

A meta-analysis of Oral-B® oscillating-rotating electric toothbrushes on plaque and gingivitis: Results versus manual toothbrush controls

Grender JM, Adam R, Zou Y. *Am J Dent* 2020; 33(1): 3-11.

KEY GINGIVITIS FINDINGS

- Across 5 randomized clinical trials assessing gingivitis, subjects brushing with an Oral-B® oscillating-rotating (O-R) electric rechargeable toothbrush showed a 50% greater reduction in the average number of bleeding sites (~9 fewer bleeding sites) versus a manual toothbrush control. See Figure 1.
- Analysis of the change from baseline to post-treatment gingivitis status revealed that 65% of subjects with localized or generalized baseline gingivitis ($\geq 10\%$ bleeding sites) using an O-R electric brush transitioned to “healthy” ($< 10\%$ bleeding sites) post-treatment, compared to only 20% similarly transitioning for manual toothbrush users. See Figure 2.
- Subjects with localized or generalized gingivitis had 7.4 times better odds of transitioning to “healthy” after using an O-R brush versus a manual brush.

KEY PLAQUE FINDING

- Across 8 clinical trials assessing an O-R brush versus a manual brush for plaque reduction, a difference in average standardized plaque scores of -1.51 was observed ($P < 0.001$). This represents a 20% greater plaque reduction benefit for the O-R brush compared to the manual brush.

Figure 1. Number of bleeding sites at post-treatment evaluation (≤ 3 months)

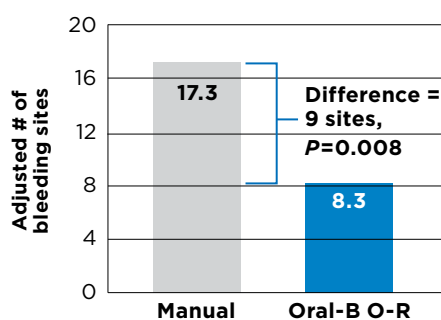
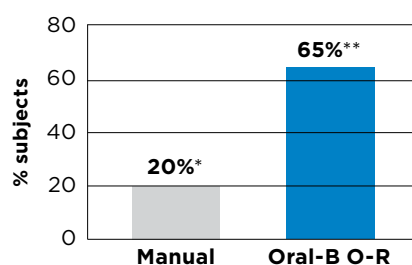


Figure 2. Subjects transitioning from “gingivitis” at baseline to “healthy”



* 32/160 subjects; ** 381/587 subjects

OBJECTIVE

A meta-analysis was conducted to compare the effects of Oral-B® O-R electric rechargeable toothbrushes versus manual toothbrush controls on plaque and gingivitis after multiple uses up to 3 months.

METHODS

- A meta-analysis of plaque and gingivitis studies from the Oral-B® (Procter & Gamble) clinical database evaluating O-R electric toothbrush effectiveness for plaque removal and gingivitis reduction compared to manual toothbrush controls was conducted in accordance with the general principles of the PRISMA statement.¹

This meta-analysis was limited to randomized controlled trials involving O-R toothbrushes from a single manufacturer to ensure access to subject-level data.

- Studies included were parallel, randomized, examiner-blinded, controlled clinical trials with plaque and/or gingivitis evaluations taken at 3 months or less.
- Five parallel group randomized controlled trials with 586 subjects were identified assessing gingivitis via number of bleeding sites for an O-R brush versus a manual brush and 8 parallel design randomized controlled trials with 824 subjects assessed plaque reduction (TMQHI, RMNPI) of an O-R brush versus a manual brush.

CLINICAL COMMENT

O-R electric toothbrushes have been shown to provide significant plaque and gingivitis reductions relative to manual toothbrushes in meta-analyses.²⁻⁴ However, unlike other meta-analyses in the literature, this meta-analysis was limited to evaluations from a single manufacturer (Procter & Gamble) to ensure access to subject-level data for transition analyses.

Using the new gingivitis case definition,⁵ significantly more subjects using an Oral-B® O-R electric toothbrush transitioned to “healthy” (<10% bleeding sites) from “gingivitis” (≥10% bleeding sites) compared to the manual control (65% vs. 20%). O-R electric toothbrushes also demonstrated gingivitis reductions across the entire baseline disease spectrum.

These bleeding reduction results have important clinical implications. Long-term research shows that tooth sites with persistent gingival bleeding are 3 times more likely to have attachment loss compared to non-bleeding sites and 46 times more likely to be lost (extracted) compared to teeth surrounded by tissue with no bleeding.^{6,7}

Collectively, these data show that brushing with an O-R electric toothbrush from Procter & Gamble provides meaningful gingival bleeding reductions compared to a manual brush, which may lead to positive long-term oral health implications for patients.

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