

## Abstract

**Introduction** Compare the brushing duration and use-interaction patterns in children aged 7-10 years using a Philips Sonicare For Kids power toothbrush versus Oral-B Stages 4 manual toothbrush.

**Materials and Methods** Sixty healthy subjects (31 females, 29 males) were enrolled in an IRB-approved, randomized, parallel design 2-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 2-weeks commenced with the assigned product in order for subjects to familiarize to 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 the manual toothbrush. A longer median brushing duration was observed for Sonicare For Kids users at both time-points. Sonicare For Kids (122 seconds) as compared to the manual toothbrush (83 seconds) at V1 ( $p=0.012$ ) and Sonicare For Kids (120 seconds) as compared to the manual toothbrush (73 seconds) at V2 ( $p=0.0001$ ). In video analysis review by an ergonomic expert, use-interaction brush artifacts occurred more frequently with the manual toothbrush than Sonicare For Kids, 1.56 as compared to 0.80.

**Conclusion** Children aged 7-10 years brushed significantly longer with Sonicare For Kids than the 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. Supported by Philips Oral Healthcare.

## Introduction

The standard professionals' recommendation to achieve good dental hygiene is to brush twice a day for 2-minutes. Motivating children to employ this recommendation is an important aspect of achieving compliance. Philips Sonicare power toothbrushes have been evaluated in the past for compliance (brushing duration) in adults, preteens and teens.<sup>1,2,3</sup> This study was designed to test brushing duration in an observational setting in 7-10 year old population when using the Philips Sonicare For Kids power toothbrush and a manual toothbrush. The study also evaluated ergonomic manipulations when using the products and its improvement following a period of familiarization of product use.

## Demographics

Variable	Total	Sonicare For Kids	Manual Toothbrush
Enrolled	60	31	29
Completed	60	31	29
Age (mean)	8.7	8.9	8.5
Gender (M)	29	14	15
Gender (F)	31	17	14

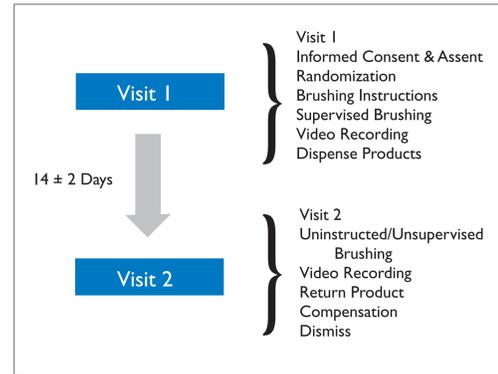
## Materials and Methods

### Test Devices

- Philips Sonicare For Kids (Philips Oral Healthcare, Snoqualmie, WA)
- Oral-B Stages 4 manual toothbrush (P&G Co., Cincinnati, OH)
- Crest Cool Mint Gel toothpaste (P&G Co., Cincinnati, OH)

### Inclusion Criteria

- Healthy children, 7-10 years old
- Sufficient dexterity to properly use the test products independently
- Absence of orthodontic bands
- Predominantly a non-Sonicare user



Observed brushing in front of the one-way mirror

### Use Interaction Brush Artifacts



## Test Devices

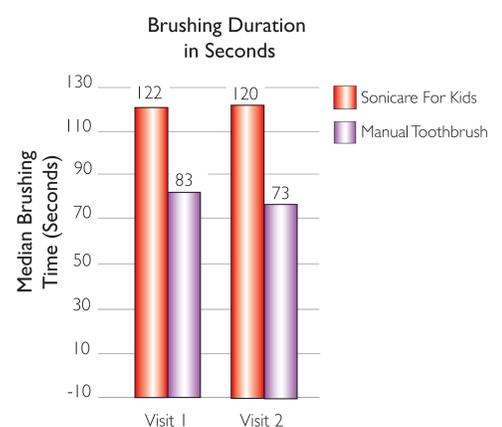
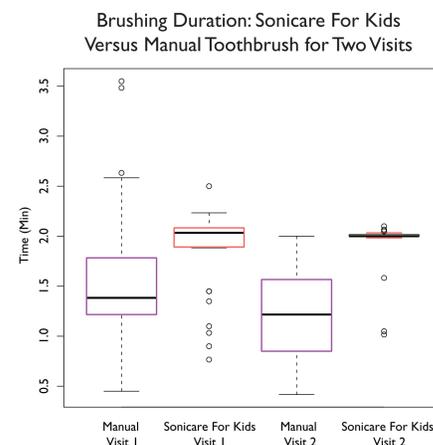
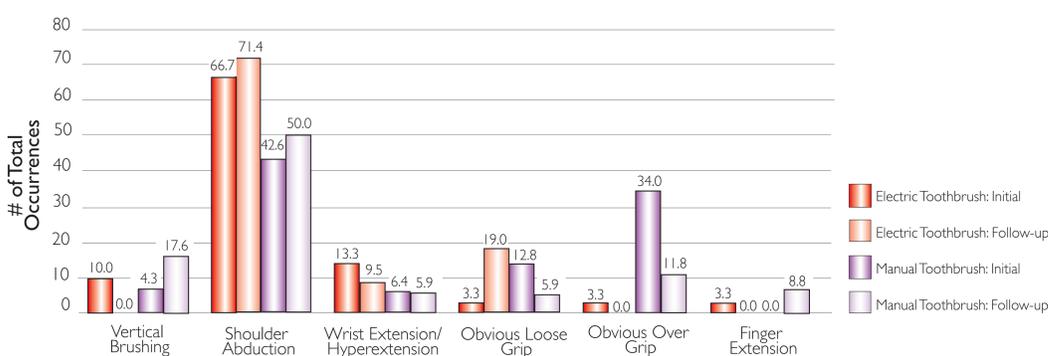


Sonicare For Kids



Oral-B Stages 4 Manual

## Results



## Conclusions

- Children aged 7-10 brushed significantly longer with Sonicare For Kids than with a manual toothbrush at visit 1 and visit 2.
- For the manual toothbrush group, duration diminished, visit 1 to visit 2 following a period of familiarization per usual routine.
- More variability in brushing duration is evident in the manual toothbrush group versus Sonicare For Kids.
- There are nearly twice as many artifacts per brush cycle for users with manual toothbrushes in comparison to electric toothbrush users at all time points.
- Use-interaction comparison suggests that form factor may influence the frequency of artifact occurrence.