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Title: Fixed pressure (FP) versus auto-adjusting continuous positive airway pressure (autoCPAP): Comparison of efficacy in reducing blood pressure, a randomized controlled trial

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Body: CPAP alone provides only modest reduction in blood pressure (BP) in obstructive sleep apnea (OSA) patients. Limited data are available on the respective impact of FP versus autoCPAP devices on BP evolution. Objective: To compare efficacy of FP versus autoCPAP in reducing BP. Design: Mono-centre, randomised-controlled (1:1), parallel trial. Interventions: One-week autotitration, then FP (95th percentile) for 4 months versus auto-adjusting CPAP throughout 4 months (6-14 cmH₂O). Main Outcome Measures: Primary endpoint was the change in office systolic BP. Secondary endpoints included 24-hour BP measurements. Results: 322 OSA participants (Apnea+Hypopnea index: 43±21/h, mean age 57±11 years, 30 % female, mean BMI 31.3±6.6 kg/m², mean office systolic and diastolic BP 135±17 and 80±10 mmHg) were randomly assigned to FP (n=161) or autoCPAP (n=161). Analysis is presented in Intention to Treat. CPAP compliance did not differ between groups with an overall median CPAP use of 5:1 hours per night. Office systolic BP decreased by 2.2 mmHg (95% CI -5.8/1.4) from baseline to 4 months in the FP group and by 0.4 mmHg (-4.3/3.4) in the autoCPAP group (difference between groups -1.3 mmHg, -4.1/1.5; p=0.365, adjusted for baseline BP values). From baseline to 4 months, 24-hour diastolic BP decreased by 1.7 mmHg (-3.9/0.5) in the FP group and by 0.5 mmHg (-2.3/1.3) in the autoCPAP group (difference between groups -1.4 mmHg, -2.7/-0.01; p=0.0477, adjusted for baseline BP values). Conclusions: Fixed pressure is more effective than autoCPAP in reducing blood pressure. Trial Reg No: NCT01090297.