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Diagnostic Accuracy of Home Sleep Apnea Testing (HSAT) Based on Recording Duration

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SKMC Class of 2021
SI CTR Abstract
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Diagnostic Accuracy of Home Sleep Apnea Testing (HSAT) Based on Recording Duration

Introduction: Obstructive Sleep Apnea (OSA) is a chronic sleeping disorder with serious health consequences. Currently, standard diagnosis is through in-lab polysomnography; however, there has been a shift to greater use of Home Sleep Apnea Testing (HSAT) for patients with a high pre-test probability of having OSA.

Objective: To investigate the minimum recording time needed during HSAT to accurately diagnose the presence and severity of OSA.

Methods: A retrospective review was conducted of HSATs done from January-October 2017. Each study was divided into 1-, 2-,3-,4-,5-, 6-, and 7 hour intervals beginning at the recording start time. The respiratory event index (REI) was determined for each of these time intervals and then compared to the initial REI derived from the total monitoring time (REI_{TMT}) by a Fleiss' κ test, a paired samples t-test, and concordance correlation coefficients (CCC).

Results: Significant differences were found between the REI_{TRT} and the REI at 60 min ($P < 0.0001$), 120 min (0.0002), 180 min (< 0.0001) and 240 min (0.0002) with a lack of concordance, signifying these intervals are poor diagnostic correlates for the REI_{TRT} . REIs determined at 300, 360, and 420 min were not significantly different from the REI_{TRT} and had very significant CCCs, 0.979, 0.990, and 0.996, respectively. The Fleiss' κ test showed almost perfect agreement between the REI_{TRT} and and the REI for 360 and 420 min.

Discussion: The results suggest that at least 6 hours of monitoring time during HSAT is needed to accurately diagnose and determine the severity of OSA.