

Unflavored Toothpaste's Impact On Reducing Plaque in Children with Autism

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Introduction

ASD is a neurodevelopmental disability that typically presents in early childhood and persists throughout an individual's lifetime, often accompanied by complex deficits in social, emotional, and communicative abilities.¹

Atypical sensory processing patterns, including hyper- and hypo-responsiveness, are frequently observed in young children with Autism. Hyper-responsiveness may manifest as extreme or unpleasant reactions to sensory stimuli, such as refusal to try new foods or aversion to certain textures and tastes, though not all individuals exhibit these patterns.^{1,2} The daily oral care routine of children with ASD can be particularly challenging, necessitating repeated instructions and active participation from caregivers to ensure proper oral hygiene. Dislike of toothpaste taste may hinder effective plaque removal, highlighting the importance of supervised testing of different toothpaste options to find a more tolerable taste.^{1,2, 3}

Study Aim

This study investigates the effect of unflavored toothpaste on plaque reduction in children with ASD, while also assessing caregivers' knowledge of their children's brushing preferences/habits with regular toothpaste and measuring changes in plaque score and brushing time.

Methods

Study Design: Employing a randomized controlled trial design, participants were recruited from the Mailman Segal Dental Clinic at Nova Southeastern University, Davie, Florida. **Participants:** Inclusion criteria encompassed children aged 3 to 10 years exhibiting mild to severe plaque levels, as determined by the Silness and Loe plaque index.

Intervention: Participants were randomly assigned to either the experimental group (unflavored toothpaste) or the control group (flavored toothpaste). **Outcome Measures:** The primary outcome measure was plaque reduction, assessed using the GC Tri Plaque ID Gel™ indicating changes in plaque biofilm color. Parents received education on plaque colors and brushing technique, with participants randomized to control or experimental toothpaste groups. Secondary outcome measures included brushing time and caregiver-reported satisfaction with the toothpaste.

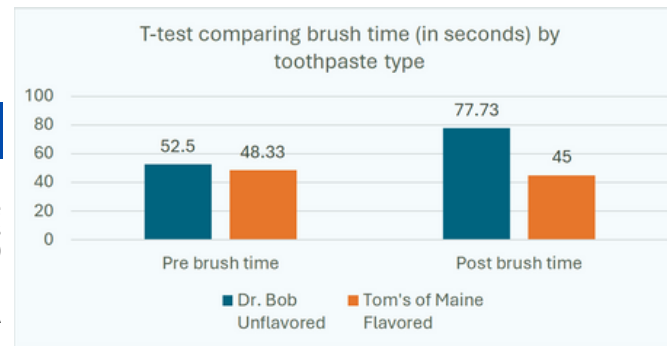
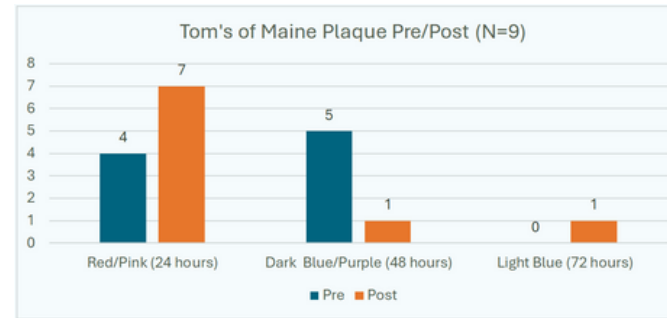
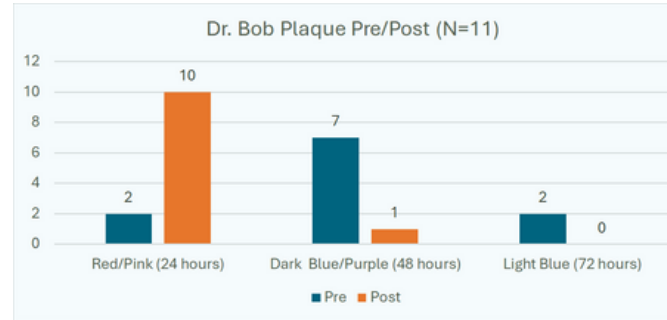
Results

Baseline Frequencies:

A total of 28 patients were enrolled in the study. Out of these, 20 patients completed the study. The mean age of the patients was 6.35 (SD=2.16), and they ranged in age from 3-10. At baseline, caregivers reported a mean of 50.53 seconds of brushing time (SD=36.81); the range of brushing time was 15-120 seconds.

Post Intervention Frequencies:

A total of 20 participants had complete data for the baseline and post intervention questions. A large majority of caregivers reported an improvement in their child's brushing habits (N=18; 90%), and more than half reported that their child enjoys brushing more now following the intervention (N=11; 55%). In addition, 60% (N=12) reported an improvement in the child's brushing technique. After completing the intervention, the mean number of seconds brushing was 63.00 (SD=52.10, range= 15-240 seconds).



Pre-intervention plaque biofilm appeared largely blue/purple for both toothpastes, transitioning post-intervention to a greater distribution in the milder pink/red category, reflecting plaque reduction. Although the results were not statistically significant, the reduction in plaque scores was greater for Dr. Bob Unflavored toothpaste than for Tom's of Maine Flavored toothpaste. Paired samples t-tests examining differences in brush time pre and post intervention revealed a greater increase in brushing time with Dr. Bob Unflavored toothpaste. Although there are differences in the mean brush time pre and post, the differences were not statistically significant (Dr. Bob p=0.13; Tom's of Maine p=0.31). Similarly, when comparing independent samples t-tests revealed difference in brushing time that were not statistically significant (pre p=0.41; post p=0.07).

	Dr. Bob Unflavored		Tom's of Maine Flavored		p value
	N	%	N	%	
Brushing habits improved					
Yes	9	81.1%	9	100%	0.48
No	2	18.2%	0		
Brushing technique improved					
Yes	6	54.5%	6	66.7%	0.67
No	5	45.5%	3	33.3%	
Brushing more enjoyable					
Yes	7	63.6%	4	44.4%	0.65
No	4	36.4%	5	55.6%	

Conclusion

The observed improvements in brushing times among participants using unflavored toothpaste indicate increased tolerance and potentially better acceptance of the intervention.

This improved tolerance likely facilitated longer brushing times and enhanced compliance with oral hygiene practices. Moreover, the ability of parents to focus on brushing technique may have contributed to the observed improvements in plaque scores.

While statistical significance was not achieved, these findings suggest a promising trend towards improved oral hygiene outcomes among children with Autism Spectrum Disorder (ASD) using unflavored toothpaste. Further research with larger sample sizes and comprehensive assessments is warranted to validate these findings and explore the full potential of unflavored toothpaste improving oral health outcomes in this population.

References

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