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Title: Development of a new scale to evaluate sleepiness in obstructive sleep apnea (OSA): The Barcelona sleepiness scale (BSS)

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Body: Background: Excessive daytime sleepiness (EDS) is a common problem with serious consequences for health and social activities of the patients. There is no simple method to reliably quantify sleepiness, and objective methods (Multiple Sleep Latency Test, MSLT; Maintenance of Wakefulness Test, MWT) and subjective ones (Epworth Sleepiness Scale, ESS) are poorly correlated. Aim: To develop and validate a new sleepiness scale for clinical use in OSA. Methods: Generation of items: 30 consecutive patients with OSA and their partners were interviewed using focus group techniques and cognitive interviews generating a preliminary list of sleepiness items. This list was reduced to 16 common situations considering the frequency of response and a homogeneous representation of the sleepiness severity. Validation: 30 consecutive patients complaining of snoring or apneas with and without EDS were evaluated with MSLT, MWT, ESS and the list of sleepiness items. A composite of MSLT and MWT was calculated as an objective criterion of sleepiness. Exhaustive regression analysis of all the subsets of the list was performed. Mallows' Cp minimization was used to choose the best item combination. Results: Two items (In the morning, when I get relaxed & In the afternoon, while standing in a line) achieved the minimum Cp score and comprised the BSS. The correlation between the BSS and the composite score of MSLT and MWT was 0.51, much higher than that found with ESS (0.23). Conclusion: Our data suggest that the BSS, a simple sleepiness scale of 2 items, shows the best correlations with objective tests. Support by PI07/0318.