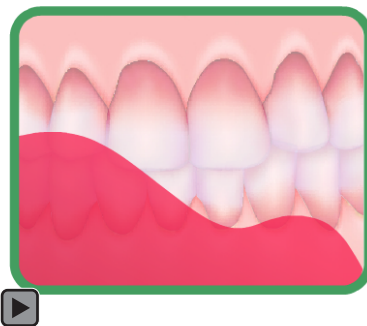


Plaque Removal Efficacy of a Prototype Manual Toothbrush versus an ADA Reference Manual Toothbrush with and without Dental Floss

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Abstract

Objective: The objective of this study was to compare the plaque removal efficacy of a prototype manual Deep Clean toothbrush versus an American Dental Association (ADA) manual toothbrush and the ADA manual toothbrush in conjunction with floss.

Methods: This study was a randomized, examiner-blind, six-period cross-over, single-center study conducted in 60 adult subjects that examined plaque removal with a prototype Deep Clean manual toothbrush, an ADA reference manual toothbrush, and an ADA reference manual toothbrush followed by floss. During the course of this study, subjects used each treatment two times. Plaque was scored before and after brushing using the Rustogi Modification of the Navy Plaque Index. A mixed model analysis of covariance (ANCOVA) for a crossover design with baseline plaque score as the covariate was applied to the baseline minus one-minute post-brushing differences in average whole-mouth plaque scores. Supplemental analyses were also performed using the ANCOVA model separately for average gingival margin scores and for average interproximal scores, using the appropriate baseline score as the covariate. All comparisons were two-sided at the 0.05 level of significance.

Results: The prototype Deep Clean manual toothbrush delivered an adjusted (via ANCOVA) mean difference between baseline and post-brushing plaque scores of 0.245, while the ADA manual toothbrush plus floss delivered an adjusted mean difference of 0.207 versus 0.196 for the ADA manual toothbrush alone. The

prototype Deep Clean manual toothbrush demonstrated a statistically significantly greater reduction in plaque than the ADA manual toothbrush plus floss ($p<0.001$), which in turn had a statistically significantly greater reduction in plaque than the ADA manual toothbrush alone ($p<0.001$). The prototype Deep Clean manual toothbrush group had, on average, 25.2% and 18.3% greater plaque removal scores than the ADA manual toothbrush alone and the ADA manual toothbrush plus floss groups, respectively. Results for the interproximal and gingival margin regions also demonstrated statistically significantly ($p<0.001$) greater plaque removal for the prototype Deep Clean manual toothbrush group relative to the other groups.

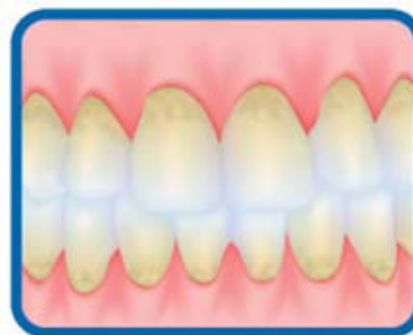
Conclusions: The prototype manual Deep Clean toothbrush was found to deliver greater plaque removal by 25.2% and 18.3% compared to the control manual toothbrush group (ADA reference manual toothbrush) and ADA manual toothbrush plus floss group.

Keywords: Deep Clean toothbrush, ADA reference manual toothbrush, plaque removal

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Introduction

Plaque-induced gingivitis continues to be prevalent among children, adolescents, and adults worldwide.¹⁻³ The prevalence of gingivitis in adults exceeds 75% and in some populations approaches 100%.⁴ The importance of prevention, early diagnosis, and treatment of gingivitis in adults to prevent progression into advanced periodontal diseases is emphasized in the dental literature.⁵ The role of dental bacterial plaque in the development of these diseases has been established in many studies.⁶⁻⁸ The best approach to manage periodontal diseases is prevention, followed by early detection and treatment. The prevention of periodontal diseases is targeted at the control of dental plaque.⁹ Prevention may be achieved by conscientious daily brushing and flossing to remove plaque that forms each day before inflammation occurs.¹⁰ Mechanical plaque removal with a manual toothbrush remains the primary method of maintaining good oral hygiene and the most affordable method for the majority of the population.^{11, 12} The toothbrush has been reported to be the most effective home care device for plaque removal.¹³ (See page 10 for "How to Brush" pdf.) In addition, dental floss has been reported to be an important part of oral hygiene.¹⁴⁻¹⁷ Flossing removes plaque from between the teeth and under the gumline-areas where a toothbrush cannot reach. These are the parts of the teeth where decay and periodontal disease often start.

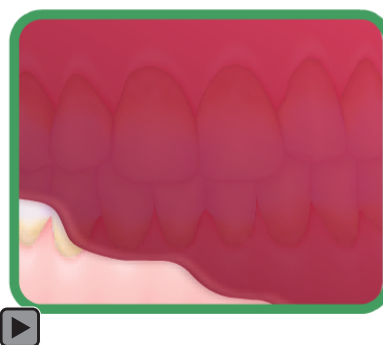


The removal of interproximal plaque is considered to be important for the maintenance of gingival health and prevention of periodontal disease. Unfortunately, most conventional manual toothbrushes are not designed to effectively remove interproximal plaque and, therefore, patients need to resort to additional products such as floss and interdental brushes for interproximal cleaning. Reports in the literature have consistently demonstrated manual toothbrushes with advanced features such as tapered filaments deliver superior plaque removal in specific anatomical areas including interproximal sites compared to American Dental Association (ADA) manual reference toothbrushes. A recent clinical study has demonstrated a newly developed manual toothbrush with tapered filaments (Meridol, GABA International, CH-Munchenstein) was superior to the ADA reference brush in plaque removal. At proximal surfaces, the plaque scores

were reduced for a Meridol toothbrush from 2.02 ± 0.49 to 1.11 ± 0.43 ($p < 0.001$) and for the ADA reference brush from 2.01 ± 0.52 to 1.20 ± 0.45 ($p < 0.001$). The relative plaque reductions at proximal surfaces were $44.2 \pm 18.8\%$ for the Meridol toothbrush and $40.5 \pm 15.9\%$ for the ADA reference brush.¹⁸ Moreover, a study by Sharma et al. investigated the efficacy of a novel angled-bristled toothbrush (Oral-B CrossAction Vitalizer toothbrush) in comparison with three established brushes. They have shown each tested toothbrush significantly ($P = 0.0001$) reduced plaque levels after a single brushing. However, in all three studies the CrossAction Vitalizer was significantly ($P = 0.0001$) more effective than the comparator brushes in plaque removal from the whole mouth, the gingival margin, and interproximal surfaces.¹⁹ The use of dental floss and interproximal brushes has been shown to add additional benefits, in terms of plaque reduction, when they are associated with conventional manual brushes. A review article by Sicilia et al. have indicated techniques of interproximal oral hygiene, fundamentally the use of dental floss and interproximal brushes, appear to add additional benefits, in terms of plaque reduction, when they are associated with conventional manual brushes. The authors also indicated further long-term studies are necessary to confirm their efficacy in the reduction of gingival bleeding or inflammation. They suggested the choice of the type of technique must be made in relation to the characteristics of the patient: dental floss could be indicated in individuals with closed interdental spaces and inter-proximal brushes in periodontal patients or in those with open embrasures.²⁰ The main problem with all interdental cleaning is, however, patient ability and motivation. Patients are known to find flossing difficult, especially where there are tight contact points; therefore,

interdental cleaning may not readily become an established part of daily oral hygiene.²¹ For that reason, patients may want to look for other advanced toothbrushes that maximize the removal of plaque in particular from interproximal areas.

There is a divergent body of scientific evidence reporting the relative effectiveness of different toothbrush designs for removing plaque. The current study was designed to compare the plaque removal efficacy of a prototype manual Deep Clean toothbrush (Figure 1) versus an ADA manual toothbrush (Figure 2) and the ADA manual toothbrush in conjunction with floss.



Materials and Methods

This was a three treatment, randomized, examiner-blind, six-period cross-over, single-center study conducted at the University of Texas Health Science Center, San Antonio, TX. Both the research protocol and written informed consent were reviewed and approved by an institutional review board prior to study initiation. The three treatment groups were a prototype Crest Deep Clean Active Clean manual toothbrush (Procter & Gamble), an ADA reference manual toothbrush (American Dental



Figure 1. Prototype Deep Clean Active Clean toothbrush.



Figure 2. ADA reference manual toothbrush.

Association), and an ADA reference manual toothbrush followed by floss (Crest Glide Comfort Plus, Procter & Gamble). Randomization and treatment assignment were performed by a member of the study staff who was not involved in collecting the efficacy data.

A total of 60 adult subjects, with a minimum of 16 gradable teeth, between the ages of 18 and 70, enrolled into the study based on study criteria. Prospective subjects were excluded from the study for the following reasons: obvious periodontal disease, orthodontic appliances or removable prosthesis, carious lesions requiring treatment, pregnancy, or inability to comply with the study protocol.

During the course of this study, subjects used each treatment two times. Subjects were randomly assigned to one of the following nine treatment sequences (ACBBCA, BACCAB, CBAABC, ABBACC, BCCBAA, CAACBB, AABCCB, BBACAAC, CCABBA) (6-7 subjects per sequence) according to a computer-generated, randomization plan prepared in advance of study execution. Subjects were asked to refrain from all oral hygiene procedures and chewing gum

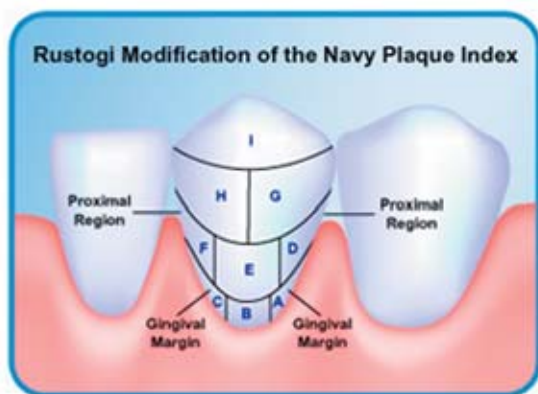


Figure 3. Rustogi Modification of the Navy Plaque Index. Plaque is assessed for each tooth area (A-I) and is scored using the following scale: 0 = Absent; 1 = Present.

Facial and lingual surfaces of all gradable teeth are scored and a mean plaque index (MPI) is calculated for each subject at each examination.

$$\text{MPI} = \frac{\text{Total number of tooth areas with plaque present}}{\text{Total number of tooth areas scored}}$$

Subjects MPI scores were calculated for the whole mouth (areas A-I), for interproximal areas (areas D and F), and along the gingival margin (areas A, B, C).

for 12 hours prior to their appointment time. In addition, they were asked to refrain from eating, drinking, or smoking for 4 hours prior to their appointment time. All subjects were appointed between 7:30 a.m. and 12:30 p.m. to facilitate compliance with the study requirements and were queried regarding compliance with instructions prior to each study visit. As subjects reported to the clinic facility, they were randomly assigned to one of the treatment sequences. Subjects were disclosed with Red-Cote disclosing solution as directed by manufacturer instructions in a dedicated supervised brushing room to maintain blinding. They then moved to a separate clinical operatory where they were examined by a blinded examiner for baseline overnight plaque using the Rustogi Modified Navy Plaque Index (Figure 3).² Subjects were examined by a single examiner at each appointment. The plaque examination was scored on all 28 teeth (excluding 3rd molars, crowns, and surfaces with cervical restorations) on buccal and lingual surfaces, 9 sites per surface, for a total of 504 sites. The maximum number of teeth was 28 with 504 gradable sites, while the minimum number of teeth was 16 with 288 gradable sites.

Subjects then were instructed to brush for one minute with their assigned toothbrush according to manufacturer's instructions and marketed toothpaste (Crest Cavity Protection), unaided by access to a mirror. Subjects assigned to the ADA toothbrush plus floss treatment flossed their teeth after brushing, also unaided by access to a mirror. Brushing and flossing was monitored and conducted in an area separated from the examinations to protect blinding. After brushing their teeth (and flossing, if assigned), the subjects again swished with red disclosing solution in order to disclose their plaque and a post-brushing plaque examination was performed. Subjects were rescheduled for five additional visits. At each of these visits, the same disclosing, brushing/flossing, and plaque grading procedure was followed.



For statistical comparisons, individual plaque scores for each tooth at each examination

were averaged on a per-subject basis. Each subject had a single whole-mouth average score for baseline and for the exam following their assigned brushing and flossing regimen for that study visit. The difference (baseline minus post-brushing/flossing) in average scores was calculated and analyzed using a mixed model analysis of covariance (ANCOVA) for a crossover design²³, with baseline whole-mouth average score as the covariate and terms in the model for subjects, periods (i.e., the six study visits), and treatment group. Subjects were considered a random effect in the model. In addition to the analysis of whole-mouth scores, supplemental analyses were performed using the ANCOVA model separately for average gingival margin scores and for average interproximal scores, using the appropriate baseline score as the covariate. All statistical tests of hypotheses were two sided and employed a level of significance of $\alpha = 0.05$.

Results

A total of 60 subjects were randomized and enrolled into the six-period crossover study. All subjects provided complete data for the six study periods. The study population ranged in age from 23-62 years. Baseline whole-mouth plaque scores averaged between 0.357 and 0.364 prior to using the three toothbrushes. Adjusted mean whole-mouth plaque removal (baseline minus post-brushing) scores were 0.245 for the prototype Deep Clean manual toothbrush, 0.207 for the ADA manual toothbrush plus floss, and

0.196 for the ADA manual toothbrush alone. Each of the pairwise differences among the three treatment groups were statistically significant ($p \leq 0.001$). For whole-mouth scores, the prototype toothbrush had an adjusted mean reduction in plaque scores that was 18.3% higher than the ADA toothbrush plus floss and 25.2% higher than the ADA toothbrush alone. The adjusted mean for the ADA manual toothbrush plus floss was 5.8% higher than that for the ADA toothbrush alone (Table 1).

Similar results were found for the analyses of plaque in specific anatomical areas. Adjusted mean gingival margin plaque removal scores were 0.660 for the prototype Deep Clean toothbrush, 0.555 for the ADA toothbrush plus floss, and 0.528 for the ADA toothbrush alone. Each of the pairwise differences among the three treatment groups was statistically significant ($p \leq 0.001$). For gingival margin scores, the prototype toothbrush had an adjusted mean reduction in plaque scores that was 18.9% higher than the ADA toothbrush plus floss and 25.0% higher than the ADA toothbrush alone. The adjusted mean for the ADA manual toothbrush plus floss was 5.2% higher than that for the ADA toothbrush alone (Table 2).

Finally, adjusted mean interproximal plaque removal scores were 0.065 for the prototype Deep Clean toothbrush, 0.056 for the ADA toothbrush plus floss, and 0.052 for the ADA toothbrush alone. The differences between the prototype toothbrush and the ADA toothbrush

Table 1. Plaque Results – All Regions.

Treatment Group	N	Baseline Score (Mean \pm S.D.)	Baseline minus Post- Brushing Difference (Adjusted mean ^b \pm S.E.)	% Greater Plaque Removal Score ^c
Prototype Manual toothbrush	120	0.364 \pm 0.038	0.245 \pm 0.004	25.2%
ADA Reference Manual toothbrush + Glide Floss	120	0.360 \pm 0.032	0.207 \pm 0.004	5.8%
ADA Reference Manual toothbrush	120	0.357 \pm 0.025	0.196 \pm 0.004	-----

The between group differences in adjusted means are statistically significant ($p \leq 0.001$). [Prototype Toothbrush > ADA Reference Manual + Floss > ADA Reference Manual]

- The 120 values for each brush head represent duplicate measurements for each of the 60 subjects and were appropriately considered in the ANCOVA model.
- Adjusted means and standard errors from ANCOVA with baseline score as the covariate. All adjusted mean differences were statistically significantly greater than zero ($p < 0.001$).
- % Greater Plaque Removal Score = $100\% \times (\text{brush mean} - \text{ADA Reference Manual mean}) / \text{ADA Reference Manual mean}$

Table 2. Plaque Results – Gingival Margin.

Treatment Group	N	Baseline Score (Mean ± S.D.)	Baseline minus Post- Brushing Difference (Adjusted mean ^b ± S.E.)	% Greater Plaque Removal Score ^c
Prototype Manual toothbrush	120	1.000 ± 0.000	0.660 ± 0.013	25.0%
ADA Reference Manual toothbrush + Glide Floss	120	1.000 ± 0.001	0.555 ± 0.013	5.2%
ADA Reference Manual toothbrush	120	1.000 ± 0.000	0.528 ± 0.013	-----

The between group differences in adjusted means are statistically significant ($p \leq 0.001$).
[Prototype Toothbrush > ADA Reference Manual + Floss > ADA Reference Manual]

- The 120 values for each brush head represent duplicate measurements for each of the 60 subjects and were appropriately considered in the ANCOVA model.
- Adjusted means and standard errors from ANCOVA with baseline score as the covariate. All adjusted mean differences were statistically significantly greater than zero ($p < 0.001$).
- % Greater Plaque Removal Score = $100\% \times (\text{brush mean} - \text{ADA Reference Manual mean}) / \text{ADA Reference Manual mean}$

Table 3. Plaque Results – Interproximal Regions.

Treatment Group	N	Baseline Score (Mean ± S.D.)	Baseline minus Post- Brushing Difference (Adjusted mean ^b ± S.E.)	% Greater Plaque Removal Score ^c
Prototype Manual toothbrush	120	0.083 ± 0.099	0.065 ± 0.002	25.5%
ADA Reference Manual toothbrush + Glide Floss	120	0.075 ± 0.080	0.056 ± 0.002	8.2%
ADA Reference Manual toothbrush	120	0.064 ± 0.059	0.052 ± 0.002	-----

The following p-values were calculated for differences between adjusted means:

- Prototype Toothbrush vs. ADA Reference Manual + Floss ($p=0.002$)
 - Prototype Toothbrush vs. ADA Reference Manual ($p<0.001$)
 - ADA Reference Manual + Floss vs. ADA Reference Manual ($p=0.146$)
- The 120 values for each brush head represent duplicate measurements for each of the 60 subjects and were appropriately considered in the ANCOVA model.
 - Adjusted means and standard errors from ANCOVA with baseline score as the covariate. All adjusted mean differences were statistically significantly greater than zero ($p < 0.001$).
 - % Greater Plaque Removal Score = $100\% \times (\text{brush mean} - \text{ADA Reference Manual mean}) / \text{ADA Reference Manual mean}$.

with or without floss were statistically significant ($p \leq 0.002$). There was no statistically significant difference ($p=0.146$) between the ADA toothbrush plus floss and the ADA toothbrush alone. For interproximal scores, the prototype toothbrush had an adjusted mean reduction in plaque scores that was 16.0% higher than the ADA toothbrush plus floss and 25.5% higher than the ADA toothbrush alone. The adjusted mean for the ADA toothbrush plus floss was 8.2% higher than that for the ADA toothbrush alone (Table 3).

For assessing the effect of dental floss use, a supplemental analysis was performed using the expanded interproximal region of the tooth. When floss is wrapped around the tooth, the floss contacts not only the “interproximal” areas (D and F in Figure 3) but also two of the “gingival margin” areas (A and C in Figure 3). An “expanded interproximal” MPI (combination of areas A, C, D, and F) was derived and subjected to the same statistical analysis procedures as the other plaque areas discussed above. Adjusted mean expanded

Table 4. Plaque Results – Expanded Interproximal Regions.

Treatment Group	N	Baseline Score (Mean ± S.D.)	Baseline minus Post-Brushing Difference (Adjusted mean ^b ± S.E.)	% Greater Plaque Removal Score ^c
Prototype Manual toothbrush	120	0.542 ± 0.050	0.292 ± 0.007	48.6%
ADA Reference Manual toothbrush + Glide Floss	120	0.538 ± 0.040	0.222 ± 0.007	12.9%
ADA Reference Manual toothbrush	120	0.532 ± 0.029	0.196 ± 0.007	-----

The between group differences in adjusted means are statistically significant ($p \leq 0.001$). [Prototype Toothbrush > ADA Reference Manual + Floss > ADA Reference Manual]

- The 120 values for each brush head represent duplicate measurements for each of the 60 subjects and were appropriately considered in the ANCOVA model.
- Adjusted means and standard errors from ANCOVA with baseline score as the covariate. All adjusted mean differences were statistically significantly greater than zero ($p < 0.001$).
- % Plaque Removal Versus BL = $100\% \times (\text{Baseline minus Post-Brushing difference} / \text{Baseline Score})$
- % Greater Plaque Removal Score = $100\% \times (\text{brush mean} - \text{ADA Reference Manual mean}) / \text{ADA Reference Manual mean}$

Table 5. Plaque Score Reductions from Baseline.

Treatment Group	N ^a	Tooth Area	Baseline Score (Mean ± S.D.)	Baseline minus Post-Brushing Difference (Mean ± S.D.)	% Plaque Removal Versus BL ^b
Prototype Manual toothbrush	120	All Regions	0.364 ± 0.038	0.247 ± 0.034	68.0%
		Gingival Margin	1.000 ± 0.000	0.660 ± 0.113	66.0%
		Interproximal	0.083 ± 0.099	0.072 ± 0.079	86.1%
		Expanded Interproximal	0.549 ± 0.059	0.288 ± 0.058	52.4%
ADA Reference Manual toothbrush + Glide Floss	120	All Regions	0.360 ± 0.032	0.207 ± 0.040	57.5%
		Gingival Margin	1.000 ± 0.001	0.556 ± 0.108	55.6%
		Interproximal	0.075 ± 0.080	0.057 ± 0.069	75.2%
		Expanded Interproximal	0.548 ± 0.050	0.237 ± 0.052	43.2%
ADA Reference Manual toothbrush	120	All Regions	0.357 ± 0.025	0.194 ± 0.036	54.4%
		Gingival Margin	1.000 ± 0.000	0.527 ± 0.107	52.7%
		Interproximal	0.064 ± 0.059	0.044 ± 0.049	68.3%
		Expanded Interproximal	0.534 ± 0.026	0.172 ± 0.048	32.1%

The differences from baseline are all statistically significant ($p < 0.001$).

- The 120 values for each brush head represent duplicate measurements for each of the 60 subjects.
- % Plaque Removal Versus BL = $100\% \times (\text{Baseline minus Post-Brushing difference} / \text{Baseline Score})$

interproximal plaque removal scores were 0.292 for the prototype Deep Clean toothbrush, 0.222 for the ADA toothbrush plus floss, and 0.196 for the ADA toothbrush alone. Each of the pairwise differences among the three treatment groups was statistically significant ($p \leq 0.001$). For expanded interproximal scores, the prototype

toothbrush had an adjusted mean reduction in plaque scores that was 31.3% higher than the ADA toothbrush plus floss and 48.6% higher than the ADA toothbrush alone. The adjusted mean for the ADA toothbrush plus floss was 12.9% higher than that for the ADA toothbrush alone (Table 4).

Versus baseline, the prototype Deep Clean manual toothbrush reduced whole-mouth plaque scores by 68%, gingival margin plaque scores by 66%, interproximal plaque scores by 86.1%, and expanded interproximal plaque scores by 52.4% following a single one-minute brushing. On the other hand, the ADA manual toothbrush in conjunction with floss reduced whole-mouth plaque scores by 57.5%, gingival margin plaque scores by 55.6%, interproximal plaque scores by 75.2%, and expanded interproximal plaque scores by 43.2% following a single one-minute brushing. These results and those for the ADA manual toothbrush alone are summarized in Table 5.

There were no adverse events reported during the study. All three treatment regimens were well tolerated.

Discussion

In this randomized, examiner blind, cross-over, single-center study, a prototype manual Deep Clean toothbrush was found to deliver significant plaque removal with 25.2% and 18.3% greater plaque removal scores compared to the ADA manual toothbrush alone and ADA manual toothbrush plus floss groups, respectively. Similar results were also found for the analyses of plaque in specific anatomical areas including gingival margin and interproximal sites.

Although there is general agreement among dental professionals that efficient plaque removal is the key for preventing and controlling periodontal diseases, many people still have difficulty in maintaining this task with conventional oral hygiene aids. Controlled clinical research, such as the trial reported here, provides the dental professional with data to understand the potential plaque removal benefits of a toothbrush when used in a controlled environment. When making recommendations to patients, the dental professional must also consider factors related to patient compliance and hygiene efficiency, as they also play an important role in treatment outcomes. For example, toothbrushing duration has been found to play an important role in plaque removal efficacy. Clinical research has shown individuals typically brush for only one minute or less.^{24, 25} Further, toothbrush design also plays an important role in plaque removal

efficacy as does toothbrushing duration. Under these circumstances, effective plaque removal does not seem to be realistic for most people who overestimate toothbrushing duration. Studies have shown it is very difficult to change individual's habits.²⁶ Given the fact most people brush for only one minute or less and the difficult task of changing individual's habits, manufacturers should adapt advanced toothbrush designs to the most common toothbrushing habits of the general public.^{27, 28} These advanced design toothbrushes including improvements in handles, bristle trim arrangement, and brush head design allow penetration into dental embrasures and gingival margins that result in more effective plaque removal. These new designs have been shown to remove plaque at the lingual, interproximal, and posterior areas. These new features have been demonstrated in the new prototype manual Deep Clean toothbrush, which employs a multi level bristle trim pattern enhancing interproximal penetration.

Reports in the literature have consistently demonstrated the use of floss is just as important and necessary as the toothbrush.^{15, 17, 29, 30} However, inadequate flossing by most people or inexperienced individuals with the use of dental floss³¹ can lead to an accumulation of plaque, and ultimately gingivitis, particularly in areas that are inaccessible to a regular toothbrush.²⁷ See page 11 to read about a recommended flossing technique. For that reason, an individual may be wise to choose a toothbrush that would help in removing plaque in areas from between the teeth and along the gumline-areas a regular toothbrush does not reach well. The results of this study demonstrated the new prototype manual Deep Clean toothbrush was found to deliver significant plaque removal when compared to either the ADA manual toothbrush alone or the ADA manual toothbrush plus floss groups. This benefit was manifested on both whole-mouth, interproximal, and gingival regions with statistically significant plaque reductions favoring the prototype manual Deep Clean toothbrush observed for all regions.





**Currently marketed Deep Clean
Active Clean toothbrush**

The prototype manual Deep Clean toothbrush design employs a multi level bristle trim pattern at angles other than 90° to the brush head enhancing interproximal penetration and significant plaque removal compared to the conventional flat-bristle trim ADA reference manual toothbrush and ADA reference manual toothbrush plus floss. This result should not be over-interpreted relative to the effectiveness of floss between teeth at removing plaque or reducing gingivitis. Dental floss has the unique

ability to remove plaque under the interproximal contacts where a toothbrush cannot reach. The Navy Plaque Index used in this study reflects the plaque control status of the patient and emphasizes plaque in the cervical portion of the tooth, which is in contact with the gingiva and at the line angles (1 to 2 mm interproximal). The relationship of the observed results to gingival and periodontal health is unknown, but it does not reflect plaque under interproximal contact or subgingival. It is also important to note these results are from a controlled clinical trial evaluating plaque levels following single brushings. As with any controlled research, results cannot automatically be extrapolated to non-clinical settings.

Conclusion

The new prototype manual Deep Clean toothbrush group had significant mean plaque removal scores that were 25.2% and 18.3% greater than those observed in the control manual toothbrush group (ADA reference manual toothbrush) and ADA manual toothbrush plus floss group.

How to Brush

HOW TO BRUSH

1. For thorough but gentle cleaning, use a soft-bristle toothbrush or a powered toothbrush.
 2. Hold your brush at a 45° angle. Begin by brushing the outsides of the front teeth. Use a gentle back-and-forth motion.
 3. Next, brush the outsides of the back teeth, starting along the gumline.
 4. For the insides of the back teeth, use short, angled strokes.
 5. Brush the insides of the front teeth, tilting the brush vertically; use an up-and-down motion.
 6. On the chewing surfaces, hold the brush flat and use a gentle scrubbing motion.
 7. Remember to replace your toothbrush every 3 to 4 months.
- Ask your dental professional how this Crest product can help you:
- Crest Manual Toothbrushes

1.



2.



3.



4.



5.



6.



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How to Floss

WHY SHOULD I FLOSS?

Flossing removes plaque—a sticky, germ-containing substance that builds up on your teeth and gums to cause gum disease—as well as debris that can adhere to teeth and gums and in between teeth. Floss is the single most important weapon against plaque. By flossing your teeth daily, you increase the chances of keeping your teeth for a lifetime. By stimulating your gums with flossing, you can decrease your chances of developing gum problems.

HOW TO FLOSS

1. Wrap the ends of an 18" to 24" section of floss around your middle fingers.
2. Hold the floss between your thumbs and forefingers. Leave about 1" of floss between your hands.
3. Gently work the floss between your teeth. When you reach the gumline, curve into a "C" shape around the tooth, making sure to go below the gumline.
4. Gently glide the floss up and down several times between each tooth, including your back teeth. Apply pressure against the tooth while flossing. Unwind new floss as needed.

Your gums may bleed for the first week until the plaque layer is broken up, bacteria are removed, and your gums heal.

Ask your dental professional how this Crest product can help you:

- Glide® Floss

1.



2.



3.



4.



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