The efficacy of woodsticks on plaque and gingival inflammation: a systematic review

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CRD summary
This review concluded that woodsticks did not have an additional effect on visible interdental plaque or gingival index, but provided an improvement in interdental gingival inflammation by reducing the bleeding tendency. These conclusions reflected the results of the review and are probably reliable, although the limited search and small patient numbers should be borne in mind.

Authors' objectives
To assess whether a handheld triangular woodstick can improve clinical parameters of gingival inflammation compared with no adjunct or another interdental cleaning device in addition to daily toothbrushing.

Searching
MEDLINE and Cochrane Central Register of Controlled Trials were searched to February 2008. Search terms were reported. References of included studies were checked.

Study selection
Randomised controlled trials (RCTs) or controlled clinical trials that compared handheld triangular woodsticks with another or no interdental cleaning device in healthy adults aged over 18 years were eligible for inclusion in the review. Trials were required to report on plaque, bleeding or gingivitis.

All included studies assessed interventions in conjunction with unsupervised manual toothbrushing. Three different brands of woodsticks were assessed (Stim-U-Dent, Jordan and Inter-Dens). Control interventions were dental floss or interdental brushes. Included studies enrolled subjects who never or only occasionally used adjunctive interdental cleaning devices, dental students, patients treated for periodontitis or partially edentulous subjects. Participant ages ranged from 18 to 81 years. Several studies gave prophylactic oral treatment before the study began, including supra- and subgingival scaling. Plaque outcomes were scored using Plaque Index of Silness and Loe, Global Plaque Index and Wolfe Index. Gingival inflammation was assessed using the Eastman Interdental Bleeding Index and the Visual Gingival Index.

Two reviewers independently assessed the studies for inclusion in the review. Disagreements were resolved through discussion.

Assessment of study quality
The studies were assessed for validity using the criteria of randomisation, blinded outcome assessment and completeness of follow up. The authors did not state how many reviewers performed the validity assessment.

Data extraction
Mean values and their standard deviations were extracted for each outcome. The authors stated that three reviewers performed the data extraction, but did not describe how this was carried out.

Methods of synthesis
The studies were combined in a narrative synthesis due to a high level of clinical heterogeneity between studies.

Results of the review
Eight studies reported in seven publications were included in the review (n=438): six RCTs (n=265) and two controlled clinical trials (n=173). Four studies were cross-over trials and the others had a parallel design. Sample sizes appeared to range from 10 to 161, but there were some discrepancies between the text and tables. Five studies used blinded outcome assessment. Only three studies adequately reported loss to follow-up.

Plaque scores: Six studies reported plaque scores as an outcome. Three compared the additional use of woodsticks to...
toothbrushing alone and found no statistically significant differences between the groups. Five studies used dental floss as a comparator; only one showed a statistically significant between-group difference and favoured dental floss. Two studies reported comparisons with interdental brushes; the only one with usable data showed significantly greater effectiveness for interdental brushes.

**Gingival inflammation:** Three studies reported bleeding scores as an assessment of gingival inflammation and all showed significantly greater effectiveness compared to brushing alone. It was unclear whether there were differences between floss and woodsticks (one study). There were no significant differences between woodsticks, brushing only and dental floss when assessed by visual signs of inflammation (one study).

**Authors’ conclusions**

Woodsticks did not have an additional effect on visible interdental plaque or gingival index, but provided an improvement in interdental gingival inflammation by reducing the bleeding tendency.

**CRD commentary**

The review question and the inclusion criteria were clear. Two relevant databases were searched. The authors did not report either systematically searching for unpublished studies or whether any language restrictions were employed. Hence the potential for publication or language biases was not clear. The authors reported using methods designed to reduce reviewer bias and error in the selection of studies, but not in the assessment of validity; it was unclear whether they were applied to data extraction. The validity assessment used some appropriate criteria and was clearly reported. The decision to employ a narrative synthesis was probably appropriate given the level of clinical heterogeneity between studies. The authors’ conclusions reflected the results of the review and were probably reliable, although the limited search and small patient numbers should be borne in mind.

**Implications of the review for practice and research**

The authors did not state any implications for practice or further research.

**Funding**

Not stated.

**Bibliographic details**


**PubMedID**

19138179

**DOI**

10.1111/j.1601-5037.2008.00335.x

**Original Paper URL**

http://onlinelibrary.wiley.com/journal/121515930/abstract

**Indexing Status**

Subject indexing assigned by NLM

**MeSH**

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

**AccessionNumber**

12009102925
Date bibliographic record published
29/04/2009

Date abstract record published
04/11/2009

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.