

Validation of an apnea home screening device.

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Aims: The apnea screening device (SleepStrip™, SLP, Ltd.) has been validated in previous studies (Shochat T, *et al.*, Eur Resp J, 2001: 19:121-6). The new version includes features designed to improve both its accuracy and appearance. We present the results of a validation study performed with the new version, to compare performance of the device with sleep laboratory polysomnographic (PSG) recordings.

Methods: 120 consecutive adult patients (93 men) suspected of sleep apnea syndrome (SAS) and referred to the sleep laboratory at the Technion Sleep Medicine Center participated in the study. Mean age was 47 (SD 12.4), mean BMI was 29.3 (SD 5.4). Patients underwent overnight PSG recordings concomitantly with the use of the device. Recordings were scored and respiratory disturbance indices (RDI) were computed by expert scorers who were blinded to the device's final scores ("sscores"). Pearson correlation was computed between RDI and sscores. RDI thresholds were defined as: 15-24: mild, 25-39: moderate and ≥40: severe. Sscore thresholds were selected (based on optimal sensitivity and specificity): 12-19: mild, 20-29: moderate and ≥30: severe. Measures of accuracy were computed in two ways: when corresponding sscore and RDI thresholds were compared, and when the sscore threshold was held constant at mild against three RDI thresholds.

Results: Twenty three patients were removed from analysis (19%) mainly due to improper usage or insufficient total sleep time. Correlation between sscore and RDI was: $r=0.63$, $p<0.001$.

Table 3 shows measures of accuracy using the sscore thresholds against RDI thresholds.

	Mild	Moderate	Severe
Sensitivity	0.83	0.70	0.79
Specificity	0.69	0.74	0.86
Positive predictive value	0.67	0.51	0.48
Negative predictive value	0.84	0.87	0.96
Overall accuracy	0.75	0.73	0.85

Table 4 shows sensitivity values using one threshold held constant at mild or above against three RDI thresholds.

	Mild	Moderate	Severe
Sensitivity	0.83	0.93	1.00

Conclusions: Measures of accuracy were comparable to the Israeli sample published previously (Shochat T, *et al.*, Eur Resp J, 2001: 19:121-6), while failure rates decreased. Thus, the new device is a useful tool for SAS screening, particularly when using the low threshold for detecting high risk patients. Success rates and display appearance are substantially improved.