

OP34 WHAT IS THE EFFECT OF HEADGEAR ON CRANIOMANDIBULAR GROWTH? A SYSTEMATIC REVIEW AND META-ANALYSIS

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AIMS: To compare in a systematic review the effect of extraoral maxillary traction for Class II malocclusions with headgear on craniomandibular growth, based on clinical trials on human patients in an evidence-based manner.

MATERIALS AND METHOD: Five electronic databases were searched from inception to November, 2015 without year, language, or publication type limitations for randomized controlled trials (RCTs) and prospective non-RCTs comparing Class II patients treated with headgear and untreated Class II patients, followed by manual searches. After duplicate study selection and data extraction, risk of bias within and across studies was assessed in duplicate with the Cochrane risk of bias tool and the GRADE approach, respectively. Random-effects meta-analyses of treatment-induced annualized mean differences (MD) and 95 per cent confidence intervals (CIs) were conducted, followed by mixed-effects subgroup and sensitivity analyses.

RESULTS: A total of 27 papers pertaining to 10 clinical trials (3 RCTs, 7 prospective non-RCTs) with over 500 patients were included. Headgear treatment had, in the short-term, a significant restraining effect on SNA angle (6 studies; MD = $-0.99^\circ/\text{year}$; 95% CI = -1.43 to $-0.55^\circ/\text{year}$; $P < 0.001$), essentially no effect on SNB angle (5 studies; MD = $-0.02^\circ/\text{year}$; 95% CI = -0.30 to $0.25^\circ/\text{year}$; $P = 0.870$), and a significantly improving effect on ANB angle (6 studies; MD = $-1.06^\circ/\text{year}$; 95% CI = -1.51 to $-0.61^\circ/\text{year}$; $P < 0.001$) compared to normal growth. The stability of the attained effects was problematic, especially with partial retention protocols, while the overall quality of evidence according to GRADE was moderate to low. Finally, significant signs of overestimation of headgear's effectiveness from prospective non-RCTs compared to RCTs were identified (difference in standardized effect sizes = 0.47; 95% CI = 0.07 to 0.86; $P = .020$).

CONCLUSION: Based on existing trials, there is insufficient evidence to make robust recommendations about a headgear effect on craniomandibular growth, as the quality of evidence was low. Future clinical recommendations should be based on evidence arising exclusively from well-conducted RCTs on headgear in order to avoid bias.