

Implant- supported fixed prostheses give greatest OHRQoL improvement

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A commentary on

Ali Z, Baker S R, Shahrabaf S, Martin N, Vettore M V.

Oral health-related quality of life after prosthodontic treatment for patients with partial edentulism: A systematic review and meta-analysis. *J Prosthet Dent* 2018; DOI:10.1016/j.prosdent.2018.03.003. [Epub ahead of print].

Abstract

Data sources Medline, Cochrane Central, Cochrane Database of Systematic Reviews, National Health Service Economic Evaluation Database, Health Technology Assessment Database, Web of Science and the abstracts of conference proceedings for International Association for Dental Research meetings.

Study selection Randomised controlled trials (RCTs), non-RCTs, and cohort studies measuring pre-treatment to post-treatment change in oral health-related quality of life (OHRQoL) score using validated measures were included.

Data extraction and synthesis Two reviewers independently screened and selected studies, and extracted data. Risk of bias was assessed independently using the Cochrane tool for RCTs and the Newcastle Ottawa Scale for non-randomised studies. Random effects meta-analysis was used to compare change in OHRQoL scores.

Results Twenty one cohort studies and two RCTs were included. Eight studies investigated implant-supported crowns (ISCs), ten studies reported on implant-supported fixed dental prostheses (IFDPs), nine on dental prostheses (TFDPs) and two implant-supported removable dental prostheses (IRDPs). Seventeen papers contributed to the meta-analysis. At nine months the pooled mean OHRQoL change was 15.3 for TFDP, 11.9 for RPD, and 14.9 for IFDP and the pooled standardised OHRQoL change >9 months was 13.2 for TFDP and 15.8 for IFDP. Direct comparisons nine months between TFDP against IFDP and RPD against IFDP significantly favoured IFDP in both cases.

Conclusions TFDP and IFDP had short- and long-term positive effects on OHRQoL. RPDs positively affected OHRQoL in the short term. IFDP showed greater short-term improvement in OHRQoL than RPD and TFDP.

Commentary

Partial edentulism can result in psychosocial problems that result from the functional and aesthetic deficiencies caused by tooth loss. Several options exist for the rehabilitation of partially edentulous patients including: removable partial dentures (RPD); tooth-

Practice point

While the findings suggest that IFDPs produced the best improvements in OHRQoL scores in both the short and medium term, additional high-quality long-term clinical trials are needed.

supported fixed partial dentures (TFDP); implant-supported fixed partial dentures (IFDPs); implant-supported removable partial dentures (IRDPs); and implant-supported crowns (ISCs). The patient's medical and social conditions, the adjacent teeth and the edentulous space should be carefully considered in order to make a clinically sound choice between these different types of restoration. The purpose of this systematic review and meta-analysis was to examine the improvements in quality of life of patients after treatment with different prosthodontic modalities. The authors described a clear methodology for this study. For the literature search, the Mesh terms were detailed along with the databases used. The inclusion and exclusion process for analysis were well defined, particularly the use of validated oral health-related quality of life (OHRQoL) outcome measures in the studies, and only those that had measurements pre- and post-treatment. The authors include a breakdown of the outcome measures used by each study (OHIP-14, OHIP-20, OHIP-49 and GOHAI), acknowledging that while the measures were different, the common themes assessed and the outcome standardisation justified their combined analysis. Only English language studies were included, and studies over a 37 year period were selected (1979–2016). The study used a robust selection process with two assessors (along with a tie-breaker assessor), and a Cohen kappa score provided for inter-assessor agreement on the suitability of included studies.

The authors accounted for all identified papers using the PRISMA flow diagram. Twenty-three studies were identified for qualitative synthesis, and ultimately, 17 studies were included for meta-analysis. The remaining six studies were excluded due to insufficient data (n = 2), patients undergoing a combination of interventions (n = 2), unrepresentative patient demographics (n = 1) and a poorly established treatment modality (n = 1) where mini-implants were used. Of the 17 meta-analysed studies, two were randomised control trials (RCTs) and 15 were non-randomised trials.

Each included study was evaluated with established quality assessment tools; the Cochrane Collaboration risk of bias tool for randomised trials and Newcastle-Ottawa scale to assess quality of non-randomised studies. The RCTs analysed were both identified as having a low risk of bias, as were the majority

GRADE rating 

of non-randomised studies. A Cochrane Q test was used to evaluate the heterogeneity of indirect comparisons between the different interventions. The authors divided the results among the interventions based on a <9 month follow-up and >9 month follow-up due to the limited timescales used by the studies (a range of 1 month–60 months).

Results were calculated for each prosthodontic intervention, with a weighting for random effects analysis attached to each constituent study. The results of the indirect meta-analysis suggest that IFDPs and TFDPs both deliver quality of life benefits in both the short and medium term. Conversely, ISCs do not provide an improvement in OHRQoL outcomes at any time, with RPDs showing an initial improvement which is not sustained in the medium term (>9 months). It is proposed that the anterior-posterior position of ISCs may result in a difference of measured outcomes, due to the aesthetic restoration of anterior implants, however, such an intervention subgroup analysis was not possible in this study. A number of reasons for the decrease in OHRQoL scores for RPDs in the medium term were suggested, including distortion in fit, maintenance requirements and negative periodontal consequences associated with wear. RPDs were more likely to provide a larger improvement in OHRQoL scores when anterior teeth were replaced, but patient perceptions of treatment success may reduce over time if functional performance is not maintained. The division of the timescales used in the analysis may accurately represent short term outcomes for the treatment modalities used, however, medium- and long-term outcomes are less well represented.

While two studies analysed IRDPs, the number of patients treated with this modality (n = 32) was insufficient to carry out a meta-analysis and therefore results were not available. Despite this, the

authors acknowledge that initial results from these studies appear promising and recommend further high-quality research in this area.

Direct meta-analyses were carried out between IFDPs versus RPDs, and IFDPs versus TFDPs, based on three studies. An RPD versus TFDP analysis was not carried out due to the heterogeneity detected between the data sets. The results suggested that IFDPs were superior to both RPDs and TFDPs at <9 months follow-up, as OHRQoL scores improved by 40% and 42%, respectively. However, the authors recommend caution in interpreting the results for IFDPs without consideration of individual clinical situations and due to the results being based on only three studies.

Overall, a high-quality systematic review and meta-analysis of the OHRQoL outcomes for restoration of partially edentulous arches has been performed. Consistent and careful consideration of the data heterogeneity and risk of inherent study bias has been made throughout the analysis process, in spite of the small number of studies that have been used to produce the results. While the results suggest that IFDPs produce the best improvements in OHRQoL scores in both the short and medium term, the authors suggest that there is a need for further high-quality long-term clinical trials before definitive conclusions can be drawn for the best intervention for partial edentulism rehabilitation.

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