

# Sealant Retention in Children: Behavioral Factors on Longevity and Effectiveness



NYU Langone Dental Postdoctoral Residency Programs

Michelle Stegmann DMD MPH, Nikesha Walters DMD MS, Akilesh Shreekrishna DMD MPH FAAP  
 NYU Langone Hospitals-Advanced Education in Pediatric Dentistry, Columbia-MO Site

## INTRODUCTION

- Dental caries in children is seven times as common as the common as hay fever<sup>1</sup>. In 2015-16, the prevalence of untreated dental caries in children ages 2 to 5 were 21.4%, ages 6 to 11 years old were 50.5%, and ages 12 to 19 year-olds were 53.8%<sup>2</sup>.
- Posterior teeth are more prone to dental decay due to their deep pit and fissures. The occlusal anatomy of molar teeth makes the mechanical removal of bacteria, plaque and debris difficult leading to increased risk of dental caries. Pits and fissures contribute to 90% of caries in permanent posterior teeth and 44% in primary teeth<sup>3</sup>.
- Dental sealants were introduced in the 1960's to help protect the occlusal surfaces of posterior teeth<sup>3</sup>. Sealants are an important preventative procedure to help reduce the risk of dental decay, where they have been shown to reduce caries to about 76%<sup>4</sup>.
- Current literature is limited on evaluating a patient's behavior and sealant retention rates, where only a few studies have examined a patient's behavior affecting the success of a sealant.

## PURPOSE

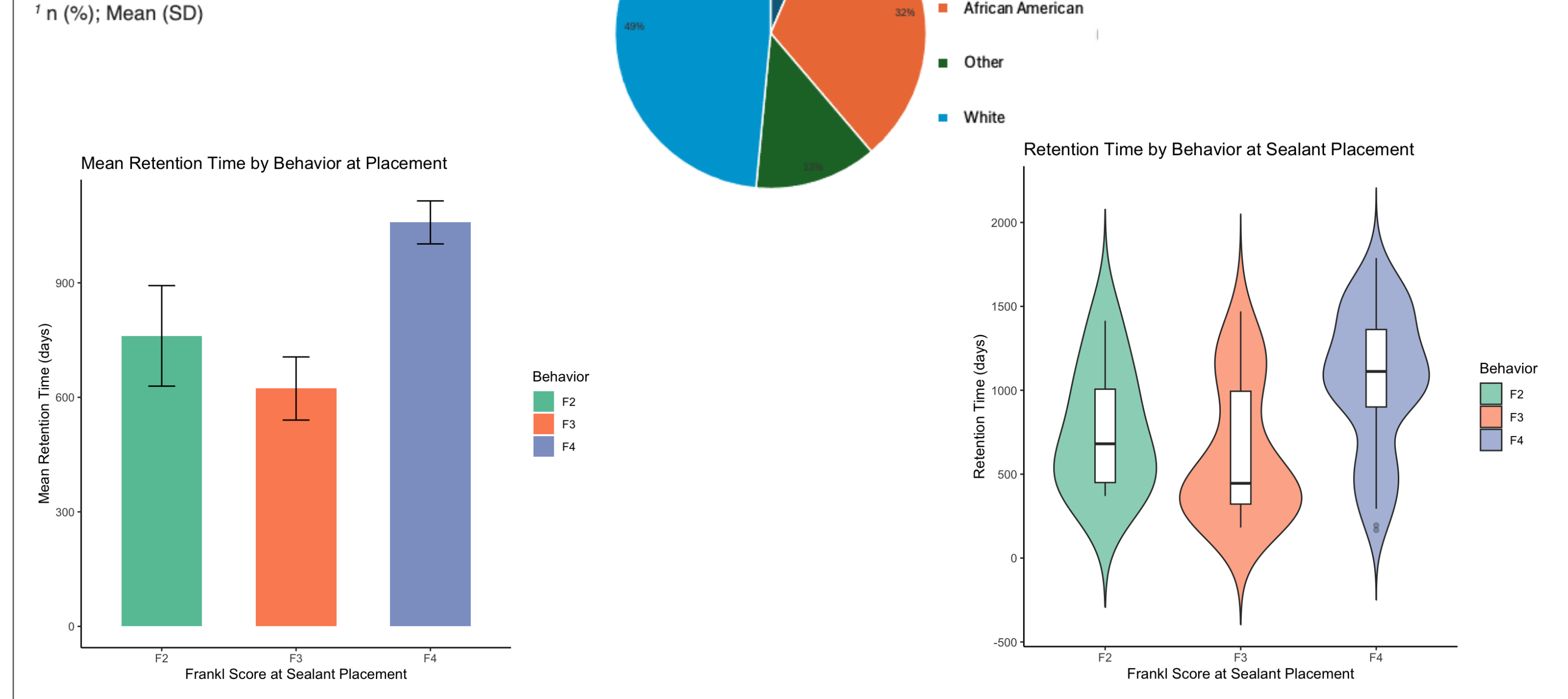
The aim of the study is to determine if patients with higher Frankl scores had a higher sealant retention rate. Understanding this relationship can help clinicians develop tailored approaches for sealant success when there are behavioral challenges. We hope to use the results to help reduce the sealant repair rates in our clinic which will ultimately reduce the caries incidence rate in the community.

## METHODS

- Retrospective chart review of patients seen at Compass Health's Pediatric Dental Clinic at the Portland location from August 1<sup>st</sup>, 2024, to August 1<sup>st</sup>, 2025.
- Patients selected had sealants repaired (D1353) during that time. The audit of the chart included the sealant procedure, which tooth the sealant was placed on, evaluation of the patient's medical history, the doctor's note and dismissal notes to evaluate the patient's Frankl rating during the sealant procedure.
- The study Inclusion criteria were neurotypical patients (male and female) ages 6-11 years old with first molar fully erupted (as charted in the odontogram). ADHD diagnosis was included. Patient age, gender, ethnicity, and language were recorded.

## FIGURES

Characteristic	N = 87 <sup>1</sup>	F2	F3	F4	p-value <sup>2</sup>
<b>Ethnicity</b>					
African American	28 (32.2%)	4 (50.0%)	3 (12.5%)	21 (38.1%)	0.13
Other	11 (12.6%)	1 (12.5%)	4 (16.7%)	6 (10.9%)	
White	42 (48.3%)	3 (37.5%)	15 (62.5%)	24 (43.6%)	
Declined to answer	6 (6.9%)	0	2 (8.30%)	4 (7.27%)	
<b>Gender</b>					
Female	48 (55.2%)	3 (37.5%)	15 (62.5%)	30 (54.5%)	0.5
Male	39 (44.8%)	5 (62.5%)	9 (37.5%)	25 (45.5%)	
<b>Age at Sealant Placement</b>					
Frankl Score at Sealant Placement	6.93 (1.30)	8.88 (1.25)	8.96 (1.68)	9.62 (1.10)	0.14
<b>Frankl Score at Sealant Repair</b>					
F1	8 (9.2%)	0 (0.0%)	1 (4.2%)	0 (0.0%)	0.013
F2	24 (27.6%)	2 (25.0%)	4 (16.7%)	3 (5.5%)	
F3	55 (63.2%)	3 (37.5%)	5 (20.8%)	6 (10.9%)	
F4	9.37 (1.32)	3 (37.5%)	14 (58.3%)	46 (83.6%)	
<b>Retention Time</b>					
Frankl Score at Sealant Repair	911 days (451)	761 days (372)	623 days (405)	1,058 days (418)	<0.001



## RESULTS

- A total of 87 patients were selected from August 1<sup>st</sup>, 2024 to August 1<sup>st</sup>, 2025
- 48 females and 39 males
- 34.6 % African American, 42% White, 11% Other
- Fisher's exact test and Kruskal-Wallis rank sum test for categorical and continuous variables respectively
- Average age at sealant placement 6.93 years old, Average age at sealant repair 9.37 years old
- Average Sealant Retention times: Frankl 2 was 761 days, Frankl 3 was 623 days, Frankl 4 was 1058 days

## Conclusion

- No significant difference between ethnicity, gender at sealant placement.
- No significant difference between age at sealant repair and Frankle score at placement.
- There is a significant relationship between Frankl score at repair and Frankl score at placement. F3 and F4 patients at sealant placement were more likely to score a F3 or F4 at sealant repair; which indicates that patient behavior tends to be consistent across time, even if the sealant placement and repair were several years apart.
- Significant relationship between patient behavior at sealant placement and sealant retention time with a p-value of <.001. Patients with Frankl 4 behavior at the sealant placement had the highest sealant retention rates (average 1,058 days), while patients with F3 or F2 Frankl scores had significantly lower retention rates (average 761 days, and 623 days, respectively).
- Patients with low Frankl scores will have significantly lower sealant retention times compared to patients with Frankl 4.**
- The results of the study confirms the hypothesis that patients with higher Frankl scores will have better sealant retention rates.**
- Behavior management is essential during sealant placement to have optimal sealant retention. When the clinician can increase the cooperation of the patient during the sealant procedure, the better outcome of the sealants which ultimately can help reduce the caries rate in the surrounding community.**

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