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Title: Neuropsychological functioning after CPAP treatment in obstructive sleep apnea: A meta-analysis

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Body: Introduction: the generally held clinical view is that treatment with continuous positive airway pressure (CPAP) substantially improves cognition in patients with obstructive sleep apnea (OSA). The cognitive domains in which recovery is found as well as the extent of recovery differs widely between studies, however. Objective: a meta-analysis was conducted to quantify the magnitude of the overall effect of CPAP treatment in OSA on neuropsychological functioning Methods: a comprehensive literature search of clinical trials published from January 1990 to June 2011 was performed. The inclusion criteria were: randomized controlled trial, diagnosis OSA by polysomnography, apnea-hypopnea index, duration and compliance of CPAP treatment, one or more standardized neuropsychological tests. Mean-weighted effect sizes of CPAP treatment for 7 cognitive domains were calculated. Results: 12 studies encompassing 516 OSA patients were included. A small significant effect on attention was observed in favour of CPAP treatment ($d=.20$). For the other cognitive domains the effect sizes did not reach significance. Improvement on measures of sleepiness was modest ($d=.30-.40$) and comparable to a prior meta-analysis. Conclusion: this meta-analysis shows that effect of CPAP treatment on cognition is small and limited to the attention domain. These findings indicate that, contrary to the general assumption, only slight improvement of cognitive functioning after CPAP treatment can be expected.