The efficacy of interdental brushes on plaque and parameters of periodontal inflammation: a systematic review
Slot D E, Dorfer C E, Van der Weijden G A

CRD summary
This review concluded that interdental brushes used as an adjunct to toothbrushing removed more dental plaque than brushing alone. Most trials showed a positive effect of interdental brush use compared to floss. The limited amount of evidence retrieved in the review may call into question the reliability of these conclusions.

Authors' objectives
To evaluate the use of interdental brushes, as an adjunct to toothbrushing, compared to toothbrushing alone or other interdental hygiene devices on plaque and clinical parameters of periodontal inflammation.

Searching
MEDLINE and the Cochrane Central Register of Controlled Trials were searched from inception to November 2007 for English-language studies. Search terms were reported. Reference lists of retrieved articles were searched for any additional relevant papers.

Study selection
Randomised controlled trials (RCTs) evaluating the effects of interdental brushes on plaque, bleeding, gingivitis or pocket depth in adults (aged 18 years and over) in good general health were eligible for inclusion.

Selected RCTs evaluated a range of different brands, lengths and diameters of interdental brushes. Most RCTs did not report participants' smoking habits. Included RCTs used a parallel, cross-over or split-mouth design. Most studies included periodontal recall maintenance patients.

Two reviewers independently screened studies for inclusion, with any disagreements resolved by discussion and consensus.

Assessment of study quality
Validity of included trials was assessed according to: method of randomisation; blinding of examiners; number of participants lost to follow-up; and plaque indices and parameters of periodontal disease reported.

The authors did not report how many reviewers performed the assessment.

Data extraction
Mean values and standard deviations for plaque index, bleeding index, gingival index or pocket depth were extracted from the included trials by two reviewers. Where possible, the mean difference between baseline and endpoint were calculated for each study group. Where data were available, between-group differences were categorised as (a) no significant difference, (b) inconclusive data, or (c) positive significant difference in favour of the interdental brush group.

The authors did not state whether the extraction was performed independently or in duplicate.

Methods of synthesis
Trials were primarily combined in a narrative synthesis. For a subgroup of trials comparing interdental brushing to floss, trials were combined in a random-effects meta-analysis using the weighted mean difference. Clinical heterogeneity was explored. Statistical heterogeneity among pooled trials was quantified using the I^2 statistic.
Results of the review
Nine randomised controlled trials (RCTs) were included in the review (n=510 participants). Follow-up ranged from a single use to 12 weeks, with most RCTs reporting four or six week follow-up. For all trials, procedures for concealing treatment allocation were not reported and blinding of participants was not possible.

A significant improvement in plaque scores from baseline was observed for interdental brushes in eight of the nine RCTs. Significant improvements were observed for bleeding scores and probing pocket depth (in those trials that measured these outcomes) and for two of the three studies reporting the Loe and Silness Gingival Index.

A significant difference favouring interdental brush use on plaque was observed for all three RCTs comparing interdental brushing to brushing alone, for five of the eight RCTs comparing interdental brushes to floss, and for one of the two RCTs comparing interdental brushes to woodsticks. Two out of three RCTs found a favourable effect for interdental brushes on pocket depth compared to floss. Data on other outcomes were inconsistent or unreported.

A meta-analysis of RCTs comparing interdental brushes to floss showed a statistically significant effect in favour of interdental brushes on the Silness and Loe plaque index (weighted mean difference -0.48, 95% confidence interval: -0.65 to -0.32; p<0.00001, I²=85.4%). Comparisons of other indices were not statistically significant.

No adverse events were reported.

Authors' conclusions
Interdental brushes as an adjunct to brushing removed more dental plaque than brushing alone. The majority of trials showed a positive significant difference in plaque index for interdental brushes compared to floss.

CRD commentary
The review question was clearly defined in terms of the participants, interventions, outcomes and study designs of interest. However, given to the limited number of search sources and limitation to English-language publications, the potential for publication bias cannot be ruled out. Attempts to minimise the potential for errors and bias were made for some parts of the review process, but not others. The decision to conduct a narrative synthesis appeared appropriate, given the clinical and statistical heterogeneity of the included trials. However, it was not clear why the decision was made to pool one statistically heterogeneous subset of trials in a meta-analysis. Although the authors' conclusions follow from the evidence presented, the limited amount of evidence retrieved may call into question the reliability of these conclusions.

Implications of the review for practice and research
Practice: The authors did not state any implications for practice.

Research: The authors stated that a future clinical trial could be conducted to evaluate both buccal and lingual use of interdental brushes.

Funding
Not stated.

Bibliographic details

PubMedID
19138177

DOI
10.1111/j.1601-5037.2008.00330.x
Original Paper URL
http://onlinelibrary.wiley.com/journal/121515916/abstract

Indexing Status
Subject indexing assigned by NLM

MeSH
Dental Devices, Home Care; Dental Plaque /prevention & control; Dental Plaque Index; Gingival Hemorrhage /prevention & control; Gingivitis /prevention & control; Humans; Periodontal Index; Periodontal Pocket /prevention & control; Periodontitis /prevention & control; Randomized Controlled Trials as Topic; Research Design; Toothbrushing /instrumentation

AccessionNumber
12009102924

Date bibliographic record published
29/04/2009

Date abstract record published
26/08/2009

Record Status
This is a critical abstract of a systematic review that meets the criteria for inclusion on DARE. Each critical abstract contains a brief summary of the review methods, results and conclusions followed by a detailed critical assessment on the reliability of the review and the conclusions drawn.