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Title: Evaluation of automatic scoring algorithm for home sleep diagnosis

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Body: The routine clinical use of simplified sleep diagnosis systems in non-specialized centers requires tools for minimizing resources while obtaining good quality results. The aim of the study was to compare the results of the Automatic Scoring Algorithm (ASA) of the BitmedLab (SIBEL, Spain) analysis software with manual scoring. Thirty recordings from home polygraphy studies in 10 patients with suspicion of SAHS and obtained with the Sleep&Go (SIBEL, Spain) type III device were scored in 2 different runs: 1, a sleep technician first selected portions of the recordings were the patient was asleep based on the flow patterns (Guerrero, Respir. 2010;80:495), and then scored the recordings manually; and 2, the ASA was applied to the same selected portions of the tracings. During manual scoring, the apnea and hypopnea event definitions were according to AASM recommendations (Berry In AASM Ed. Darien; 2012). In the ASA, apneas were defined as >90% reduction in the flow signal for >10 sec and hypopneas as >30% reduction during >10 sec followed by a desaturation ($\geq$3%). The mean±SD AHI with manual scoring was 22±17 ev/h, the mean AHI with ASA was 20±16 ev/h and the mean of the differences was -2.9±3.5 ev/h. The Pearson correlation coefficient between both variables was r=0.982. When classifying the severity level according to the manual AHI (No SAHS<5; Mild: between 5 and 15; Moderate: between 15 and 30; Severe: $\geq$30), 80% of the recordings scored with ASA were in agreement with manual scoring. The automatic scoring algorithm of the BitmedLab software applied to home polygraphy recordings is useful for scoring respiratory events.