

COMMENTARY

A Requiem for the Clinical Use of the Epworth Sleepiness Scale

Commentary on Campbell et al. Clinical reproducibility of the Epworth Sleepiness Scale score for patients with suspected sleep apnea. *J Clin Sleep Med*. 2018;14(5):791–795.

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The Epworth Sleepiness Scale (ESS) is a numerical scale developed by Murray Johns in 1991 as a subjective assessment of daytime sleepiness.¹ It has been translated and validated in many languages and widely used in clinical and research settings as an index of sleepiness associated with obstructive sleep apnea (OSA) and other conditions. It is generally accepted that a score of > 10 indicates the presence of sleepiness.

In this issue of the *Journal of Clinical Sleep Medicine*, Campbell et al. conducted a retrospective analysis of sequential ESS scores in patients with suspected OSA across a diagnostic referral pathway.² Their study showed that the ESS scores are variable when administered sequentially within a 6-month period. The scores of 7% of the patients dropped from > 10 to < 10 between initial and subsequent ESS assessments while 7.8% of patients had their ESS score increase from < 10 to > 10. Furthermore, the ESS score differed between the 2 timepoints by 5 or more in 21% of patients. The authors propose that because ESS scores are not always clinically reproducible, it should not be the sole determinant of patients' eligibility for OSA evaluation. This is in line with other studies that have assessed the clinical utility of the ESS when used alone or in conjunction with other validated OSA screening tools. Smith et al. compared several screening questionnaires for affect, fatigue, emotion, mood and quality of life among 50 patients who reported excessive daytime sleepiness. They recommended that a model of sleepiness that assesses dimensions of fatigue and anxiety could explain the symptom of subjective sleepiness better than the isolated use of the ESS.³ Similarly, Silva et al. compared the predictive accuracy for OSA of the STOP, STOP-BANG, 4 variable tool and the ESS in the SHHS cohort and found that the ESS performed the worst with only a 39% sensitivity compared with 87% for the STOP-BANG.⁴

Although sleepiness is a cardinal symptom of OSA, the presence of this symptom alone to screen for OSA is fraught with the potential for error as illustrated by the results of Campbell et al. Patients with OSA present with a myriad of symptoms. The ESS focuses solely on only one of these symptoms (sleepiness) which may or may not be present regardless of the severity of OSA.^{5,6} Furthermore, patients' perception and manifestation of daytime sleepiness is variable and the 8 scenarios

presented in the ESS may not always describe patients' symptoms. For instance, some patients may take regular scheduled naps, while in others, habitual consumption of stimulants such as caffeine may mask their symptoms and enable them stay awake in the scenarios described in the ESS. Some patients who do not report subjective sleepiness may nevertheless have objective sleepiness noted by friends and family. Women, especially, may instead report fatigue, tiredness, lack of energy or feeling unrested.⁷

The Campbell et al. study results are non-biased as it is a retrospective study, so patients were not aware that the sequential scores would be compared.² However, since the study was based on sequential measures within a 6-month period, there may have been genuine changes in subjective sleepiness in individual patients during that time. Unfortunately, this study was done retrospectively so information regarding lifestyle or medication changes, which may have impacted ESS were not assessed. Another limitation cited in the study that may account for the observed variability was that the identity of the person filling out the forms each time was not confirmed. Therefore, it is not clear if the questionnaire was completed by the patients or on behalf of the patients by family members, friends or health care professionals. Language barrier was another possible source of error inasmuch as some of the patients had different ethnic backgrounds and the questionnaires were completed in English.

There are other sources of error in the ESS. The decision to score the presented scenarios as 1, 2 or 3 is very subjective and patients have no clearly defined description of what a low, moderate or high chance of dozing represents. The level of education completed by the patient is another source of error.⁸ Certain patient populations like commercial drivers may also underscore the ESS for fear of repercussions, which may affect their ability to maintain their jobs.⁹

The findings from the Campbell et al. study² remind us of the limitations of the ESS that make it inadequate as a singular tool in stratifying patients at risk for OSA. However, it can be a useful adjunct in the assessment of patients with OSA when used in conjunction with a thorough history, clinical examination and other validated OSA screening tools that

incorporate symptoms, signs, and risk factors for OSA. Going forward, we as sleep specialists need to de-emphasize the role of ESS in OSA assessment and educate our peers and health care decision makers that irrespective of OSA severity, not all patients with OSA exhibit daytime sleepiness. Even when present, sleepiness may manifest in a variety of ways outside of those delineated in the ESS. As emphasized in an editorial in the *Journal of Clinical Sleep Medicine* several years ago,¹⁰ the ESS should not be used by itself to determine eligibility for a sleep study.

CITATION

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REFERENCES

1. Johns MW. A new method for measuring daytime sleepiness: the Epworth sleepiness scale. *Sleep*. 1991;14(6):540–545.
2. Campbell AJ, Neill AM, Scott DA. Clinical reproducibility of the Epworth Sleepiness Scale score for patients with suspected sleep apnea. *J Clin Sleep Med*. 2018;14(5):791–795.
3. Smith S, Rossdale J, Serry Y, Sekaran A, Drakatos P, Steier J. Multiple dimensions of excessive daytime sleepiness. *J Thorac Dis*. 2018;10(Suppl 1):S170–S176.
4. Silva GE, Vana KD, Goodwin JL, Sherrill DL, Quan SF. Identification of patients with sleep disordered breathing: comparing the four-variable screening tool, STOP, STOP-Bang, and Epworth Sleepiness Scales. *J Clin Sleep Med*. 2011;7(5):467–472.
5. Kapur VK, Baldwin CM, Resnick HE, Gottlieb DJ, Nieto FJ. Sleepiness in patients with moderate to severe sleep-disordered breathing. *Sleep*. 2005;28(4):472–477.
6. He K, Kapur VK. Sleep-disordered breathing and excessive daytime sleepiness. *Sleep Med Clin*. 2017;12(3):369–382.
7. Chervin RD. Sleepiness, fatigue, tiredness, and lack of energy in obstructive sleep apnea. *Chest*. 2000;118(2):372–379.
8. Marra L, Carratu P, Dragonieri S, Quaranta VN, Castellana G, Resta O. The role of education in the self-compilation of Epworth sleepiness scale questionnaire in patients with suspected obstructive sleep apnea. *Sleep Breath*. 2017 Nov 9. doi:10.1007/s11325-017-1586-2. [Epub ahead of print].
9. Colvin LJ, Collop NA. Commercial motor vehicle driver obstructive sleep apnea screening and treatment in the united states: an update and recommendation overview. *J Clin Sleep Med*. 2016;12(1):113–125.
10. Quan SF. Abuse of the Epworth Sleepiness Scale. *J Clin Sleep Med*. 2013;9(10):987.

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DISCLOSURE STATEMENT

The authors report no financial conflicts of interest.