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ELEVATING CHILDHOOD ORAL HEALTH WITH OSCILLATING ROTATING TECHNOLOGY

Scientific Exchange Educational Program Toolkit



CHILDHOOD CARIES

A GLOBAL PANDEMIC ¹⁻²

#1

most common preventable infectious disease in children

573
million

children worldwide have untreated dental caries in primary teeth

60-90%

of schoolchildren globally have experienced caries

#1

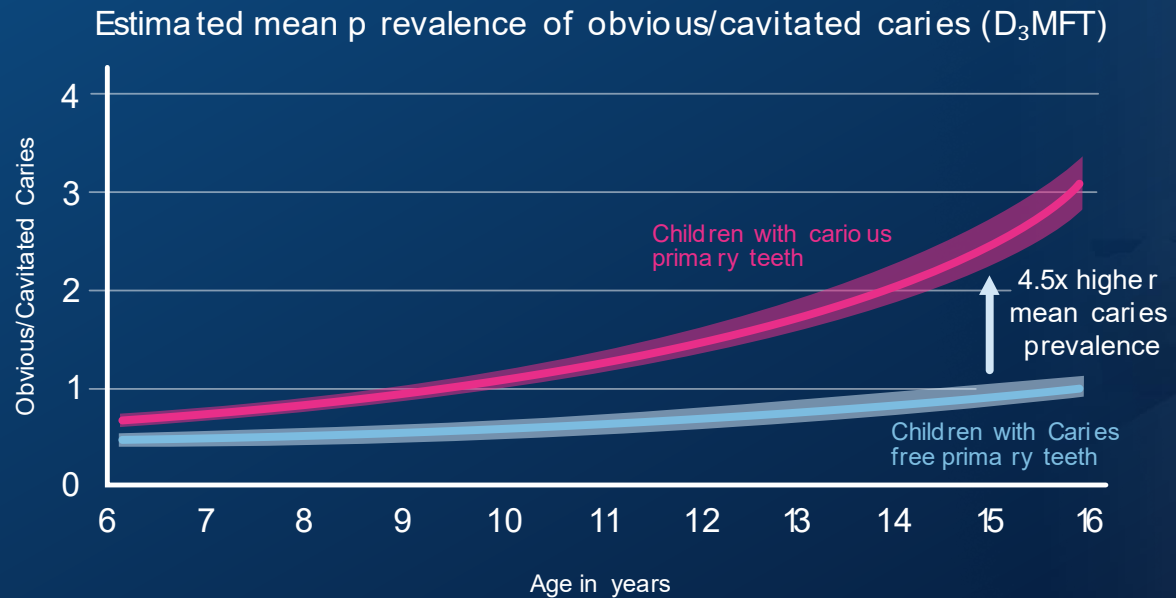
cause of hospital admissions in children aged 5-9

¹ <https://www.fdiworlddental.org/oral-health/ask-the-dentist/facts-figures-and-stats>

² <https://www.who.int/news-room/fact-sheets/detail/oral-health>

CAVITIES IN THE PRIMARY DENTITION IS A PREDICTOR OF CAVITIES IN THE PERMANENT DENTITION

56% OF CHILDREN WITH CAVITIES in primary teeth develop cavities in permanent teeth.^{1*}



¹ Hall-Scullin et al. Journal of Dental Research 2017, Vol. 96(7) 762–767

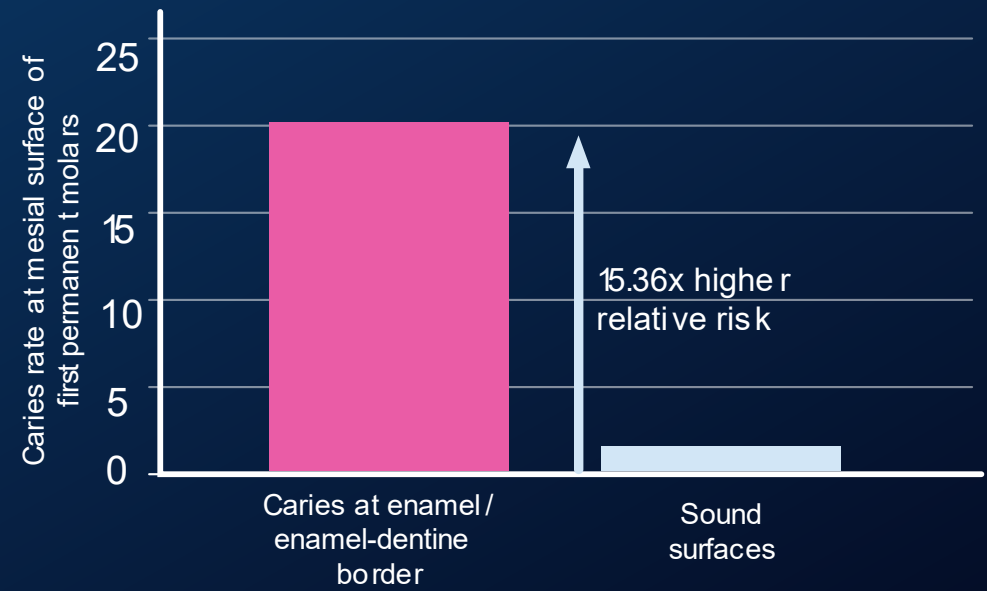
* Versus 22% of children with caries-free primary teeth

INTERPROXIMAL CARIES IN PRIMARY MOLARS LEADS TO A 15x HIGHER CARIES RATE IN PERMANENT MOLARS ¹



Image courtesy of Dr Clarissa Bonifacio, Faculty of Dentistry, ACTA

Influence of caries in primary molars on caries rate of first permanent molars among children aged 6-12 years *



Status of distal surface of second primary molars

¹ Mejàre I, Caries Res. 2001 May-Jun;35(3):178-85. doi: 10.1159/000047453. PMID: 11385197.

* 95% Confidence interval





PREVENTIVE HABITS REINFORCED BY PARENTS FROM EARLY CHILDHOOD ARE A DOMINANT INFLUENCE ON ORAL HEALTH ¹

“You learn it from a young age don’t you, like your parents tell you to brush your teeth before you go to bed and when you wake up, and you just stick to the routine”

Qualitative study of the views of English adolescents on their caries risk and prevention behaviors

¹ Hall-Scullin, E., Goldthorpe, J., Milsom, K. et al. BMC Oral Health 15, 141 (2015). <https://doi.org/10.1186/s12903-015-0128-1>

POOR ORAL HEALTH HINDERS THE PHYSICAL AND MENTAL WELLBEING OF CHILDREN

PAIN

3 out of 10

children or adolescents may have experienced dental pain in the past¹

ANXIETY

45% MORE LIKELY

to experience emotional distress³

DISRUPTED DEVELOPMENT

3x MORE LIKELY

to miss school & perform poorly²

LOW SELF-CONFIDENCE

35%

of children aged 12 are too embarrassed to smile or laugh due to the condition of their teeth^{4*}



¹ Pentapati KC et al Eur Arch Paediatr Dent. 2021 Feb;22(1):1-12. doi: 10.1007/s40368-020-00545-7. Epub 2020 Jun 16. PMID: 32557184; PMCID: PMC7943429.;

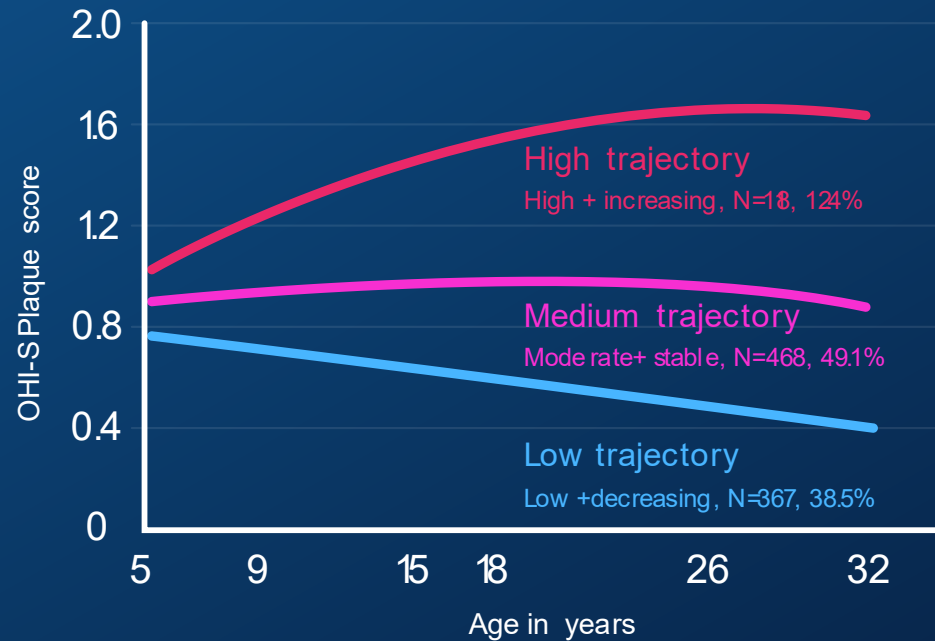
² Jackson et al Am J Public Health. 2011;101: 1900-1906. doi:10.2105/AJPH.2010.200915;

³ Alsumait et al. Health and Quality of Life Outcomes (2015) 13:98 DOI 10.1186/s12955-015-0283-8;

⁴ National Health Service Child Dental Health Survey 2013

EPIDEMIOLOGICAL FINDINGS CONFIRM IMPORTANCE OF ESTABLISHING EFFECTIVE BRUSHING HABITS EARLY IN LIFE¹

Plaque trajectory group plots. Simplified Oral Hygiene Index (OHI-S) plaque scores, according to age.



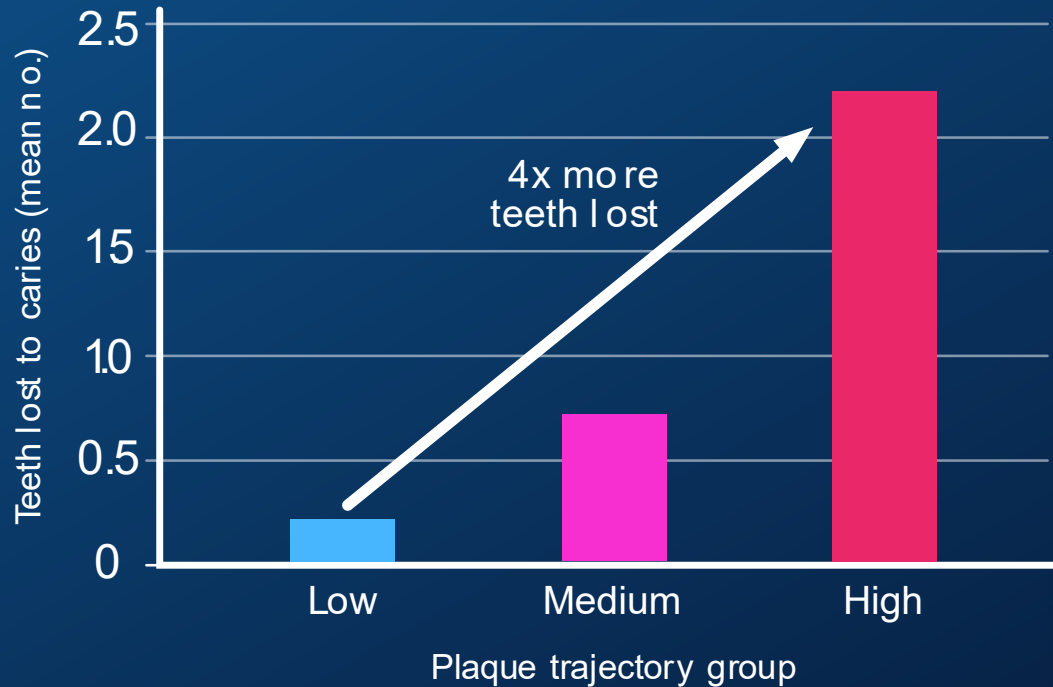
A LONGITUDINAL STUDY OF 1,015 SUBJECTS
found that patients followed identifiable trajectories of oral
hygiene over the course of their lives.

¹ Broadbent JM et al. J Am Dent Assoc. 2011 Apr;142(4):415-26. doi: 10.14219/jada.archive.2011.0197. PMID: 21454848



EPIDEMIOLOGICAL FINDINGS CONFIRM IMPORTANCE OF ESTABLISHING EFFECTIVE BRUSHING HABITS EARLY IN LIFE¹

Mean number of teeth lost due to caries at age 32 by plaque trajectory group



¹ Broadbent JM et al. J Am Dent Assoc. 2011 Apr;142(4):415-26. doi: 10.14219/jada.archive.2011.0197. PMID: 21454848



SCIENTIFIC EVIDENCE ON SUPERIORITY OF ELECTRIC TOOTHBRUSHES FOR CHILDREN

SYSTEMATIC REVIEWS AND META-ANALYSES:



5 clinical trials

“Powered toothbrushes provide a statistically significant benefit compared with manual toothbrushes.”¹

EFFICACY

“PEDIATRIC DENTISTRY” Journal

9 clinical trials

“Superior plaque removal with the powered rather than the manual toothbrush, support similar findings in the adult population”²

CROSS-SECTIONAL STUDY:

IMPACT

Children brushing with OR electric toothbrushes had:



—● versus manual toothbrushes³

¹ https://www.cochrane.org/CD004971/ORAL_different-types-powered-toothbrushes-plaque-control-and-healthy-gums

² <https://pubmed.ncbi.nlm.nih.gov/32847667/>

³ <https://www.mdpi.com/1660-4601/17/22/8595>

SUPERIORITY AND SAFETY OF OR ELECTRIC TOOTHBRUSHES VERSUS MANUAL TOOTHBRUSHES FOR CHILDREN

RECENT FINDINGS
FROM P&G SPONSORED
CLINICAL TRIALS

EFFICACY

Superior plaque removal by the OR electric toothbrush versus a manual toothbrush

**PLAQUE REDUCTION AT
SINGLE USE¹**

1.3x greater
in the primary dentition

1.5x greater
in the mixed dentition

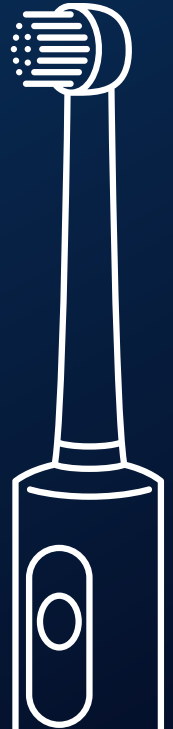
**PLAQUE REDUCTION AT
4 WEEKS²**

1.6x greater
in the primary dentition

1.9x greater
in the mixed dentition

SAFETY

The OR electric brush was well tolerated in both studies with no adverse hard or soft tissue events ¹⁻²




¹ Davidovich E, Int J Paediatr Dent. 2020 Nov 22. doi: 10.1111/ipd.127535

² Data on file, publication in 2022

CROSS-SECTIONAL STUDY SHOWS CHILDREN ARE MORE LIKELY TO BE CARIES-FREE WITH OR TECHNOLOGY ^{1*}

Children brushing with OR electric toothbrushes had 1.4x higher odds of being caries-free



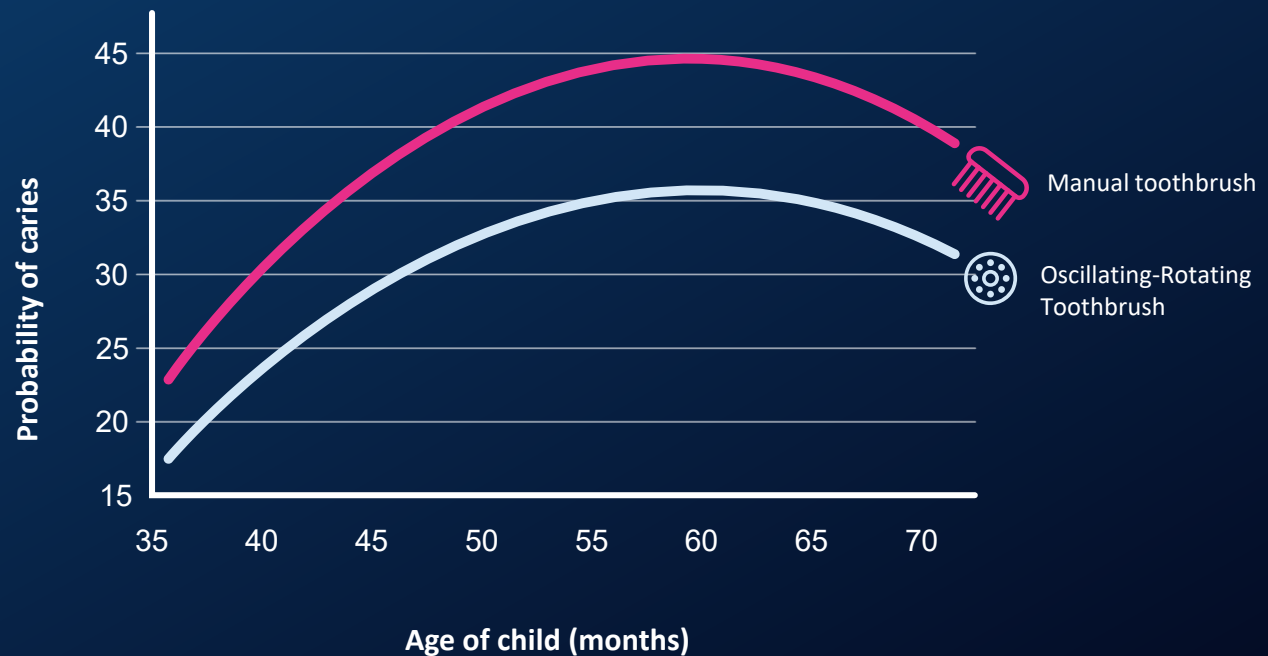
Study findings also showed that children’s oral health is mainly influenced by:¹

Toothbrush type  / 

Starting age for brushing 

Twice daily brushing  / 

Probability of caries by toothbrush type and age (months)





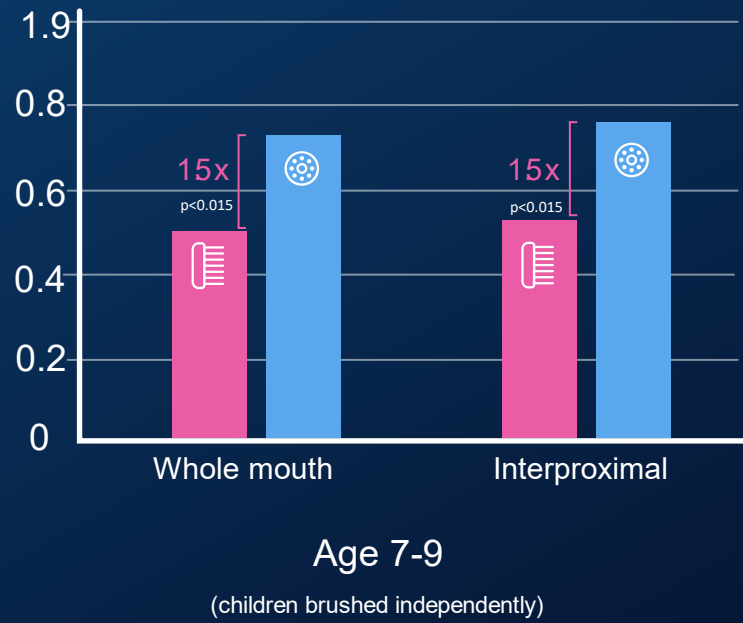
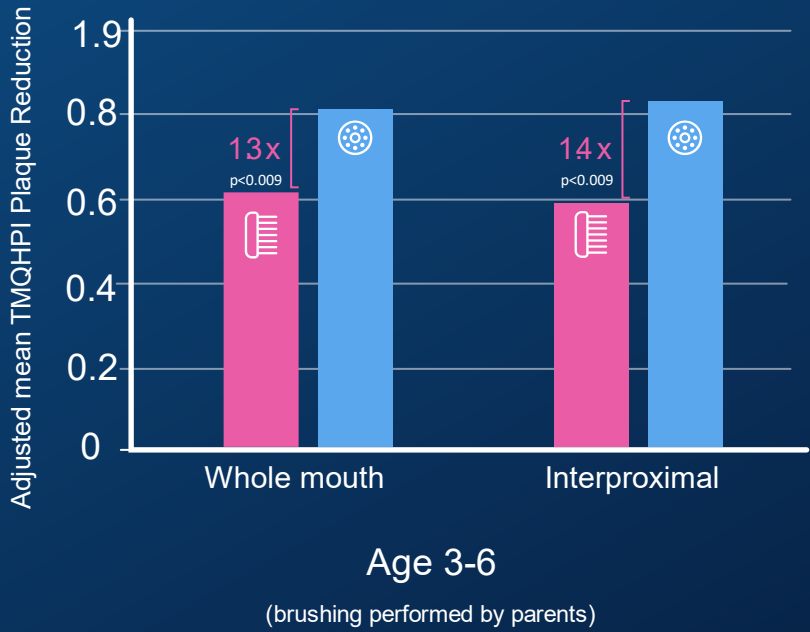
¹ Davidovich.et al, Int. J. Environ. Res. Public Health 2020, 17(22), 8595
 * Versus manual toothbrushes



THE OR ELECTRIC TOOTHBRUSH REDUCED SIGNIFICANTLY MORE PLAQUE AT FIRST USE IN THE PRIMARY AND MIXED DENTITIONS ¹⁺

Single-use analysis of plaque removal by an OR v manual toothbrush in 3- to 9-year old children¹

-  OR electric toothbrush
-  Manual toothbrush

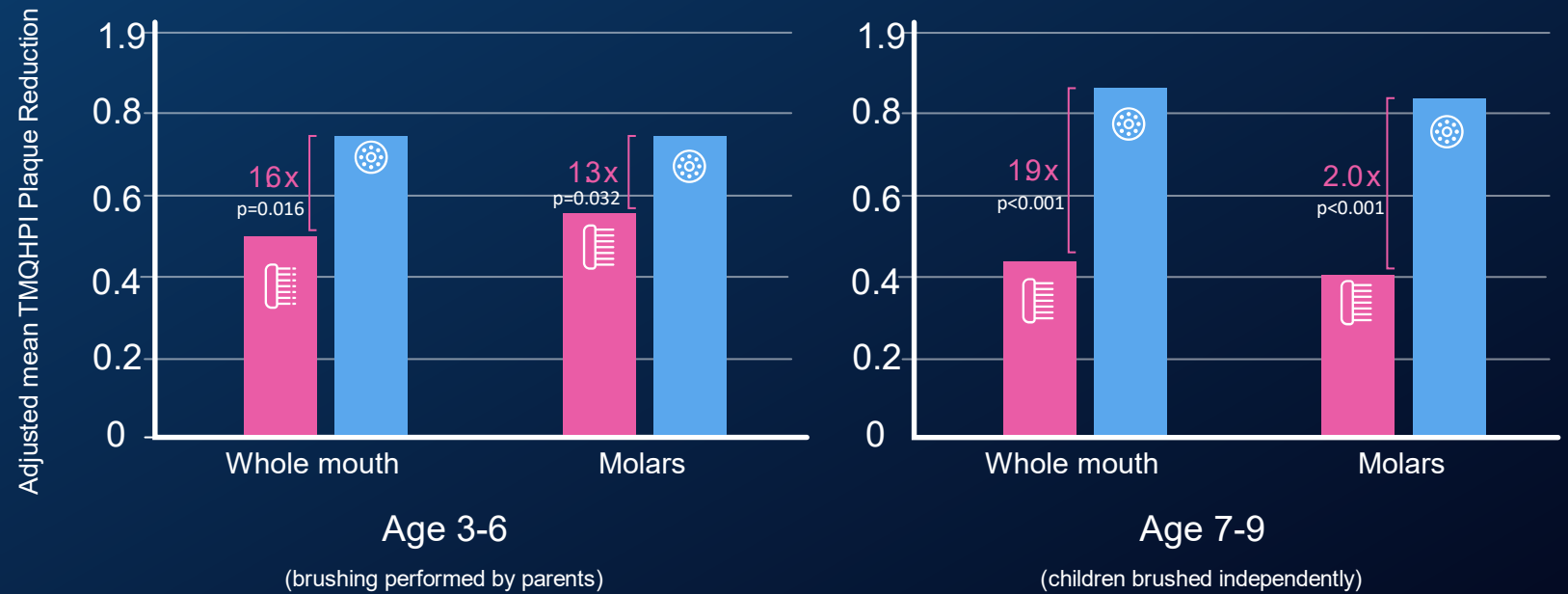
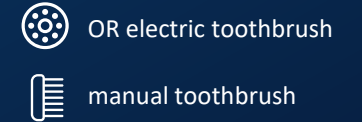


¹ Davidovich E, Int J Paediatr Dent. 2020 Nov 22. doi: 10.1111/ipd.127535
+ Versus manual toothbrushes

THE OR ELECTRIC TOOTHBRUSH REDUCED SIGNIFICANTLY MORE PLAQUE OVER 4 WEEKS IN THE PRIMARY AND MIXED DENTITIONS +



4 week evaluation of plaque removal by an OR v manual toothbrush in 3- to 9-year old children¹

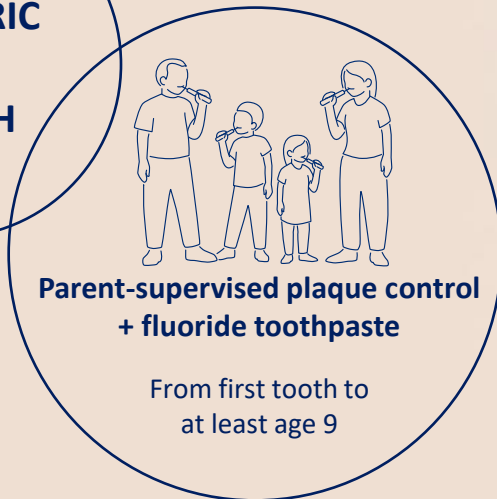
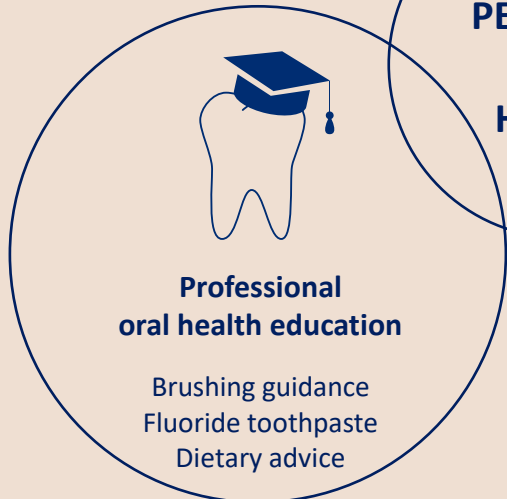


¹ Data on file. Publication in 2023
+ Versus manual toothbrushes

CURRENT PRACTICES & RECOMMENDATIONS ¹⁻⁴



PEDIATRIC ORAL HEALTH



¹ <https://www.scottishdental.org/wp-content/uploads/2014/04/SIGN138.pdf>

² <http://mouthmonsters.mychildrensteeth.org/wpcontent/uploads/2019/02/StateofLittleTeeth.2ndEdition.pdf>

³ <https://www.eapd.eu/index.php/post/prevention-is-effective-when-it-starts-early>

⁴ https://www.eapd.eu/uploads/files/EAPD_Fluoride_Guidelines_2019.pdf

STRONG TEETH MAKE STRONG KIDS: RESOURCES DESIGNED TO SUPPORT ORAL HEALTH CONVERSATIONS

RESOURCES TO GUIDE & SUPPORT PARENTS, carers and children on good oral health habits at home



- Educational pamphlets & laminates
- Waiting room tent cards
- Worksheets to facilitate at-home care
- Action Plans

RESOURCES FOR DENTAL PROFESSIONALS to enhance oral health conversations

PREVENTING TOOTH DECAY STARTS WITH THE 1st TOOTH

BABY TEETH MATTER
KEY TO HEALTHY DEVELOPMENT: Helps growing children chew, speak, and smile.

SETS THE STAGE FOR HEALTHY ADULT TEETH: When baby teeth have tooth decay, it increases the chance of decay in adult teeth.

INTRODUCING GOOD ORAL CARE NOW WILL DEVELOP HEALTHY HABITS FOR LIFE: Good brushing and healthy eating aren't a phase, they're a lifelong habit.

YOU CAN PREVENT TOOTH DECAY FOR YOUR CHILD BEFORE IT'S TOO LATE

46% of children aged 0-5 in the UK suffer from tooth decay.

LISTENING FOR OPPORTUNITIES TO START AN ORAL HEALTH CONVERSATION

The Conversation Flow Chart has been developed to help First-Visit Orthodontists identify the cases that indicate where a child may be facing oral health concerns. Often times these conversations start in the waiting room.

With your help, parents and dental professionals can work together to help improve the oral health of a child in your office.

- 1. UNDERSTANDING THE REASONS FOR THE VISIT**
 - Identify the parent or carer when they express the dental office.
 - Use this opportunity to ask that parent or carer the purpose of this office visit.
 - If the parent or carer mentions a concern that is specific to eating habits, brushing habits or dental care, make note of this.
- 2. LISTENING AND WATCHING OUT FOR CLUES**
 - Keep an ear out for certain hints of parent or carer concern.
 - Some of parent or carer verbal cues that may indicate a good indicator that they may have the healthy eating habits that you are looking for.
 - If parents or carer mention longer illnesses or if they do have their office should encourage parent to bring the child in for a check-up.
- 3. ALERTING THE DENTAL PROFESSIONAL**
 - Help address the importance of good oral care habits by alerting the dental professionals about what you've observed.

PARENTS COULD BENEFIT FROM

- STEP 1: MOTIVATION**
 - Does parent or carer appear to be open to the visit?
 - YES
 - NO
- STEP 2: ASSESSMENT**
 - Does child have tooth?
 - YES
 - NO
- STEP 3: OTHER BARRIERS**
 - Was the child brought to the office on non-emergency?
 - YES
 - NO

PARENTS SHOULD BRUSH FROM FIRST TOOTH

- Communication and behavior change training
- Patient conversation flow-charts
- Patient education videos
- Implementation guides

STRONG TEETH MAKE STRONG KIDS: P&G- FUNDED FEASIBILITY STUDY TO SUPPORT DENTAL TEAMS

Complex oral health intervention
underpinned by behavior change theory

Training with a focus on the conversation
between dental professional and parent

Evaluation of the acceptability of the "Strong
Teeth" oral health conversation



Quantitative
Study¹

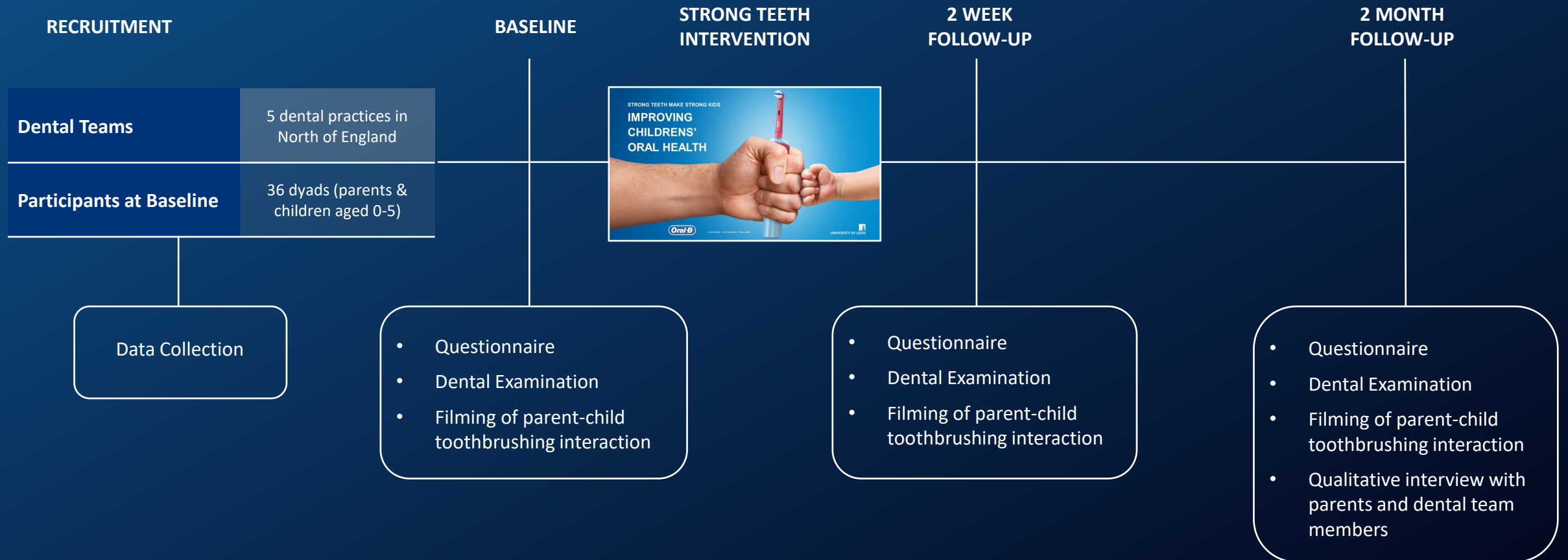
Qualitative
Study²

¹ Giles E et al. "Strong Teeth": BMC Oral Health 21, 267 (2021). <https://doi.org/10.1186/s12903-021-01608-x>;

² Bhatti et al. BMC Oral Health (2021) 21:138 <https://doi.org/10.1186/s12903-021-01444-z>;

³ Bhatti et al. BMC Oral Health (2021) 21:210 <https://doi.org/10.1186/s12903-021-01560-w>

FEASIBILITY STUDY TO EXPLORE ACCEPTABILITY, FEASIBILITY AND IMPACT OF STRONG TEETH ORAL HEALTH CONVERSATION TO SUPPORT DENTAL TEAMS¹⁻³



¹ Giles E et al. "Strong Teeth": BMC Oral Health 21, 267 (2021). <https://doi.org/10.1186/s12903-021-01608-x>

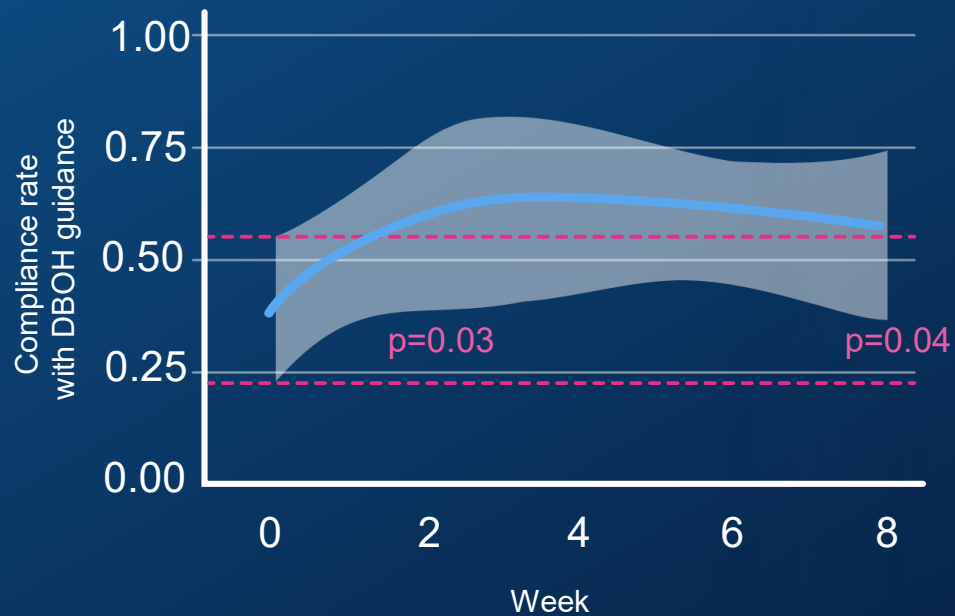
² Bhatti et al. BMC Oral Health (2021) 21:138 <https://doi.org/10.1186/s12903-021-01444-z>

³ P&G Funded

STRONG TEETH MAKE STRONG KIDS: INTERVENTION SHOWS TREND TOWARDS COMPLIANCE WITH GUIDELINES AND IMPROVED PLAQUE CONTROL WITH OR ¹

QUANTITATIVE STUDY RESULTS

Compliance to Delivering Better Oral Health guidance at 2 weeks and 2 months post "Strong Teeth" intervention



24% MORE PATIENTS showed total compliance with all DBOH Guidelines at the 2 month follow up.

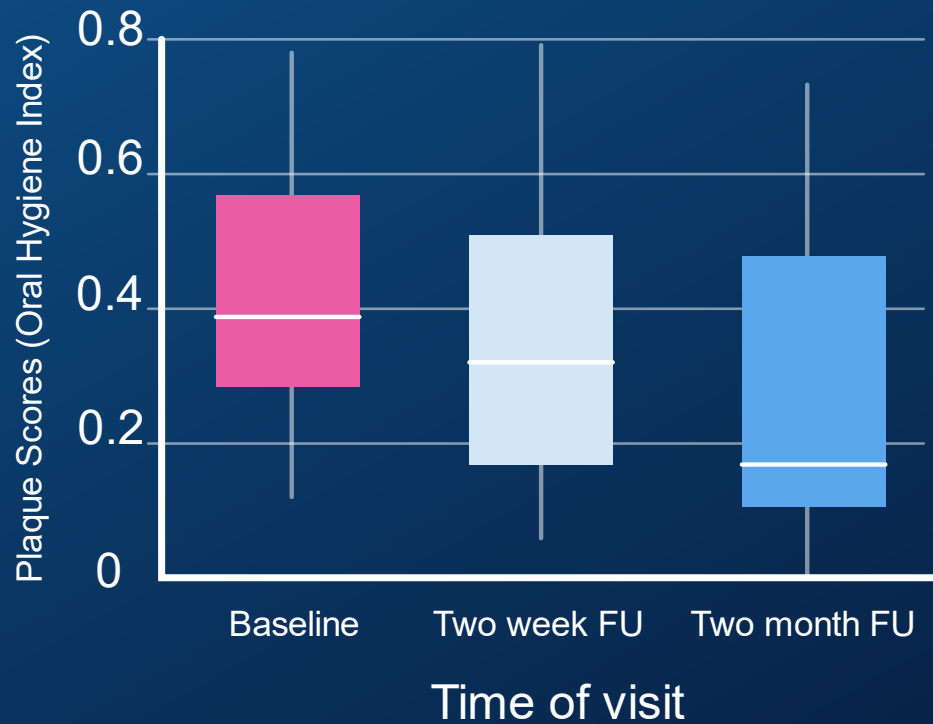
¹ Giles E et al. "Strong Teeth": BMC Oral Health 21, 267 (2021). <https://doi.org/10.1186/s12903-021-01608-x>



STRONG TEETH MAKE STRONG KIDS: INTERVENTION SHOWS TREND TOWARDS COMPLIANCE WITH GUIDELINES AND IMPROVED PLAQUE SCORES WITH OR ¹

QUANTITATIVE STUDY RESULTS

Improving plaque scores for children aged 3-5 years old using an OR electric toothbrush



Box plot for plaque scores within the 3-5 age group

¹ Giles E et al. "Strong Teeth": BMC Oral Health 21, 267 (2021). <https://doi.org/10.1186/s12903-021-01608-x>

Average brushing duration **increased by 18 seconds**



EFFICACY, IMPACT, SAFETY AND ACCEPTANCE OF OSCILLATION ROTATION TECHNOLOGY FOR PEDIATRIC PATIENTS



Superior whole mouth plaque control over 4 weeks ^{1*}:

- **1.6x greater plaque reduction** in children ages 3-6
- **1.9x greater plaque reduction** in children ages 7-9



Cross-sectional study findings show children using OR electric toothbrushes are more likely to have ^{2*}

- **Less Plaque: 6x higher odds**
- **Caries-free teeth: 1.4x higher odds**



3 separate studies on safety for pediatric patients ^{3-5*}

256 subjects

No adverse effects on hard or soft tissues



81% of parents thought the OR brush was more effective ³

74% of children agreed the OR brush was more fun to use ³

80% of dental professionals felt strongly that they would recommend the OR brush for children ³

¹ Data on File, Publication in 2023;

² Davidovich et al, Int. J. Environ. Res. Public Health 2020, 17(22), 8595;

³ Nowak et al. Compendium 23(3): Suppl2:25-32, 2002;

⁴ https://www.dentalcare.com/-/media/dentalcareus/research/pdf/ca_power/garciagodoy.pdf?la=en&v=1-201604250926;

⁵ <https://www.dentalcare.com/-/media/dentalcareus/research/pdf/vitality/grossman1997.pdf?la=en&v=1-201604251004>

* Versus manual toothbrush

** Practice-based study involving 13 dental offices and a total of 154 children aged 4 to 9 years