

COMMENTARY

Exploring telemedicine evaluation reliability: ahead of its time and long overdue

Commentary on Yurcheshen ME, Pigeon W, Marcus CZ, et al. Interrater reliability between in-person and telemedicine evaluations in obstructive sleep apnea. *J Clin Sleep Med*. 2021;17(7):1435–1440. doi:10.5664/jcsm.9220

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For many sleep medicine practitioners, 2020 brought telemedicine from theory into practice—whether we were ready for it or not. Yet the concept of “sleep telemedicine” is nothing new. Expanding internet usage in the 1990s enabled remote polysomnography and other nocturnal monitoring data to be transmitted to a central hub,^{1,2} and telemedicine-based counseling for patients with obstructive sleep apnea (OSA) commenced just as the 20th century concluded.³ Since that time, technological advances and a burgeoning need for more widespread sleep health care have cultivated an environment ripe for telemedicine’s dissemination. However, it took a pandemic for sleep telemedicine to realize its potential; an American Academy of Sleep Medicine survey recently showed that 62% of members anticipate greater use of telemedicine after the coronavirus disease 2019 (COVID-19) pandemic.⁴ Why had its widespread roll-out taken more than 20 years? Reimbursement concerns—now at least temporarily ameliorated⁵—have long stymied sleep telemedicine’s full deployment, but so too have important questions about clinical care quality. Just how feasible is it to perform a useful physical examination through telemedicine, and how does its quality compare with an in-person physical examination?

Yurcheshen et al⁶ examine these questions in this issue of the *Journal of Clinical Sleep Medicine*. One board-certified sleep medicine physician interviewed and examined a patient in the clinic while a different board-certified sleep medicine physician completed a similar evaluation with the same patient through telemedicine. Their assessments of the patient’s pretest probability of having OSA were then compared; accurate determination of pretest probability of OSA is important because it will often determine whether and which type of sleep testing is obtained.⁷ Symptomatic assessments (such as witnessed apnea) generally showed higher interrater reliability than upper airway examination elements such as modified Mallampati grade, tonsils, and overjet. The authors note study limitations such as an unexpectedly high dropout rate, absent in-person to in-person or telemedicine to telemedicine comparisons, and lack of standardized training in telemedicine-based upper airway examination. Uniquely, their work could be considered both ahead of its time (data were obtained prior to the COVID-19

pandemic) and long overdue (the technology involved has existed for many years).

To place this research in clinical and investigative context, a brief terminology review is useful. The word “telemedicine” is relatively broad and nonspecific. The American Academy of Sleep Medicine’s 2015 position paper defines it as “A legal patient/clinician encounter using electronic communication.”⁸ Yurcheshen et al⁶ utilized a form of telemedicine called clinical video telehealth (CVT), which implies real-time (synchronous) audiovisual communication occurred between patient and practitioner. CVT is subdivided into center-to-center (C2C) telemedicine where both patient and practitioner are in clinical settings, center-to-home (C2H) telemedicine where the patient is in a nonclinical setting, and out-of-center (OOC) telemedicine where both patient and practitioner are in nonclinical settings.⁹ Therefore, this study’s specific focus is C2H CVT; the patient is in a nonclinical setting without any examination equipment besides a pen light provided by the investigators. Upper airway physical examination is somewhat more feasible during C2C CVT where a staff member (“patient presenter”) may utilize more advanced diagnostic equipment.¹⁰ The authors highlight the added challenge of C2H or OOC CVT-based physical examination when these elements are missing from the patient’s room. Interestingly, this absence highlights the presence of an elephant in the same room.

How much does the upper airway examination actually change our pretest probability determination even during in-person OSA assessment? Notably, 3 common clinical tools—the Berlin Questionnaire, STOP-Bang Questionnaire, and Multivariable Apnea Prediction score—exclude elements of upper airway examination beyond neck circumference. Although the NAMES assessment (neck circumference, airway classification, comorbidities, Epworth scale, and snoring) includes a modified Mallampati grade, its utility is comparable to the Berlin Questionnaire.¹¹ Furthermore, data published during sleep telemedicine’s infancy called into question the correlation of several upper airway examination components with presence of OSA (with the notable exception of lateral pharyngeal wall narrowing).¹² A more recent review of modified Mallampati grading noted its variable utility predicting OSA presence and

severity even in in-person research settings, with lack of examination technique standardization potentially contributing to this inconsistency.¹³ Therefore, challenges in proper upper airway grading and questions about its applicability to OSA risk assessment have long existed independently of telemedicine. Intensified roll-out of this health care modality is undoubtedly, and appropriately, heightening awareness of diagnostic and predictive dilemmas that already exist.

Nevertheless, these broader concerns regarding OSA pretest probability determination in no way diminish the important work of Yurcheshen et al.⁶ Their research highlights how increased utilization of sleep telemedicine forces us all to question both how and why we do what we do. Suboptimal interrater reliability, whether assessed through telemedicine or in-person care, is not cause to eliminate a particular physical examination maneuver or to avoid the patient encounter modality (eg, telemedicine) in which it was performed. On the contrary, these findings should spur us to re-examine our evaluation techniques¹³ while reassessing how to dovetail them with historical factors during OSA risk assessment. There is little doubt that telemedicine—particularly C2H and OOC CVT—can complicate this process further due to its inherent logistical complexities. But there is also little doubt that telemedicine is here to stay. It behooves us to continue exploring ways to optimize deployment of this important health care tool for patients who might otherwise be marginalized by geography, lifestyle, or disability. The past year has shown us that such work is no longer ahead of its time. It is long overdue.

CITATION

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Dr. Fields has seen and approved the manuscript. The author reports no conflicts of interest.