

Examining the Influence of Sibling History on the Likelihood of Dental General Anesthesia Requirement in Younger Patients: A Retrospective Study at Suncoast Community Health Center

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INTRODUCTION

Caries is a multifactorial disease seen across all populations and it is a dentists duty to create a trusting relationship between patient and themselves and provide quality treatment in a safe manner.

To protect a child’s developing psyche, establish a trusting relationship with the dentist, and enable quality dental treatment to be accomplished, various behavioral management approaches are employed to ensure successful and safe treatment. Since each child is unique, a range of approaches may be necessary to alleviate fear and anxiety. The American Academy of Pediatric Dentistry (AAPD) recommends techniques like Tell-Show-Do (TSD), nitrous oxide, oral conscious sedation (OCS), and general anesthesia (GA), depending on patient needs.

Previous research has extensively examined maternal influence on oral health practices. A relationship that has not been sufficiently studied is the influence of siblings on oral health. Sibling relationships have the potential to be the longest lasting relationship, with the potential for influencing oral health care. Bandura’s social learning theory suggests younger siblings may mimic older siblings' dental experiences, affecting their treatment outcomes. Prior studies indicate a high prevalence of sibling-recurrent DGA, highlighting the need for family-centered oral health education.

Findings could inform strategies to reduce GA reliance by improving oral hygiene and preventive care through family-based education.

PURPOSE

The purpose of this study is to evaluate the influence of sibling relationships on the need for dental general anesthesia (DGA) for pediatric patients at Suncoast Community Health Center. This study further explores the sibling relationship further within the pediatric population at Suncoast Community Health Center in Brandon, Florida.

It was hypothesized children with an older sibling who have undergone dental general anesthesia are more likely to undergo general anesthesia to complete their dental treatment. Following completion of this study, additional research may be conducted to understand why the recurrence rate of dental general anesthesia is at its current level.

METHOD

This single site research project reviewed sibling sets from Suncoast Community Health Center dental departments. It was a retrospective chart review evaluating records of 200 total patients (100 sibling sets).

The study accessed eClinicalWorks (eCW) records of siblings with common parents/guardians, identifying cases where the older sibling underwent DGA and assessing the younger sibling’s behavior management modality. Data collection included age, assigned sex, and treatment details, with all records securely stored on a HIPAA-compliant network.

Inclusion criteria required sibling pairs aged 3-15 seen at SCHC between 2015-2024, with the older sibling having received DGA. Exclusions included twins, sibling sets greater than two, or cases outside the study timeframe.

No patient contact occurred, and confidentiality risks were minimized. While the study provided no direct benefits to patients, findings may help reduce GA reliance in pediatric dentistry.

TABLE 1

Study Factors	Older Sibling	Younger Sibling	p-Value
Assigned Sex (%)			0.099
Male	58	46	
Female	41	54	
Age at Date of Service (mean)	5.37	4.84	0.007
Number of Treatments (mean)	20	12	p<0.001
Behavior Management Modality used (younger sibling only)(%)	N/A		p<.001
Tell-Show-Do		10	
Nitrous Oxide		37	
Oral Conscious Sedation		12	
General Anesthesia		41	

RESULTS

Table 1 shows that among 100 sibling pairs, there was no significant difference in assigned sex (p = .099), with older siblings being 41% female and 58% male, compared to 54% female and 46% male in younger siblings.

Older siblings had a significantly higher average age at treatment (5.37 (1.85) vs. 4.84 (1.34) years, p = .007) and underwent significantly more treatments (20 (7) vs. 12 (9), p = 8.8E-11).

Behavior management modalities for younger siblings included 10% TSD, 37% nitrous oxide, 12% oral conscious sedation, and 41% general anesthesia, with a highly significant distribution difference (p = 5.8E-7) from the expected equal distribution.

CONCLUSIONS

Based upon the results of this study, the following conclusions can be drawn:

- Younger siblings were significantly more likely to require dental general anesthesia compared to the other behavior management modalities.
- Further studies are necessary to better understand the relationship between siblings and their required behavior management modality to complete dental treatment.

DISCUSSION

The study results support a significant correlation between older siblings who received DGA and the behavior management modality required for younger siblings, aligning with previous research showing 45% of cases involved one sibling with GA and 55% involved multiple siblings. No significant difference was found in assigned sex, and older siblings were generally older at treatment, possibly due to later initial visits. Older siblings also had more completed treatments, likely due to DGA allowing for comprehensive care in a single session.

Limitations include sample size, selection bias, and the possibility that younger siblings may still require DGA in the future.

Further research should explore larger sibling groups, parental influence, socioeconomic factors, and controlled study designs to better understand family treatment patterns and enhance patient education.

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