of Sleep Medicine, 2007; Vol 3, No. 7.