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**Title:** Flexible positive airway pressure improves treatment adherence compared with auto-adjusting PAP

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**Body:** Background: There are no clinical data comparing adherence and quality of life between auto-adjusting positive airway pressure (APAP) and two different flex PAP devices (A-Flex, C-Flex) in patients with obstructive sleep apnea (OSA). Methods: Ninety-three patients with OSA who were newly diagnosed were randomly assigned to receive 3 months of APAP (n=31), APAP with C-Flex (n=31), or APAP with A-Flex (n=31). Objective adherence was determined after 3 months of CPAP treatment, and the Epworth Sleepiness Scale (ESS), Pittsburgh Sleep Quality Index (PSQI), and Calgary Sleep Apnea Quality of Life Index (SAQLI) were examined at baseline and after 3 months. After 3 months, patients in the APAP with A-Flex group and those in the APAP with C-Flex group were crossed over and those in the APAP group were switched to A-Flex for 3 additional months. Results: The groups were similar demographically. Treatment adherence during the first 3 months was significantly greater in the APAP with C-Flex group (APAP with C-Flex: 5.19±1.84 h/night vs. APAP: 3.96±1.66 h/night vs. APAP with A-Flex: 4.27±2.12 h/night, p = 0.04). There was a significant improvement in 2 of 4 of the SAQLI domain scores and in the ESS and PSQI in the APAP with C-Flex group. Adherence significantly improved among the poor compliers (< 4 h/night of use) in the APAP group after change to APAP with A-Flex (p=0.01). Conclusions: APAP with C-Flex was a suitable CPAP modality in three type CPAP modalities. Clinical Trial Registration—URL:<http://www.clinicaltrials.gov>. Unique identifier: NCT00873977.