The University Of Sheffield.

School Of Clinical Dentistry.

Rolf G. Behrents, Editor-in-Chief
American Journal of Orthodontics and Dentofacial Orthopedics

30 June 2020

Academic Unit of Oral Health, Dentistry and Society

Head of Unit
Professor Sarah Baker
BSc(Hons), PhD, AFBPsS

Claremont Crescent
Sheffield
S10 2TA
Telephone: +44 (0) 114 215 9319 (Office)
Fax: +44 (0) 114 215 9414
Email: ds-ohds@sheffield.ac.uk

Dear Dr Behrents

Re – Macey et al Do malocclusion and orthodontic treatment impact oral health? A systematic review and meta-analysis doi: 10.1016/j.ajodo.2020.01.015

I welcome the inclusion of patient reports of the impact of their malocclusion on their oral health, function, social and emotional well-being in this review; however, I fundamentally disagree with the authors' conclusions that there is an absence of evidence. Numerous studies have clearly and consistently found that people with malocclusion have worse oral health-related quality of life (OH-QoL) than people without malocclusion and this has been the conclusion of at least four previous systematic reviews. [1-4] Two of these reviews managed to carry out a meta-analysis. Kragt and colleagues[4] combined data from 9293 young people with malocclusions and 10,717 without malocclusion, concluding that those with malocclusion are 1.74 times more likely to have an impact on their OH-QoL.

Regarding the correction of malocclusion through orthodontic treatment we did not, as stated by the authors, conclude that there was a 'lack of evidence of the benefit to a patient's quality of life'.[5] We combined the generic OH-QoL data from five longitudinal studies, involving 243 participants and found a moderate improvement observed from before and after orthodontic treatment. Although the effect size of 0.75 is within the range considered, somewhat arbitrarily, to be 'moderate', this compares very favourably with effect sizes achieved by other healthcare interventions.[6] Indeed, the upper confidence limits of these generic OH-QoL data (0.80 to 1.15) indicate that substantial improvement might be shown from future, high-quality longitudinal studies, with larger sample sizes, and collecting data using condition-specific questionnaires designed to assess more precisely the impacts of malocclusion. Andiappan and colleagues[3] also managed to undertake a meta-analysis of studies using a pre-post design and found a larger effect size (1.29; 95% CI: 0.67 to 1.9; 23 studies; 228 participants), but these participants had undergone combined orthodontic/orthognathic surgical treatment. Incidentally, Macey and colleagues have described another of our articles as a review, when it was actually a commentary on this article.[7]

Regarding improvement in the health of the teeth and supporting structures as a result of orthodontic treatment the authors state they were unable to undertake a meta-analysis because 'tooth-level' data were not available and whole-mouth data are 'not relevant to malocclusion when individual components such as localized crowding, may influence the outcome'. However, tooth-level data are statistically problematic due to the clustering effect of teeth with an individual's mouth. We might have to accept that, although we, as clinicians, are aware of the improvement in the dental health of individual patients (e.g. those with palatally displaced maxillary canines with root resorption of adjacent teeth), proving that orthodontic treatment leads to an improvement in dental health at a population level will remain elusive, other than for the reduction of incisal trauma.

It is very disappointing that the authors of this article have continued to state that there is no evidence of benefit from orthodontic treatment (unlike the admittedly anecdotal, but consistent feedback from patients), just as there is available evidence to the contrary.

References

1. Liu Z, McGrath C, Hagg U. The impact of malocclusion/orthodontic treatment need on the quality of life. A systematic review. Angle Orthod 2009;79:585-91.
2. Dimberg L, Arnrup K, Bondemark L. The impact of malocclusion on the quality of life among children and adolescents: a systematic review of quantitative studies. Eur J Orthod 2015;37:238-47.
3. Andiappan M, Gao W, Bernabe E, Kandala NB, Donaldson AN. Malocclusion, orthodontic treatment, and the Oral Health Impact Profile (OHIP-14): Systematic review and meta-analysis. Angle Orthod 2015;85:493-500.
4. Kragt L, Dhamo B, Wolvius EB, Ongkosuwito EM. The impact of malocclusions on oral health-related quality of life in children-a systematic review and meta-analysis. Clin Oral Investig 2015.
5. Javidi H, Vettore M, Benson PE. Does orthodontic treatment before the age of 18 years improve oral health-related quality of life? A systematic review and meta-analysis. Am J Orthod Dentofacial Orthop 2017;151:644-55.
6. Sullivan GM, Feinn R. Using Effect Size-or Why the P Value Is Not Enough. J Grad Med Educ 2012;4:279-82.
7. Javidi H, Benson P. The impact of malocclusion and its treatment on the oral health related quality of life of adults, assessed using the Oral Health Impact Profile (OHIP-14). Evid Based Dent 2015;16:57-8.

Yours sincerely

Philip Benson