

Dental Home Establishment Following Comprehensive Dental Treatment Under General Anesthesia (GA): An Eight-Year Follow-Up



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Abstract

This study evaluated follow-up patterns and factors associated with dental home establishment among pediatric patients treated for early childhood caries under general anesthesia at Jamaica Hospital Medical Center between 2015 and 2023. A retrospective review of 217 patients (ages 4–18, ASA I–II) examined demographic, clinical, geographic, and Social Deprivation Index (SDI) data, with follow-up visits tracked for two years postoperatively. Overall, 52% of patients returned for follow-up. Younger age and closer proximity to the hospital were associated with higher follow-up rates in unadjusted analyses; however, in adjusted models, increasing age remained the only significant predictor of decreased follow-up (OR = 0.34, p = 0.04). Greater distance was associated with fewer total follow-up visits (RR = 0.80, p = 0.04), while SDI and other demographic factors were not significant. These findings suggest that older age and geographic distance are key barriers to follow-up and dental home establishment, highlighting the need for targeted interventions to improve long-term oral health outcomes.

Introduction

Early Childhood Caries (ECC), defined as the presence of decayed, missing, or filled primary tooth surfaces in children under six, remains a significant global health issue (AAPD Definition). Affecting up to 49% of preschool-aged children, it is the most common preventable, noncommunicable disease of the teeth (Maklennan 2024; Giacaman et al. 2022). ECC can result in pain, missed school, impaired oral function, and substantial financial burden, particularly when treatment requires general anesthesia (GA) in a hospital setting (Jamieson 2007; Maklennan 2024).

The establishment of a dental home by 12 months of age supports preventive and comprehensive care, early diagnosis, and appropriate referral, including for treatment under GA (AAPD 2024; Sheehy et al. 1994). Children with a dental home are significantly less likely to develop caries (Hayes 2021). However, patients treated under GA — especially those with high initial disease burden — remain at risk for recurrent decay, underscoring the need for ongoing follow-up (Sheehy et al. 1994).

Follow-up care is critical for monitoring oral health and reducing dental anxiety, particularly within the first 15.6 months when retreatment risk is highest (Savanheimo et al. 2014; Guidry et al. 2017). This study aims to retrospectively evaluate patients treated under GA at Jamaica Hospital Medical Center over eight years, identify barriers to establishing a dental home, and inform strategies to improve post-treatment patient retention.

Methodology

- **Study Design:** Retrospective EMR review of pediatric dental patients (ages 4–18) undergoing oral surgery (2015–2023).
- **Data Collected:** Demographics, insurance, comorbidities, ASA status, preferred language, and 2-year postoperative follow-up.
- **Geographic Measures:** ZIP codes used to estimate distance to hospital and Social Deprivation Index (SDI).
- **SDI:** Area-level socioeconomic measure (0–100) derived from ZCTA data (poverty, education, housing, employment).
- **Statistical Analysis:** Descriptive statistics (frequencies, medians, IQR).
- **Comparisons:** Wilcoxon rank-sum and Fisher's exact tests by follow-up status.
- **Modeling:** Logistic regression for follow-up likelihood; negative binomial regression for visit rates (p < 0.05, 95% CI).

Results

- **Sample:** 217 pediatric patients (ages 4–18; ASA I–II); 52% (113) completed follow-up within 2 years.
- **Bivariate Findings:** Younger age and shorter distance from hospital were significantly associated with follow-up (p < 0.05); SDI, race, language, and insurance were not.
- **Logistic Regression (Follow-up):**
 - Increased age associated with lower odds of follow-up (adjusted OR ≈ 0.34, p = 0.04).
 - Distance was significant in unadjusted analysis but not after controlling for race and SDI.
- **Visit Frequency (Negative Binomial Model):**
 - Greater distance associated with fewer follow-up visits (adjusted RR ≈ 0.80, p = 0.04).
 - Age was not significant after adjustment.
- **Overall Trend:** Both older age and greater distance act as barriers, but their effects differ depending on outcome (follow-up vs. visit frequency).
- Refer to Table 1 for numerical analysis and breakdown of data points.

Figures & Table

Table 1:

	No Follow-up (N=104)	Follow-up (N=113)	P-value
Race			
Hispanic	40 (38.5%)	47 (41.6%)	0.0603
Asian	24 (23.1%)	40 (35.4%)	
Black	27 (26.0%)	19 (16.8%)	
Other	13 (12.5%)	7 (6.2%)	
Language			
English	70 (67.3%)	62 (54.9%)	0.128
Other	8 (7.7%)	16 (14.2%)	
Spanish	26 (25.0%)	35 (31.0%)	
Age			
Median [Q1, Q3]	5.00 [5.00, 7.00]	5.00 [4.00, 6.00]	0.0222*
SDI Score			
Median [Q1, Q3]	84.0 [75.8, 91.0]	82.0 [76.0, 87.0]	0.625
Distance from Hospital			
Median [Q1, Q3]	2.77 [1.31, 3.99]	2.09 [1.05, 3.94]	0.037*
Year of Surgery			
2016 - 2018	25 (24.0%)	29 (25.7%)	0.941
2019 - 2021	41 (39.4%)	45 (39.8%)	
2022 - 2023	38 (36.5%)	39 (34.5%)	
Insurance Status			
Private	2 (1.9%)	1 (0.9%)	0.942
Public	102 (98.1%)	112 (99.1%)	
ASA Rating			
1	39 (37.5%)	51 (45.1%)	0.295
2	51 (49.0%)	47 (41.6%)	
Missing	14 (13.5%)	15 (13.3%)	
Total Number of Visits after OR			
Median [Q1, Q3]	---	2.00 [1.00, 4.00]	

Dental Home Establishment after Comprehensive Dental Care under General Anesthesia

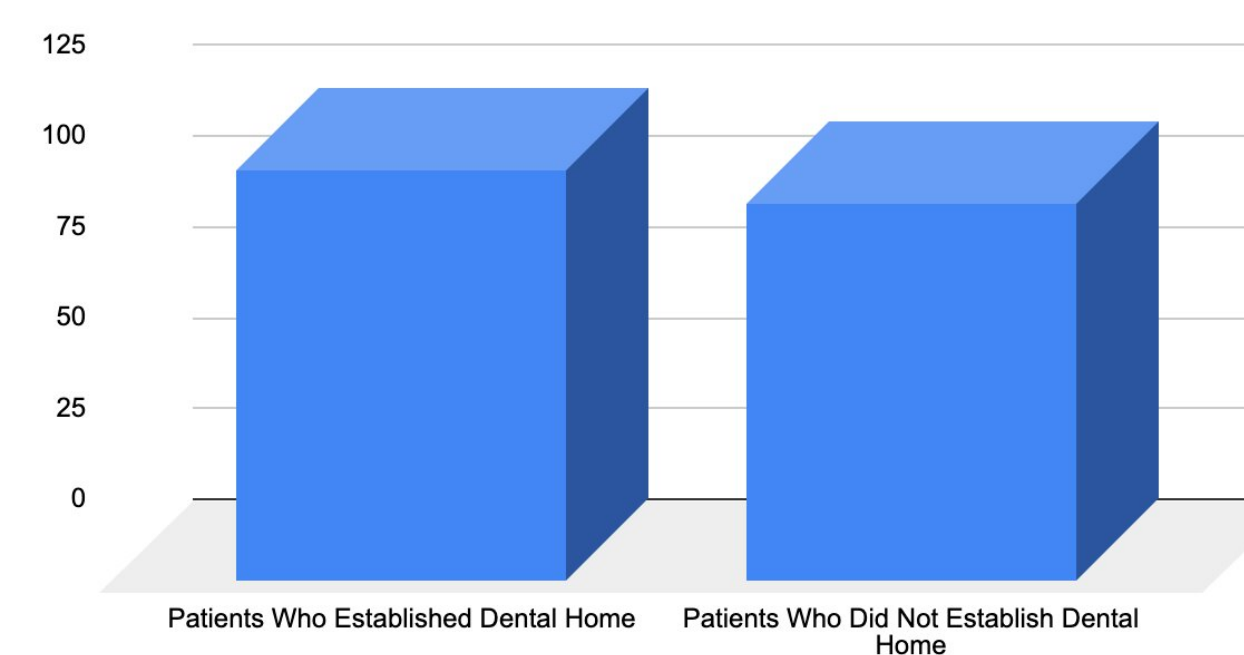


Figure 1. Establishment of Dental Home after Comprehensive Treatment under General Anesthesia.

Patients with Follow-Up Care

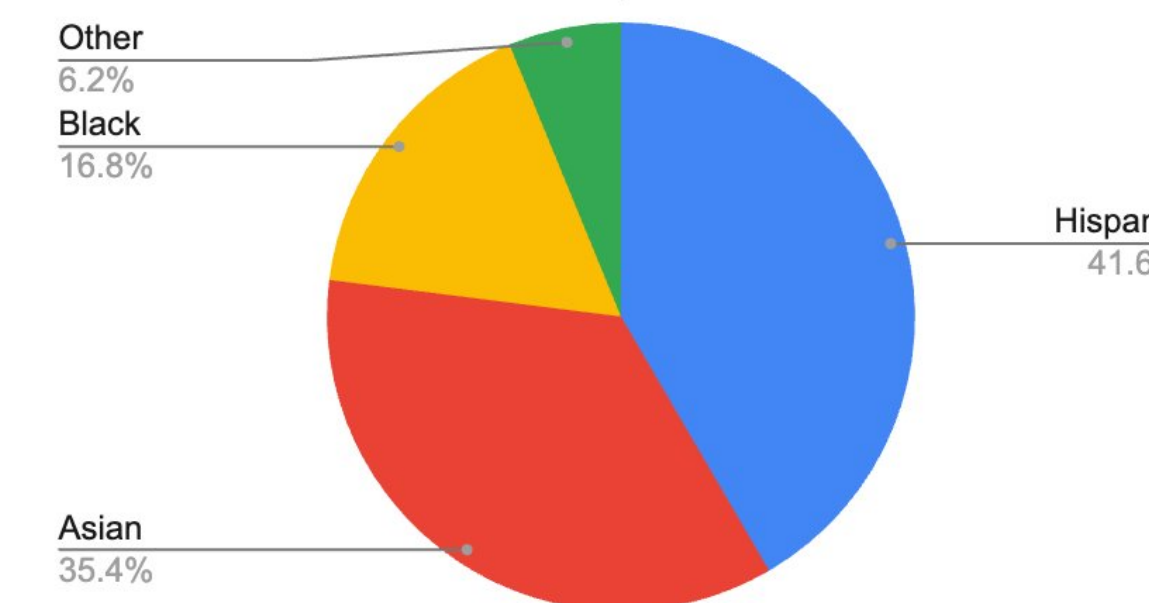


Figure 2. Demographic of Patients Establishing Dental Home after Comprehensive Dental Treatment under General Anesthesia.

Conclusion

- Of 217 patients treated for comprehensive dental care under general anesthesia, 52% of patients (113 patients) established a dental home. (Figure 1)
 - This data correlates with that published by the University of Iowa and the University of North Carolina, where about 54% and 47% of the patients, respectively, previously treated comprehensively under general anesthesia returned for post-operative visits (Jamieson et.al 2008, Mathu-Muju et. al 2010)
- Increased residential distance from the hospital was associated with decreased likelihood of dental home establishment.
- Increased patient age was associated with decreased likelihood of dental home establishment.
- 77% of the patients who established a Dental Home, a majority of patients establishing a dental home were ethnically Hispanic or Asian. Other ethnicities were less likely to establish a dental home after dental treatment under GA. (Figure 2)
- Of 113 patients who established a dental home, English was the primary language of patients who returned (54.9%).
- **Future Steps:**
 - Collection of larger multi-center studies to assess barriers to establishment of dental home after comprehensive dental treatment under general anesthesia.
 - Consideration of virtual follow-ups to increase establishment of dental home.

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