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Plaque Removal

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# Comparison of plaque removal by Sonicare For Kids and a manual toothbrush in children aged 7–10 years

Milleman J, Putt M, Olson M, Master A, Jenkins W, Schmitt P, Strate J. International J Pediatric Dent. 2009; 19:s1

## Objective

To compare the plaque removal efficacy and safety of Sonicare For Kids at "high" setting and Oral-B Stages 4® manual toothbrush (MTB) in children aged 7–10 years.

## Methodology

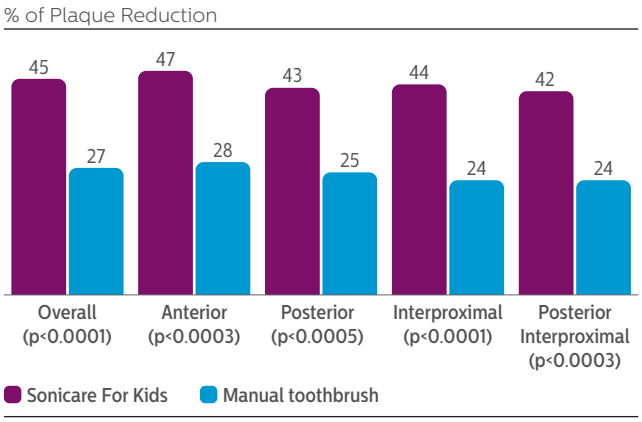
Fifty-eight healthy children enrolled in and four withdrew from an IRB-approved single-blind, randomized, parallel-design study (totaling 32 females, 22 males; mean age 8.3 years). Informed consent/assent (with parent) was obtained. All subjects abstained from brushing for 26 ± 6 hours prior to examination visits. At Visit 1, subjects were screened for eligibility (Turesky-Modified Quigley-Hein Plaque Index (TPI) >1.8). Eligible subjects were enrolled and instructed on use of both devices (Sonicare For Kids and MTB) in alternating manner at home (twice daily for two minutes) for a one-week familiarization period. At Visit 2, baseline TPI was performed followed by a randomization and supervised two-minute brushing session with the assigned device. Post-brushing TPI scores were then obtained. Safety was assessed in oral soft tissue examinations at Visit 2. ANOVA was used for the primary statistical analysis.

## Results

Sonicare For Kids removed significantly more plaque than a manual toothbrush from the dentition overall (p=0.0001) as well as in hard-to-reach areas, i.e., the posterior teeth (p=0.0005) and the interproximal spaces (p<0.0001) of children aged 7–10 years. Both toothbrushes were safe to use.

## Conclusion

Sonicare For Kids was found to remove significantly more plaque than Oral-B Stages 4 manual toothbrush in children aged 7–10 years. It is also proven safe and gentle on oral tissues.



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# Brushing duration and use interaction patterns of manual versus sonic toothbrushes in children aged 7–10 years

Defenbaugh J, Schmitt P, Master A, Jenkins W, Strate J. International J Pediatric Dent 2009; 19:s1

## Objective

To compare the brushing duration and use interaction patterns in children aged 7–10 years using a Sonicare For Kids power toothbrush versus Oral-B Stages 4® manual toothbrush.

## Methodology

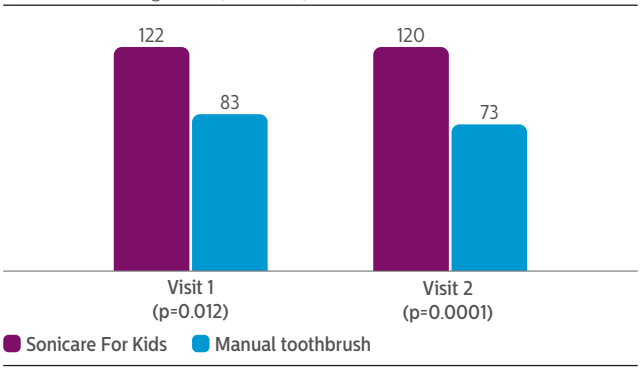
Sixty healthy subjects (31 females, 29 males) were enrolled in an IRB-approved randomized, parallel-design two-week study. Informed consent/assent was obtained. At Visit 1, eligible subjects were randomized and provided brushing instructions. They performed an on-site brushing session immediately thereafter. It was timed and video recorded for duration and use interaction data collection. A home-use period of two weeks commenced with the assigned product in order for subjects to familiarize with the device. At Visit 2, the brushing and recording procedure was repeated and subjects were dismissed. Longitudinal and between-group comparisons were assessed for duration and ergonomic use interaction events. Statistical analysis was performed using the Wilcoxon Test.

## Results

Thirty-one subjects were randomized to Sonicare For Kids and twenty-nine to a manual toothbrush. A longer median brushing duration was observed for Sonicare For Kids users at both time points. Sonicare For Kids (122 seconds) compared to manual toothbrush (83 seconds) at visit 1 (p=0.012). Sonicare For Kids (120 seconds) compared to manual toothbrush (73 seconds) at visit 2 (p=0.0001).

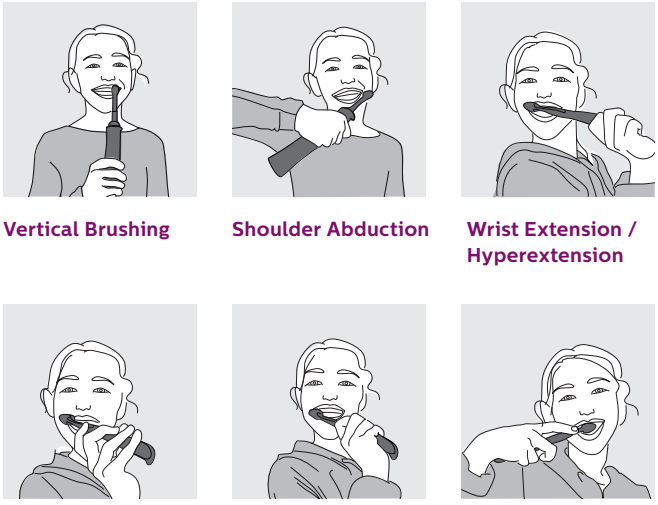
**Brushing Duration**

Median Brushing Time (seconds)




In video analysis review by an ergonomic expert, use interaction brush artifacts occurred more frequently with a manual toothbrush than with Sonicare For Kids, 1.56 compared to 0.80.

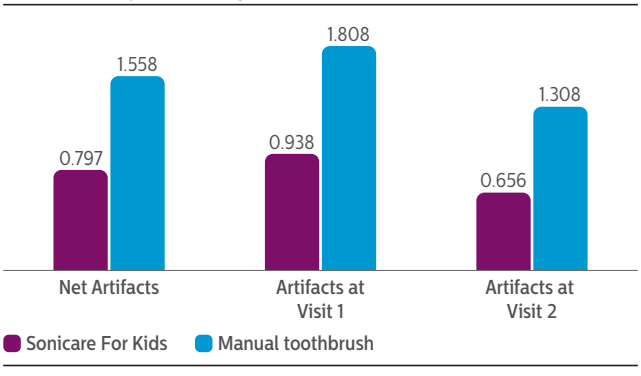
**Use Interaction Brush Artifacts**



Vertical Brushing | Shoulder Abduction | Wrist Extension / Hyperextension

Obvious Loose Grip | Obvious Over Grip | Finger Extension

# of Artifacts per Brush Cycle

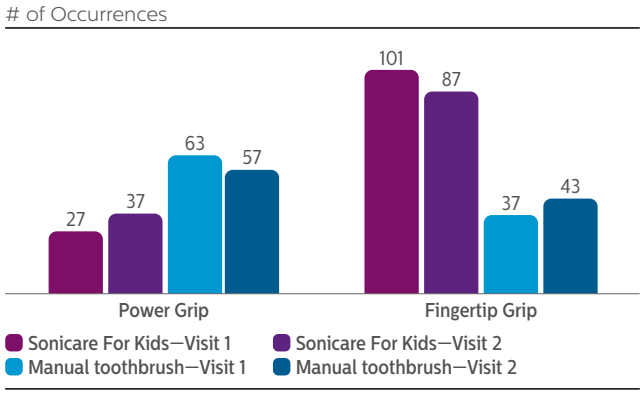


It was also observed that Sonicare For Kids toothbrush users prefer to grip with their fingertips, while manual toothbrush users prefer a power grip.

### Grip Types

**Power Grip Preferred for Manual Toothbrush**

**Fingertip Grip Preferred for Sonicare For Kids**




For both types of brush, users prefer to grip in the center of the brush handle. Users did not typically switch between grips or hand location during brushing cycles or between brushing cycles.

### Conclusion

Children aged 7–10 years brushed significantly longer with Sonicare For Kids than with a manual toothbrush following immediate product introduction and after a period of home use. Use interaction comparison suggests that form factor may influence the frequency of artifact occurrence.



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# Comparison of plaque removal by Sonicare For Kids and a Colgate® children's battery toothbrush in children aged 7–10 years

Payne D, Rimmer P, Olson M, Master A, Jenkins W, Schmitt P, Strate J. International J Pediatric Dent.2009; 19:s1

## Objective

To compare the plaque removal efficacy and safety of Philips Sonicare For Kids at "high" setting and Colgate children's battery toothbrushes ("Shrek" handle design) in children aged 7–10 years.

## Methodology

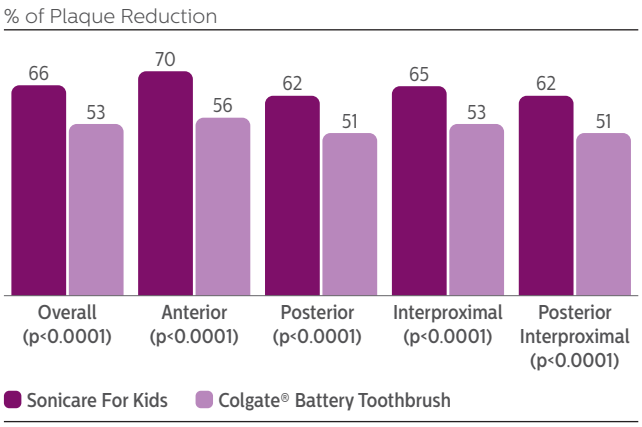
Sixty-nine healthy children (mean age 8.4 years) participated in an EC-approved single-blind, randomized, parallel-design study. Informed consent/assent (with parent) was obtained. Subjects abstained from brushing for 26 ± 6 hours prior to examination visits. At Visit 2, subjects were screened for eligibility (Turesky-Modified Quigley-Hein Plaque Index (TPI) >1.8). Eligible subjects were instructed on use of both devices (Sonicare For Kids and Colgate children's battery toothbrush) in alternating manner at home (twice daily for two minutes) for a one-week familiarization period. At Visit 3, baseline TPI was scored followed by randomization and a supervised two-minute brushing session with the assigned device. Post-brushing scores were obtained by scoring TPI. Safety was assessed in oral soft tissue examinations at Visit 3. ANOVA was used for the primary statistical analysis.

## Results

Sonicare For Kids removed significantly more plaque than a Colgate children's battery toothbrush from the dentition overall (p=0.0003) as well as in hard-to-reach areas, i.e., the posterior teeth (p=0.0037) and the interproximal spaces (p=0.0002) of children aged 7–10 years. Both toothbrushes were safe to use.

## Conclusion

Sonicare For Kids was found to remove significantly more plaque than Colgate children's battery toothbrush in children aged 7–10 years. It is also proven safe and gentle on oral tissues.



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# Plaque Removal

*in vivo study*

## Comparison of plaque removal by Sonicare For Kids and a manual toothbrush in children aged 4–7 years in a professionally applied toothbrushing study

Pelka M, DeLaurenti M, Master A, Jenkins W, Strate J, Wei J, Schmitt P. *International J Pediatric Dent.* 2009; 19:s1


Objective

To compare the plaque removal efficacy of Philips Sonicare For Kids at "high" and "low" settings and Oral-B Stages 3® manual toothbrushes in a professionally applied brushing session simulating one and two minutes of brushing time in children aged 4–7 years.

Methodology

Sixty-eight healthy children (38 females, 30 males; mean age 5.3 years) participated in an IRB-approved single-blind, randomized, split-mouth-design study. Informed consent/assent (with parent) was obtained. Subjects were screened for eligibility (Turesky-Modified Quigley-Hein Plaque Index (TPI) >1.8). Eligible subjects were randomized to Sonicare For Kids "high," Sonicare For Kids "low" and a manual toothbrush by quadrant and were brushed accordingly by clinical hygienists. TPI was scored at one- and two-minute interval equivalents by quadrant by a blinded examiner. Safety was assessed in oral soft tissue examinations. For statistical analysis, MANOVA for a split-mouth-design was applied and P-values were adjusted using the Dunnett-Hsu adjustment.

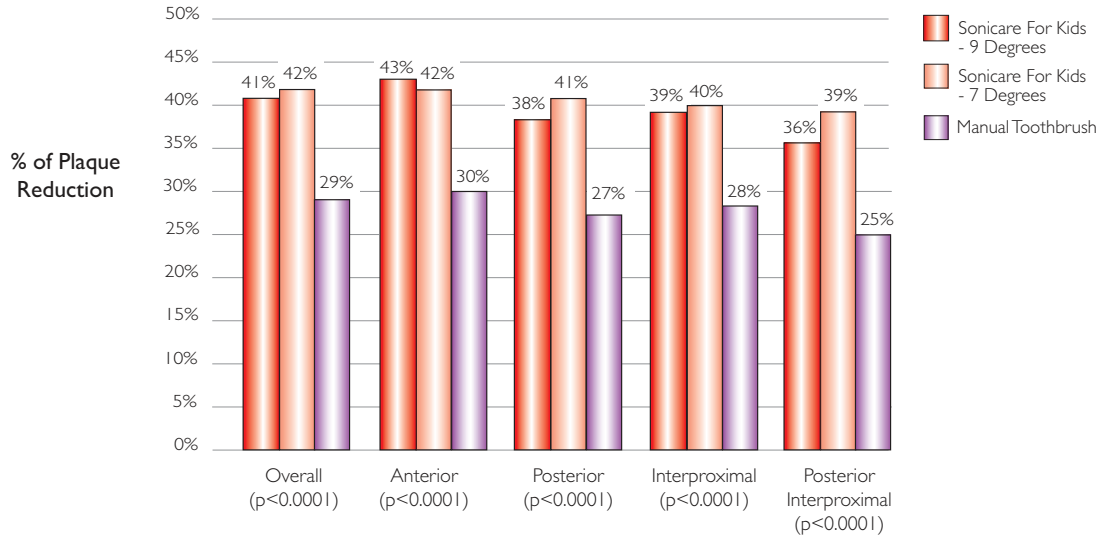
Results

Sonicare For Kids (in "high" and "low" settings) removed significantly more plaque than a manual toothbrush from the dentition overall ($p<0.0001$) as well as in hard-to-reach areas, i.e., the posterior teeth ($p<0.0001$) and the interproximal spaces ($p<0.0001$) at one- and two-minute brushing intervals in children aged 4–7 years with professionally applied brushing sessions. Both toothbrushes were safe to use.

Conclusion

Sonicare For Kids was found to remove significantly more plaque than Oral-B Stages 3 manual toothbrush in children aged 4–7 years with professionally applied brushing. It is also proven safe and gentle on oral tissues.

Adjusted Mean Percent Plaque Reduction, Squirt Prototype
7 and 9 Degrees vs. Manual Toothbrush, 1-Minute Equivalent




Adjusted Mean Percent Plaque Reduction, Squirt Prototype
7 and 9 Degrees vs. Manual Toothbrush, 2-Minute Equivalent