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Prevalence and factors of sibling-recurrent dental treatment under general anesthesia

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Prevalence and factors of sibling-recurrent dental treatment under general anesthesia

A thesis submitted in partial fulfillment of the requirements for the degree of Master of Science in Dentistry at Virginia Commonwealth University.

by

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Abstract

PREVALENCE AND FACTORS OF SIBLING-RECURRENT DENTAL TREATMENT UNDER GENERAL ANESTHESIA

Brandy Edmonds, DDS

A thesis submitted in partial fulfillment of the requirements for the degree of Master of Science in Dentistry at Virginia Commonwealth University.

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Thesis Advisor: Tiffany Williams, DDS, MSD. Assistant Professor, Department of Pediatric Dentistry

Objective/Aims: Assess the prevalence of sibling recurrent dental general anesthesia (DGA) at VCU Pediatric Dentistry. Assess factors that contribute to sibling recurrent dental general anesthesia. **Methods:** The guardian of patients with siblings were provided a questionnaire to assess the prevalence and factors associated with recurrent DGA. **Results:** A total of 40 families with a child presenting for GA and at least one sibling were included in the study. Of these, 45% had sibling-recurrent GA treatment (20% in one sibling; 25% in 2 or more siblings). Additionally, 13% of the children currently presenting for GA had already been treated under GA, and 15% of the siblings previously treated with GA had recurrent caries after GA.

Conclusion: Sibling-recurrent general anesthesia is high at VCU Pediatric Dentistry Clinic. This increased prevalence could be due to parental acceptance and positive experiences with DGA. Dental providers should be pro-active with prevention methods.

Introduction

Treatment of dental caries in young patients can be complicated by many factors including lack of cooperation, dental anxiety, and fear. The extent of dental treatment necessary, such as pulp therapy, crowns, and resin restorations, can further complicate treatment since these procedures require the patient to be able cooperate for extended periods of time. Amid the 51 million hours of missed school attributed to dental caries,[1] dental visits for treatment of caries continues to increase[1](early Childhood Caries (ECC) is the most common chronic childhood disease in the United States affecting 28% of kids aged two to five years old[1]) and recurrent visits for extensive dental treatment has been observed,[2] specifically treatment with advanced behavior measures.

Selecting an appropriate behavior management modality considers several factors including patient behavior, parenting practices, marketing, media, and society[3]. The use of dental general anesthesia (DGA) is an advanced behavioral technique that allows for the trained pediatric dentist to treat extensive treatment needs and patients of varying levels of cooperation. The American Academy of Pediatric Dentistry (AAPD) Guidelines provides the rationale for DGA as: patients who have difficulty cooperating due to a lack of psychological or emotional maturity and/or mental, physical, or medical disability, patients that have difficulty obtaining profound anesthesia because of acute infection, anatomic variations, or allergy, extremely

uncooperative, fearful, anxious, or un- communicative child or adolescent; patients requiring a significant amount of surgical procedures; protect the developing psyche and/or reduce medical risk, and lastly, patients requiring immediate, comprehensive oral/ dental care.[4]

The use of general anesthesia for treatment of dental caries comes with great risks including potential allergic reaction, infection, adverse events during surgery and death. The potential for other long term effects due to exposure to general anesthesia at an early age have been investigated. In a study by DiMaggio et al, children exposed prior to the age of three were found to have an increase in behavioral and developmental disorders.[5] Additionally, the incidence of behavioral and developmental disorders increased with repeated exposure to general anesthesia.[5] Although the DiMaggio study reports behavioral disorders due to exposure from general anesthesia, it also acknowledges multiple confounding variables that can affect child development apart from being exposed to general anesthesia.[5] Other studies have found that exposure to anesthetic agents before completion of synaptogenesis can cause neuronal degeneration and cell death.[6] Most studies that have investigated the effects on neuronal degeneration have been animal studies on mice and rhesus monkeys; the current literature is inconclusive in regards to the long term effects of general anesthesia on humans.[5] A study by Kalkman et. al divided children into four groups based on anesthesia exposure at 0–6 months, 6–12 months, 12–24 months, and greater than 24 months of age and investigated children's behavior with the Child Behavior Checklist/ 4-18(CBCL/4-18).[6] Children who had undergone surgical procedures in the 0-6 month group had higher abnormal CBCL/4-18 scores regardless of multiple anesthetic exposures, birthweight and gestational age.[6] Given the risks and

complications of DGA, dentists should be judicious in their recommendation for DGA and parents should be aware of potential risks and complications.

Prior to and following DGA can be a critical time for dental providers to implement caries prevention methods for caregivers. It is recommended that patients that have had dental treatment under GA have a comprehensive and frequent preventive approach.[7–9] Amin et.al investigated the recurrence of dental caries following treatment under general anesthesia in the short term period, 1-6 months, and long term, 19-24 months.[10] In this study, 62%of 269 patients presented for at least one recall after 12 months in the study and 24% had new carious lesions. Of the patients that attended recalls between 13-24 months following treatment, 53% had new carious lesions.[10] The study found that patients had lower relapse rates in the first 1-6months following GA but relapse increased greatly in the long term, 19-24months.[10]

Jamieson et al investigated the attendance at the post-operative visit, recall attendance and relapse rate of caries following full mouth dental rehabilitation in three hundred- twenty patients ranging from ages 2-7 years old who were treated under GA.[8] Only 54% returned for a post-operative visit and 26% had operative needs within 3 years of their GA experience.[8] The results also demonstrated low recall rates following GA with only 13% returning for six month recall and 12% returning at 12 month recall visit.[8] Of the patients that had operative needs within three years, 73% of those had recurrent decay.[8] The study discussed the need for improved education of parents following general anesthesia.[8]

Despite extensive preventative measures, including frequent recalls and guardian education, pediatric patients are returning to the dental office with recurrent decay and often

repeat visits to the hospital for DGA. A study by Almeida et al found that among 42 patients with ECC, 79% of those patients had new carious lesions and 17% required retreatment under GA. Another study reviewed data for children that required more than one treatment under GA at a single hospital.[11] The hospital found that 339 children had experienced more than one DGA and 24% experienced greater than two DGA procedures.[11] Patient factors that have been found to contribute to multiple DGA include continued use of bottle at the time of GA, 100% involvement of maxillary central incisors, poor cooperation in medical/dental setting and difficult personality of patient.[2]

Although studies have been aimed at investigating the presence of one patient returning for DGA, no studies have evaluated multiple patients within the same family who present for DGA. Dental caries is a transmissible disease primarily through the role of *mutans streptococci* genotypes.[1,12,13] Most parents may not be aware of the modes of transmission of these bacteria.[14] Children can acquire *mutans streptococci* genotypes from his or her mother via vertical transmission or siblings, and unrelated children via horizontal transmission.[12,13] The familial transmission of caries causing bacteria highlights the significance of investigating sibling recurrent DGA.

The purpose of this study was to assess the prevalence of families at Virginia Commonwealth University Medical Center that have had multiple siblings undergo dental treatment with general anesthesia (DGA) and to assess factors that may contribute to increased risk of recurrent caries and recurrent DGA within families such as number of dental visits, change in oral hygiene habits after the first child, visits following treatment under general

anesthesia and experience with general anesthesia. Investigation of the events following DGA can be helpful in improving preventative dental care and eliminating the need for repeated DGA procedures. Previous studies investigated the relapse rates of DGA of a single patient but no studies investigate the need for multiple siblings within one family.

Research Design and Methods

The project was approved under expedited status from the Virginia Commonwealth University Institutional Review Board (VCU IRB #HM20009881). This is a retrospective cohort study to determine the prevalence of families that have had multiple children undergo dental treatment with general anesthesia and to assess factors that may contribute to recurrent DGA visits within families such as number of dental visits, change in oral hygiene habits after the first child, visits following treatment under general anesthesia and previous experience with DGA. Patients were identified upon consultation for general anesthesia at VCU Pediatric Dental Clinic from July 25, 2017 to March 15, 2018. The following inclusion and exclusion criteria applied:

Inclusion Criteria:

- Patient under the age of 7 years old.
- Patient has caries that necessitate dental treatment under general anesthesia
- Parent or guardian have agreed to treatment under general anesthesia
- Patient has at least one sibling

Exclusion Criteria

- Patient is 7 years old or older
- Patient is not receiving dental treatment under general anesthesia

- Patient does not have any siblings
- Patient is receiving dental treatment under general anesthesia but does not have caries (i.e. gross debridement, preventative care)
- Patient has special health care needs that necessitate treatment under general anesthesia.

Patient Selection

Patients were identified when they presented to VCU Pediatric Dental Clinic for consultation for dental caries. Patients were examined for dental caries by a calibrated dental provider in the clinic. Verbal and written consent were provided to the guardian. Guardians were notified that their attendance at the two-three-week follow-up appointment would be recorded. Patients still received dental treatment under GA if parents did not consent to be in the study

Patient Questionnaire

Parents completed a questionnaire following consent into the study. The questionnaire was aimed at obtaining data on the current patient that is in need of DGA and if the patient has had siblings that have undergone DGA. Additional information was obtained to assess the hygiene habits and frequency of dental visits of the patient and the siblings that have had DGA. Caregivers were also asked insurance information, barriers to care, and their experience with their children having treatment under GA.

Provider Questionnaire

The calibrated dental provider completed a questionnaire which confirmed: the age of the patient; the patient did not have any special healthcare needs; caries were present and the reason for DGA. Providers charted caries on paper during the exam at initial consultation. This exam

can be very limited at this visit due to behavior which can restrict the provider's ability to diagnose all caries present.

Follow- up visit

Patients were scheduled for two to three-week follow-up after DGA. Patient attendance was recorded.

Statistical Methods

Prevalence of sibling-recurrent DGA, recurrent caries, and behavior modifications post-DGA were determined using descriptive statistics (counts and percentages). Socio-economic factors were evaluated for association with sibling-recurrent DGA using chi-squared tests. Significance level set at 0.05. SAS EG v.6.1 was used for all analyses

Results

A total of 40 families were included in the study. Demographics are given in Table 1. Children enrolled in the study were predominantly African American (64%), between the ages of 3 and 5 (73%), had a diagnosis of severe early childhood caries (83%), and were covered under Medicaid. There was roughly an equal split among child's gender (58% male, 43% female), single parent households (48% yes, 53% dual-parent household). Only 13% of patients were the oldest child in the family.

Forty-five percent of participants had at least one sibling who had already been treated under DGA (18 out of 40), with just under half reporting one sibling with DGA (45%, n=8) and 55% reporting two or more siblings with DGA experience (n=10). Among the families with siblings who had already been treated under DGA, 15% reported recurrent caries since the DGA treatment. Five of the children currently being referred for DGA had already been treated under DGA and 30% had already been treated for caries (not necessarily under DGA). After excluding the five study participants who were the oldest children in the family, the updated sibling-recurrent DGA rate was 49%. Additional results on recurrence rates are given in Table 2.

Sibling-recurrent DGA was found to be significantly associated with single-parent households (p-value=0.0281). Families that reported a single-parent household reported a higher rate of sibling-recurrent DGA: 67% vs 32%. There was marginal evidence of an association

between the child's gender (p-value=0.0884), with boys seeing a higher rate of sibling-recurrence than females (72% vs 45%). None of the other social determinants were found to be significantly associated with sibling-recurrent DGA (Table 3). Families who reported at least one child who had been treated with DGA before the study were asked questions regarding any changes made since the treatment under general anesthesia. A summary of the responses is given in Figure 1 (participants could check all that apply). The behavior modification reported more often was improved brushing habits (56%) followed by restricted access to juice, milk, or other high sugar drinks (33%)

Discussion

This is the first study that investigates the prevalence of sibling recurrent DGA. Previous studies investigated multiple DGA for a single patient and recurrence rate of caries following DGA and have found that children treated with DGA are highly susceptible to new or recurrent caries following treatment.[2,8,15,7,10,16] Many single patient studies point to a low number of restorations completed under the first DGA, less aggressive treatment under first DGA, low attendance at follow- up appointments and recalls after DGA.[2,11,15] Almeida et al found that among 42 patients that required DGA, 17% needed re-treatment under GA.[15] This is similar to the current study in that 13% of patients had previously undergone DGA. Most caregivers in the current study reported a behavior modification following DGA of the first sibling, yet 45% of patients in this study had a sibling complete DGA. Several factors may contribute to this number of sibling recurrent DGA such as demographics, parental attitude towards DGA following treatment of their child, acceptance of DGA and recall history.

In the current study, 71% of participants had an annual income of $30,000 or less and 67% African American and 12% Hispanic or Latino. Our study findings are consistent with previous data that children of lower socioeconomic status and minorities have higher incidence of caries.[1] Thirty percent of children below the poverty line have untreated decay and only 6% of children that are 300% or more above the poverty line have untreated decay.[1] Additionally, most of the patients in this study come from single parent households (54%) which is also a risk factor

for increased oral health care related problems.[1] The patient population at VCU Pediatric Dentistry is a high-risk population which could lead to higher numbers of sibling recurrent GA in this study.

In the current study, most parents of children with a previous history of DGA (88%) reported a positive experience following the procedure. Positive experiences following DGA may lead to parents selecting this advanced behavioral technique for other siblings in need of dental treatment. Other studies have reported positive responses from parents to DGA due to an increased quality of life following the procedure for not only child but the family.[16,18] Jankausenkiene et al utilized the Early Childhood Oral Health Impact Scale (ECOHIS) Oral Health Care Related Quality of Life (OHRQoL) survey to observe changes in the quality of life for families and patients following DGA.[16] Prior to surgery 44.3% of caregivers reported pain with teeth, mouth and jaws; following surgery 0% reported pain.[16] Additionally caregivers reported themselves being upset prior to surgery 81% and this decreased to 7.4% following surgery.[16] Overall, this study reported an immediate and significant improvement in quality of life for the entire family.[16] Similarly, a study by Yawry et al utilized the ECOHIS OHQOL scale and reported a significant improvement in quality of life of the patient and family following DGA;[18] if parents have a positive experience with the first sibling they may be more likely to prefer DGA for siblings.

The near 50% sibling recurrent DGA observed in this study may be reflective of an increasing trend in caregiver acceptance of DGA. Most studies report that caregivers prefer non-pharmacologic methods of treatment such as tell-show-do to achieve treatment of caries but

some studies demonstrate that acceptance of advanced DGA is growing. In a study by Eaton et al, caregivers of children with and without caries ranked DGA third after nitrous oxide administration and tell-show-do. In contrast to this, Boka et al more recently examined the parental acceptance of DGA among private practice patients and university based practices.[19] DGA ranked second to last and was less approved by parents in private practice versus university based setting.[19] This increasing trend and current study setting in a university practice could yield high numbers of caregivers that are more accepting of DGA as a treatment modality.

Some of the parents in this study reported an improvement of hygiene and/or snacking habits, and at least six month dental visits following the DGA of their first child, yet, recurrent decay was observed amongst siblings (15%) and current patients (30%). Previous studies on recurrent decay following DGA and repeat DGA observe low attendance at 2-3 week follow up visits immediately following DGA and future maintenance dental visits.[8–10] In a study by Amin et al, patients had minimal relapse in caries in the short term following DGA but were more likely to miss more appointments after 19-24 months and have caries.[10] In a similar study, Jamieson et al noted patients that presented for 2-3 week follow up visits reported improved oral health measures but high plaque was observed in patients.[8]

With increasing need for DGA and associated costs, preventative measures that avoid DGA are necessary. At Virginia Commonwealth University Pediatric Dental Clinic, during the year of 2017, 349 patients were treated under DGA with an average dental treatment cost of $1,749.50. A majority of patients in this study utilized Medicaid for insurance (83%). Other studies have explored the increasing costs of DGA which further highlights the need for

preventative measures. In the state of North Carolina, the average dental expenditures for Medicaid from 2011-2015 was $113 and $36 million for DGA including GA and treatment with these costs expected to increase in the future.[17]

The current study demonstrates the importance of early intervention for children in families that are considered high risk. The carious process is multifaceted and preventative measures can be dependent on caregiver knowledge of hygiene habits, diet, and bacteria transmission.[9] Amin et al found that caregivers of patients that have received DGA exhibited a poor understanding of bacteria impact on caries and perceived their ability to prevent future caries as limited.[9] This highlights a need for improvement in how dental providers implement oral health education. Primosch et al attempted to improve post-operative compliance by adding additional appointments pre-operatively.[20] This technique was ultimately found unsuccessful.[20] Picard et al examined the need for improved oral hygiene education that included visuals versus verbal oral hygiene instructions.[21] The group of parents that received visuals during oral hygiene instructions had significantly better appointment attendance versus parents that received simple verbal instructions.[21] Another study investigated motivational interviewing and frequency of recall as a preventative strategy to reduce caries risk in patients following DGA.[22] Patients that received motivational interviewing with recall visits every three months was found to have a decrease in caries risk versus regular six month recall visits.[22] Overall, most studies recommend pro-active and aggressive follow-up visits after DGA which should be aimed at increasing caregiver oral health knowledge.[2]

Previous studies that investigate recurrent DGA in individual patients in a university setting sited low post-operative visit attendance rates. The current study eliminated the follow up component due to inability to track post-operative visits accurately. In future studies, post-operative visits should be included in the data because it is likely a major factor in decreasing recurrent decay in siblings. These studies should also explore methods of improving post-operative visits such as counseling methods and frequency.

The questionnaire provided in this study relied on accounts of caregivers to provide data regarding past dental treatment for siblings which in some cases could have been several years ago; this likely introduced recall bias. Additionally, the caregiver questionnaire asked the frequency of recall visits for families that had children undergo DGA previously but did not explore the recall visit, caries experience and oral hygiene habits of siblings that did not under go DGA. The questionnaire also could have improved by broadening the barriers to treatment for caregivers. Future studies should explore barriers for families, caries risk and oral health care knowledge of caregivers with multiple siblings that undergo recurrent DGA in order to improve the ability of dental providers to educate high risk families.

Conclusions

The purpose of this study was to assess the prevalence of sibling recurrent DGA within the population at Virginia Commonwealth University Pediatric Dental Clinic. A secondary goal was to assess factors that may contribute to recurrent DGA. This study found that 45% of study participants had a sibling or multiple siblings complete undergo DGA. Most caregivers reported changes in oral hygiene practices and/or diet following their first child's DGA yet, a subsequent child was in need of DGA. Parental acceptance of DGA and immediate gratification following DGA of the first child may contribute to the near 50% of families in this study with multiple children undergoing DGA. This study demonstrates the need for aggressive and active oral hygiene education that is inclusive of all family members to prevent DGA for other siblings in the household.

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Vita

Brandy Edmonds was born March 31, 1990 in Fort Belvoir, Virginia. She completed her Bachelor of Science in Biology with a minor in Chemistry at Virginia Commonwealth University in 2012. Brandy then completed her Doctor of Dental Surgery degree at Virginia Commonwealth University in 2012. She will complete her Pediatric Dentistry Residency in June of 2018.

Table 1: Demographics for study participants

	n	%
Race		
Black or African American	25	64%
White	8	21%
Asian	3	8%
Other	3	8%
Ethnicity		
Hispanic or Latino	5	14%
Not Hispanic or Latino	32	86%
Education		
High School or Less	21	55%
Some College or More	17	45%
Income		
$30,000 or Less	24	69%
More than $30,000	11	31%
Single Parent Household		
Yes	19	48%
No	21	53%
Child's Gender		
Male	23	58%
Female	17	43%
Child's Age		
2 or Younger	7	18%
3	11	28%
4	9	23%
5	9	23%
6	4	10%
Child's Diagnosis		
ECC	6	15%
SECC	33	83%
Other	1	3%
Insurance		
Medicaid	33	83%
Private Insurance	5	13%
Self-pay	2	5%
Number of Kids in Household		
2	15	38%
3	8	20%
4	10	25%
5+	7	18%
Child's Birthorder		
Oldest Child	5	13%
Youngest Child	23	58%
Both younger and older siblings	12	30%

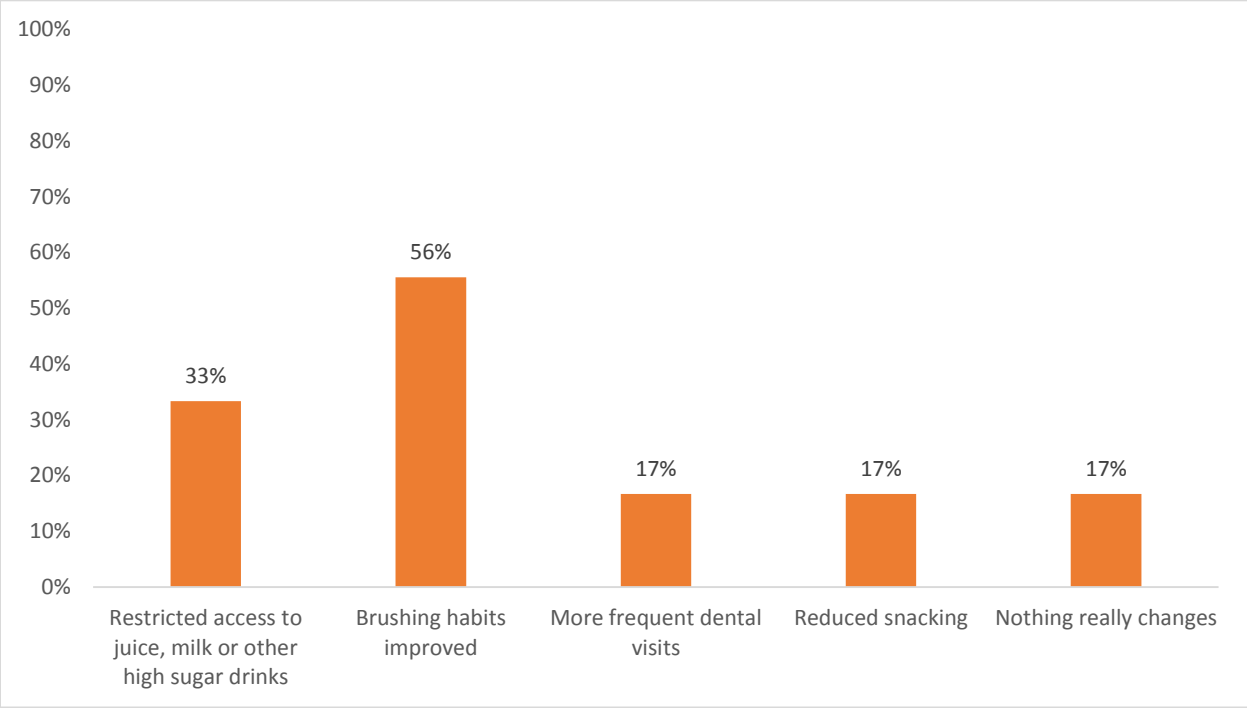
Table 2: Summary of recurrent rates in study participants

All Families	**n**	**%**
Sibling-Recurrent GA	18	45%
Number of Siblings		
0	22	55%
1	8	20%
2+	10	25%
Recurrent Caries (Sibling Since Prior GA)	6	15%
Prior Treatment (Current Child)	12	30%
Prior GA (Current Child)	5	13%
Excluding Oldest Children	**n**	**%**
Sibling-Recurrent GA	17	49%
Number of Siblings		
0	18	51%
1	8	23%
2+	9	26%
Recurrent Caries (Sibling Since Prior GA)	6	35%
Prior Treatment (Current Child)	12	34%
Prior GA (Current Child)	5	14%

Table 3: Summary of associations with sibling-recurrent DGA

	No		Yes		
	n	%	n	%	P-value
Race					0.8057
Black or African American	13	62%	12	67%	
White	5	24%	3	17%	
Asian	1	5%	2	11%	
Other	2	10%	1	6%	
Ethnicity					0.7742
Hispanic or Latino	3	15%	2	12%	
Not Hispanic or Latino	17	85%	15	88%	
Education					0.4442
High School or Less	11	50%	10	63%	
Some College or more	11	50%	6	38%	
Income					0.8028
$30,000 or Less	12	67%	12	71%	
More than $30,000	6	33%	5	29%	
Single Parent Household					0.0281
Yes	7	32%	12	67%	
No	15	68%	6	33%	
Child's Gender					0.0884
Male	10	45%	13	72%	
Female	12	55%	5	28%	
Child's Age					0.5811
2 or younger	4	18%	3	17%	
3	6	27%	5	28%	
4	3	14%	6	33%	
5	6	27%	3	17%	
6	3	14%	1	6%	
Child's Diagnosis					0.5194
ECC	4	18%	2	11%	
SECC	17	77%	16	89%	
Other	1	5%	0	0%	
Insurance					0.4856
Medicaid	17	77%	16	89%	
Private Insurance	4	18%	1	6%	
Self-pay	1	5%	1	6%	

Figure 1: Summary of Behavior Modifications after DGA (Sibling Treated before Study)



Appendix A

Dental Treatment Under General Anesthesia Questionnaire

1. How many kids are in the household?
   a. 2
   b. 3
   c. 4
   d. 5
   e. 6
   f. 7 or more

   1a. Please indicate the current age of each child in the household

	Age
Child 1	
Child 2	
Child 3	
Child 4	
Child 5	
Child 6	
Child 7	
Child 8	
Child 9	
Child 10	

2. How many of the siblings have had dental treatment under general anesthesia (put to sleep for dental treatment)?
   a. None (Please go to question #8)
   b. 1
   c. 2
   d. 3
   e. 4
   f. 5
   g. 6
   h. 7 or more

3. For each child that has received dental treatment under general anesthesia, please circle one answer in each column. Please write in current age in last column. Leave extra rows blank.

Sibling that has completed dental treatment under general anesthesia	Did the child have more than 1 general anesthesia visit?	Age at first general anesthesia?
Child 1	Yes No	0 1 2 3 4 5 6+
Child 2	Yes No	0 1 2 3 4 5 6+
Child 3	Yes No	0 1 2 3 4 5 6+
Child 4	Yes No	0 1 2 3 4 5 6+

Child 5	Yes	No	0 1 2 3 4 5 6+
Child 6	Yes	No	0 1 2 3 4 5 6+
Child 7	Yes	No	0 1 2 3 4 5 6+
Child 8	Yes	No	0 1 2 3 4 5 6+
Child 9	Yes	No	0 1 2 3 4 5 6+
Child 10	Yes	No	0 1 2 3 4 5 6+

The following questions pertain to your child or children that have <u>previously completed</u> dental treatment under general anesthesia.

4. After dental treatment under general anesthesia, how often did your child(ren) go to the dentist?
    a. Every 3 months
    b. Every 6 months
    c. Once a year
    d. Only for emergencies
    e. Never went back
5. Which describes your previous experience with dental care under general anesthesia? (Please select one)
    a. Very positive
    b. Positive
    c. Average
    d. Negative
    e. Very Negative
6. Have any of your children had additional cavities since being treated under general anesthesia (put to sleep)?
    a. Yes
    b. No
7. Circle any changes that you and your child made following the treatment under dental anesthesia: Circle all that apply:
    a. My child had restricted access to juice, milk or other high sugar drinks
    b. My child's brushing habits improved
    c. My child began to attend the dentist more frequently
    d. Reduced snacking habits
    e. Nothing really changed
    f. Other

    Please describe any other changes:

    _____

    _____

The following questions pertain to the child in current need of dental treatment under general anesthesia

8. How often does the current child go to the dentist?
    a. Every 3 months
    b. Every 6 months
    c. Once a year
    d. Only for emergencies
    e. First visit

9. Has this child had treatment under general anesthesia before?
    a. Yes
    b. No

10. Has this child had treatment for cavities before?
    a. Yes
    b. No

11. Have any of the following prevented your children from seeing the dentist?
    a. Lack of transportation
    b. Lack of insurance
    c. Lack of finances
    d. Lack of time
    e. Work schedule

12. Is this a single parent household?
    a. Yes
    b. No

13. How does the age of the child currently undergoing general anesthesia for dental treatment compare to your other children?
    a. Current child is oldest
    b. Current child is youngest
    c. Current child has both older and younger siblings

14. Please select gender of your child that is in current need of dental treatment?
    a. Female
    b. Male
    c. Other: _____

General Anesthesia Study Questionnaire For Provider

1. Age of patient:_____
2. Does this patient have any special health care need or medical disability?
    a. Yes
    b. No
3. Does the patient have a diagnoses of:
    a. Early Childhood caries
    b. Severe Early Childhood caries
    c. Neither A or B
4. Circle all indications for dental treatment under general anesthesia:
    a. Previously failed treatment
    b. Difficulty cooperating due to a lack of psychological or emotional maturity
    c. Difficulty cooperating due to mental, physical, or medical disability
    d. Difficulty obtaining profound anesthesia because of acute infection, anatomic variations, or allergy
    e. Extremely uncooperative, fearful, anxious
    f. Requires a significant amount of surgical procedures
    g. Protect the developing psyche and/or reduce medical risk
    h. Requires immediate, comprehensive oral/dental care.
    i. Other, Specify:_____
5. Please shade in any surfaces with caries for the patient receiving dental treatment under general anesthesia