

# Appropriate Age for Effective Independent Toothbrushing in Children

## Introduction

The age in which children can begin to effectively brush their own teeth has not been well-established in the existing literature. Many factors can influence this, including the child's level of dexterity, motivation, and even potentially their gender; some fine-motor skill milestones have been shown to take longer in males than their female counterparts (1). Traditionally, the effectiveness of toothbrushing has been determined with the use of plaque index scores. While many studies have been conducted regarding children's toothbrushing, no consensus has been reached as to what age practitioners should recommend that children brush their own teeth. As such, parents may receive conflicting information from providers and be unsure what timeline to implement for their children. With the proper knowledge, parents may be able to help prevent multiple trips to the dentist for their child and ultimately save both time and money for all parties involved.

## Purpose

The goal of this research is to help determine when most children become able to effectively brush their own teeth.

Research question: At which age do most children become able to effectively remove plaque from their teeth with a manual toothbrush?

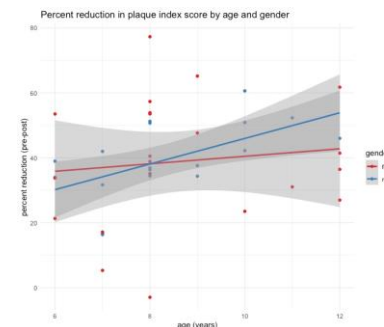
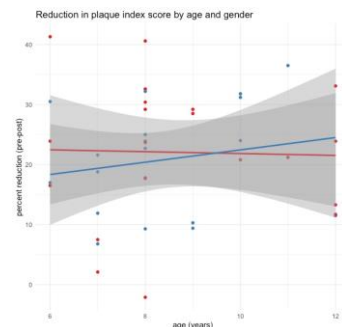
Hypothesis: Children ages 8 and above will be able to more effectively remove plaque from their teeth with a manual toothbrush than children below age 8.

## Methods

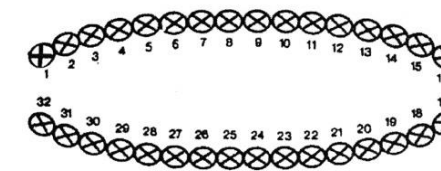
Thirty-nine healthy (ASA I or ASA II) 6–12-year-old patients of record at SLU Pediatric Dental Clinic participated in this study. When coming into the office for their regularly scheduled 6 month recall visits, parents and children were asked if they would like to participate in the study; if amenable, parents signed a consent (parent) and assent (child) form. The child participant then chewed a 2tone plaque disclosing tablet and their excess saliva and any remaining disclosing material was rinsed and suctioned from the mouth by the provider. A baseline plaque index score (O'Leary) was calculated, by the provider stating tooth number or letter and the surfaces that showed plaque (Mesial, Distal, Buccal, and Lingual) to an assistant who recorded the surfaces manually on each child's plaque index form (shown to the right). The participant then used a manual toothbrush to brush their own teeth for 2 minutes (timed by provider) with only water. Following brushing, a second disclosing tablet was chewed, the mouth was again rinsed and suctioned, and a final plaque index score was calculated and recorded on a second plaque index form. Each participant's pre- and post-brushing plaque index scores, age, and gender were recorded. Data was submitted to a biostatistician for analysis to determine any statistically significant trends in plaque reduction related to age and gender demographics.

## Results

Multiple linear regression was used to test if age, gender, and their interaction were significantly associated with the reduction in plaque. The overall regression was not statistically significant  $R^2 = .133$ ,  $F(3, 35) = 1.79$ ,  $p = .1671$ . Simple linear regression was used to test if age is significantly associated with the reduction in plaque. The regression was not statistically significant  $R^2 = .003$ ,  $F(1, 37) = 0.113$ , and  $p = .7386$ . Additionally, multiple linear regression was used to test if age, gender, and their interaction were significantly associated with the **percent** reduction in plaque. The overall regression was not statistically significant  $R^2 = .08475$ ,  $F(3, 35) = 1.08$ ,  $p = .3701$ .



## Plaque Index Form Example



O'Leary Plaque Index = # of surfaces with plaque divided by total # of surfaces x 100 = \_\_\_\_\_ %

## Conclusion

Many factors contribute to a child's ability to manually remove plaque from their teeth; however, this study found no significant trends between age or gender and the reduction in plaque or percent reduction in plaque. Further studies should be conducted with larger sample size and a focus on further eliminating extraneous variables to determine appropriate age for effective independent toothbrushing.

## References

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