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PARENTAL UNDERSTANDING OF ANESTHESIA RISK FOR DENTAL TREATMENT

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

By

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Abstract

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Virginia Commonwealth University, 2012

Major Director: Tegwyn H. Brickhouse, D.D.S., Ph.D.

Department Chair, Department of Pediatric Dentistry

Purpose: To determine which method of anesthesia risk presentation parents understand and prefer across their demographic variables

Methods: As a cross-sectional study, questionnaires were distributed to 50 parents of patients (<7 years of age) in the VCU Pediatric Dental Clinic. Parents were asked of their own and their children's demographics, previous dental and anesthesia experiences, and anesthesia understanding. Parents were then asked to rate the level of risk of several risk presentations and finally asked which method of risk presentation they most understood or preferred. Data analysis was performed using descriptive statistics, correlation coefficients, likelihood chi square tests, and repeated measures logistic regression.

Results: There was no evidence of a differential preference due to gender ($P = 0.28$), age ($P > .9$), education ($P = 0.39$) or whether they incorrectly answered any risk question ($P > 0.7$). There was some evidence that the three types were not equally preferred (likelihood ratio chi-square = 5.31, $df = 2$, P -value = 0.0703). The best estimate is that 60% prefer charts, 34% prefer numbers, and 36% prefer activity comparisons. There was a relationship between the average relative risk of general anesthesia and age ($r = -0.38$, $P = 0.0070$). Younger individuals indicate High risk more often and older individuals indicate Low risk more often.

Conclusion: There was no preference of risk presentation type due to gender, age, or education, but there was evidence that each was not equally preferred. Healthcare providers must be able to present the risk of anesthesia in multiple ways to allow for full patient understanding.

INTRODUCTION

Providing dental treatment to children often requires more than non-pharmacologic behavioral management techniques. The American Academy recommends consideration for the use of pharmacologic behavioral management, such as oral conscious sedation or general anesthesia, due to a child's: "need for extensive treatment, acute situational anxiety, uncooperative age-appropriate behavior, immature cognitive functioning, disabilities, or medical conditions^{1,2}."

Historically, non-pharmacologic management techniques have been preferred over pharmacological ones. However, standards of care and parental expectations are constantly evolving – what was once a viable treatment option may no longer be an accepted vehicle of care³. With advances in anesthesia safety, changing parental views, and an increase in treatment needs, care under general anesthesia has become more accepted⁴.

With the use of sedation and anesthesia, the risks in providing dental treatment are dramatically increased. Reports of adverse reactions to sedation and general anesthesia provided for dental treatment, while mostly mild, have been reported to be between 17.0-22.4%⁵, with an even higher rate in children at 35%⁶. From a parental perspective, concerns with anesthesia are often greater than the concerns with the actual surgery, as the anesthesia risks are usually more severe⁷. When presenting risks, it is the severity of the risk, not the likelihood, which bears more weight⁸.

When the selection of treatment under anesthesia or sedation is made, it is the dentist's duty to fully inform the parent of the risks and benefits of treatment. However, disclosing risk with full patient understanding and retention is difficult, and patient demographics may play a role⁹. That said, even with informed consent, parental recall of the consent is reported to be low when presented by the surgical team (in this case, the dentist)¹⁰, and parents may not fully understand the dental treatment nor anesthesia route being provided, even with informed consent¹¹. With this, it is no surprise that most healthcare litigation is related to a patient's claim of lack of informed consent¹².

This lack of risk of understanding can be due to numerous reasons, but this study focused on the means of risk presentation. Quantitative and qualitative statements, comparison to other activities, visual aids, and the effects of framing all affect risk interpretation by patients¹³.

While physicians may assume that patients prefer a non-numeric method of risk presentation when compared to a qualitative statement, the preference by patients is unclear. Physicians have historically been taught to present risk quantitatively, due to the variations in qualitative statement interpretation. Amongst physicians, the interpretation of qualitative words (always, likely, unlikely, etc.) varies greatly. With this, a recommendation has been made to express risk in numerical probabilities only¹⁴.

However, amongst patients, the research is divided. In a study by Shaw and Dear, it was concluded that the majority of guardians prefer a numeric statement¹⁵, while Freeman found that some parents may prefer qualitative disclosure, and physicians should be prepared to present risk in both quantitative and qualitative forms¹⁶.

That being said, a healthcare provider must also account for each parent and patient's previous experiences. For example, comparing the risk of treatment to the risk of an automobile

accident for a patient who has been in an automobile accident is interpreted differently than by someone who has not been in a car accident¹⁷. On a similar note, minimizing or maximizing the risk of treatment through risk comparisons must be well considered. This effect of framing can be powerful and should be avoided for the purposes of swaying patient treatment decisions¹⁸.

In efforts to supplement descriptive and numeric risk presentations, audio-visual aids have been introduced to aid in patient understanding. While certain patients may prefer this method¹⁹, its effect on information recall is unclear²⁰.

In summary, physicians must be able to communicate risk in several manners to meet the patient's needs and level of understanding¹⁸. Communication of risk is complex and standardizing the language of risk communication to suit all patients may not be achievable²¹.

With review of the literature, little information can be found concerning parental understanding of sedation and anesthesia for dental treatment. Therefore, the goal of this study was to present several ways of describing the risks of general anesthesia and determine how parents interpret the risk presentation in the dental setting. It was also hoped to ascertain which methods parents prefer.

METHOD AND MATERIALS

Survey Design

The survey was created through the use of an expert panel including three pediatric dentists, a dental anesthesiologist, a bioethicist, and a biostatistician. As a pilot study, the goals of the survey were to examine patient understanding of anesthesia/sedation utilized in pediatric dentistry and patient interpretation of several risk presentations in such a way that would be understood by the VCU Pediatric Dental Clinic's patient population. This study was approved for Human Subjects by the Virginia Commonwealth University Institutional Review Board.

This survey included the following data on mortality rate for:

- General Anesthesia-Related Death Risk²²
- Accidental Transportation Death Risk - US Department of Transportation²³
- School-Related Travel Death Risk - Committee on School Transportation Safety²⁴
- Skydiving Mortality Rate²⁵

With the survey, once parental and child demographics, previous dental and anesthesia experiences, and anesthesia understanding were obtained, the risk of anesthesia was presented in several ways, including quantitative and qualitative means, and through the use of visual aids. Participants were asked about their understanding of each and how they rated the risk of general

anesthesia after viewing each. Once all presentations were accounted for, the parents were asked which method they most understood or preferred.

Sample and Data Collection

Pediatric Dental Residents distributed surveys to the legal guardians of patients in the treatment rooms of the Pediatric Dental Clinic at the Virginia Commonwealth University. The option of completing the survey was presented to every guardian entering the clinic that met the inclusion criteria. The objective of the survey and participant obligations were presented prior to initiation of the survey, both written and verbally. Completion of the survey occurred as their children received dental care. Completion, or non-completion, of the survey did not affect their children's dental care.

Completed surveys were collected by the residents, without review, and placed in a secured cabinet. Surveys were converted to an electronic spreadsheet and the physical paper survey forms were shredded and securely disposed.

The inclusion criteria were English speaking/reading guardians who were able to complete a paper format survey, and had children less than 7 years of age receiving routine dental care (non-anesthesia or sedation services).

Statistical Analyses

In addition to descriptive statistics, the primary responses variables were compared across the demographic groups. The primary outcome variables were those in "Section D" of the

survey. "Section D" displayed several risk presentations and asked the parent to rate how they viewed each risk. The demographic variables of interest were: gender, age, race, and education. The comparison of interest was to test for demographic differences depending upon their response to question "D-8," which asked which method of risk presentation they most understood or preferred.

Statistical methods of this data set were conducted by Dr. Al Best and included a descriptive analysis with correlation coefficients, likelihood chi-square tests, and repeated measures logistic regression using SAS 9.2.

RESULTS

Descriptive Analysis of the Data Set

The survey was completed by 50 parents (N=50) and their demographic characteristics are summarized in Table 1. The majority of parents were female (82% female vs. 18% male) and between the ages of 21 and 40 (34% 21-30 years and 52% 31-40 years). In terms of race, 52% were African American and 42% were Caucasian. All respondents completed at least high school, with 34% completing some college, 20% having a 2 Year Degree, 14% completing a 4 Year Degree, and 12% obtaining a graduate degree.

Parent's dental and medical history is summarized in Table 2. With dental treatment, 16% of respondents reported experiencing past negative dental experience. Of those who had a bad experience, the following explanations were made: "Childhood dentist was not gentle." "Years of no dentistry." "When I was 8, the dentist told me to shut up when I was upset." "I had to have a lot of my baby teeth pulled out because they had roots." "Had wisdom teeth taken out, a nerve was hit, couldn't feel my tongue and cheeks for a while." "Tooth infection." In terms of personal anesthesia experience, 56% reported being put to sleep for a medical or dental procedure.

The patient's history is summarized in Table 3. With past dental experiences, 22% of parents reported that their children had a past negative dental experience. Of those who described their children's bad experiences at the dentist or doctor, the following descriptions were made:

“At 1 year old she was scared to get her teeth cleaned.” “1st visit to the pediatric dentist was a nightmare – they had to hold her down.” “Daughter disliked laughing gas.” “Previous appointment she would sit in the dentist chair and now she won’t. She didn’t take well to the nose medicine.” “Dentist lied to oldest.” In addition, three comments were made concerning their child’s previous negative dental experiences at non-specialty corporate pediatric dental clinics.

Attitude questions about general anesthesia are summarized in Table 4. When asked if they would prefer their child to be put to sleep for all dental procedures, 10% responded “Yes,” while 90% responded “No.” If respondents were to choose general anesthesia for dental treatment, 47% (23 of 50) equally included that they would do so due to the amount of treatment needed, or for their child’s safety.

In the third part of the survey, a number of questions were asked regarding understanding the various forms of sedation. Their understanding of sedation is summarized in Table 5. In the surveyed group, 23% of children had undergone general anesthesia for a dental procedure. Whether a child has had a particular sedation procedure (question C1) and their understanding of the effects of the procedure (questions C2-C4), is considered next. There were no differences in the responses to question C2 (their understanding of Nitrous) and whether or not their child had had Nitrous Oxide for a medical or dental procedure (question C1, option 1), Fisher’s exact P-value > 0.28 . There were no significant differences in the responses to question C3 (their understanding of Oral Conscious Sedation (OCS) and whether or not their child had had OCS (question C1, option 2), Fisher’s exact P-value > 0.093 . There were no significant relationship differences in the responses to question C4 (their understanding of GA) and whether or not their child had had GA (question C1, option 3), Fisher’s exact P-value > 0.578 . The last options for questions C2-C4 were “I don’t know” options. In the case of NO and OCS, there was no instance

where a child had had the procedure (question C1) and the parent did not know the effect of the procedure (the last option of questions C2-C4). However, there was one instance where a child had had GA and the response to question C4 was “I don't know what general anesthesia will do to my child.”

The level of understanding of the risks of sedation were assessed in the final section (see Table 6). Since questions D1 and D2 both refer to a “1 in 250,000 risk”, the responses to both questions should be identical. This was the case for 88% of the parents (43/49). But there were N=3 parents who indicated D1=Medium and D2=Low, and there were N=3 parents who indicated D1=Low and D2=Medium. Question D3 indicates that “The graph below compares the risk of a very bad reaction during general anesthesia to the risk of dying when a child walks or rides a bicycle to school” and shows a vertical bar chart with one very tall bar (“Walking to school”) and two short bars (“General Anesthesia” and “Bicycling to School”). The correct answer to D3 is “No” (general anesthesia is not riskier than a child walking or bicycling to school). N=2 individuals gave the incorrect answer. Question D4 says that soccer is riskier than general anesthesia and then asks if general anesthesia is riskier than soccer and the correct answer is no. N=4 give the incorrect answer. Question D6 says that automobiles are riskier than general anesthesia and then asks if general anesthesia is riskier than automobiles and the correct answer is no. N=4 gave the incorrect answer. Giving an incorrect answer to any of these three questions indicates that the parent may incorrectly answer others. That is, N=4 parents incorrectly answered one question and N=3 parents incorrectly answered two questions. There was no significant relationship between whether any of these questions were answered incorrectly and gender (Fisher's exact P-value =1), age (P = 0.54), or education (P = 0.60).

Questions D1, D2, D5, and D7 all ask after the relative risk of general anesthesia and presumably there may be some relationship between these four questions. These questions may be scored as identification of general anesthesia risk as: High=+1, Medium=0, Low= -1. Table 7 shows the correlation between the four relative risk of GA scores and it indicated that only D1 & D2 are correlated ($r = .78$, $P < .0001$) and D5 and D7 are correlated ($r = .42$, $P = .0032$). The table also shows the lack of correlation between the relative risk of general anesthesia scores and the number of incorrect answers to questions D3, D4, or D6 ($P_s > 0.4$). Additionally, there was no evidence of relationship between the average relative risk of general anesthesia and gender (t -test $P > .6$) and education (ANOVA $P > 0.4$). There is a relationship between the average relative risk of general anesthesia and age ($r = -0.38$, $P = 0.0070$). Younger parents indicate “High” risk more often and older parents indicate “Low” risk more often.

The last risk question, D8, asked which way of describing anesthesia risk “do you understand or like most?” As Table 6 indicates, 60% prefer charts and graphs ($N=28$), 34% prefer the numbers ($N=16$), and 36% prefer comparison to other activities ($N=17$). However, there was apparently some confusion as to how to respond to this question. The intent was to “choose one” but some individuals checked more than one preference. There was one individual who checked both charts and activities; there was one individual who checked both charts and numbers; there were 6 individuals who checked all three. Additionally, there were three individuals who did not check any preference.

Nonetheless, it is possible to assess whether charts, numbers, or activity comparisons are preferred. A repeated-measures logistic regression was use to compare these three presentation types. There was some evidence that the three types were not equally preferred (likelihood ratio chi-square = 5.31, $df=2$, P -value = 0.0703). The best estimate is that 60% prefer charts (95% CI

= 45 to 73%), 34% prefer numbers (95% CI = 22 to 49%), and 36% prefer activity comparisons (95% CI = 24 to 51%). The Tukey adjusted P-value for comparing charts to numbers was $P = 0.07$, comparing charts to activities was $P = 0.12$, and numbers to activities was $P = 0.97$. There was no evidence of a differential preference due to gender ($P = 0.28$), age ($P > .9$), education ($P = 0.39$) or whether they incorrectly answered any risk question ($P > 0.7$). There is a differential preference for African American individuals ($P = 0.0426$). The preference for charts is approximately the same in non-African Americans and African Americans (65% versus 54%), but there is a higher preference for numbers in non-African Americans than African Americans (43% versus 25%), and a lower preference for activity comparisons in non-African Americans than African Americans (22% versus 50%).

DISCUSSION

Providing risk disclosure to patients with full interpretation and understanding is a complex and difficult process. Use of any means, such as quantitative statements, comparisons to other situations or the use of visual aids, all have inherent downfalls and different meanings to different populations²⁶. To further complicate the situation, use of any methods (besides qualitative statements), can frame the risk in a positive or negative way – leading to skewed or misguided decisions by the patient¹⁸.

The medical literature reports that healthcare providers should be able to present risks in several ways to allow for patient understanding²¹. The results of this study, although limited, highlight this standpoint. While some trends were seen amongst demographics, the overriding trend was that a patient's preference varies, regardless of demographics, and that some patients prefer several ways of risk presentation. The standardization of risk language may not be possible.

In regards to the overall rating of general anesthesia, where younger parents tend to rate general anesthesia as high risk and older individuals tend to rate it as low risk, it is not surprising. With age, individuals experience more medical issues (illness, surgeries, etc.), so it would be anticipated that an older individual would be more comfortable with anesthesia and determine it to be a lower risk activity.

A potential inherent bias in the study population is the number of children (23%) and parents (56%) who had undergone general anesthesia for a medical or dental procedure.

Additionally, 38% of children had received nitrous oxide and 25% of children had received oral conscious sedation of dental treatment. Because of this, it would be expected that the parents whose children had undergone each level of sedation or anesthesia would be more knowledgeable of it. However, understanding of each level of sedation did not differ regardless of whether or not their child had received it. This can be viewed in two ways – either parents are equally aware of all levels of sedation, or those parents whose children received sedation or anesthesia truly did not understand it when they signed an informed consent. This finding warrants future research.

As a pilot study, a main goal was to determine the readability of the survey and how to improve future research in this area. While strong conclusions were not drawn, nor expected to be drawn from the survey, much was learned. It was hoped to provide an extra measure of patient confidentiality by not reviewing the survey following collection. With the amount of blank or incorrectly completed questions, future research should account for this and briefly review responses following collection.

With the use of visual aids or qualitative comparisons, the effect of framing is unavoidable. In the present survey, general anesthesia was framed both positively and negatively when compared to other activities. Such a variation may have confused respondents. Further studies should consider a consistent framing throughout, in hopes that more consistent responses are attained.

While all respondents reported a high school level of education or higher, the literacy of the population was not considered. A literacy-screening test, such as the Rapid Estimate of Adult Literacy in Dentistry (REALD²⁷), incorporated into the survey may allow for this variable to be considered.

In making all of the aforementioned improvements to the current study, the survey will require more time to complete. While this may limit the availability of potential participants, the quality of the research would be improved. The questionable literacy of our population, coupled with limited time to complete the survey, may have led to hastened responses and a decreased quality of data collected.

This study aimed to collect a large amount of data and test a variety of risk presentation methods in a short period of time. Subsequent studies may benefit from testing only one or two methods of risk disclosure if a survey design is to be employed. Simplification of the survey design will allow for more focused data collection.

Future research in this area is needed if statistically and clinically significant conclusions are to be drawn. Consideration for literacy, understanding of levels of sedation and anesthesia, simplification of study design with the use of focus groups, and completeness of data collection may improve results.

CONCLUSION

While no evidence was found in preference of risk presentation type due to gender, age, or education, there was evidence that each presentation was not equally preferred. In the sample collected 60% preferred charts, 34% preferred numbers, and 36% preferred activity comparisons. A relationship was also discovered between the average relative risk of general anesthesia and age, with younger parents tending to rate general anesthesia as a “High Risk,” and older parents tending to rate general anesthesia a “Low Risk” more often. Interestingly, there was no relationship between level of sedation or anesthesia understanding and whether or not their child had received the procedure.

In lieu of these findings, it is apparent that future research is needed to provide sound statistically and clinically significant conclusion. Well-designed research with a larger sample population can provide this. That said, even if certain trends are discovered, it is important to realize that each patient is a unique individual with different preferences. Healthcare providers must be able to present the risk of anesthesia in multiple ways to allow for full patient understanding.

APPENDIX

TABLES

Table 1: Demographics

Characteristic	N	%
Parent's gender		
F	41	82
M	9	18
Parent's age		
<21	2	4
21-30	17	34
31-40	26	52
41-50	4	8
51-60	1	2
Race/Ethnicity*		
American Indian	1	2
Asian	2	4
African American	26	52
Hispanic	2	4
White	21	42
Other	1	2
Parent's level of education		
High School	10	20
Some College	17	34
2 Yr Degree	10	20
4 Yr Degree	7	14
Grad Degree	6	12
Ages of children*		
1 year or less	3	6
2 years	10	20
3 years	13	26
4 years	13	26
5 years	14	28
6 years	21	42
How many children do you have?		
Total	121	
Mean	2.42	
SD	1.7	
Min	1	
Max	10	

* Since the question was "Select all that apply", the percentages may not total 100%

Table 2: Parent's Medical and Dental Experiences

Parents	N	%
A5. Have you ever had a bad experience at the dentist?		
N	42	84
Y	8	16
A6. How do you feel about going to the dentist?		
VF	3	6
SF	9	18
NF	38	76
A7. Have you ever been put to sleep for a medical or dental procedure?		
N	22	44
Y	28	56
A8. How do you view your current general health?		
H	36	72
SH	13	26
NH	1	2
A9. How do you view your current oral health (teeth and gums)?		
H	21	44
SH	24	50
NH	3	6

Table 3: Patient's Medical and Dental Experiences

Patients	N	%
B3. Have any of your children ever had a bad experience at the dentist or doctor?		
N	39	78
Y	11	22
B4a. Child's response to dental treatment*		
Comfortable	35	71
Scared	11	22
Resistant	6	12
B9. How do you view your child's current general health?		
H	44	88
SH	5	10
NH	1	2
B10. How do you view your child's current oral health?		
H	29	58
SH	19	38
NH	2	4

Table 4: General Anesthesia

Patients	N	%
B5. If Possible, would you prefer your children be put to sleep for all dental treatment (cleanings, fillings, x-rays)?		
N	44	90
Y	5	10
B6. Reasons to be put to sleep*		
So child would not remember treatment		
To decrease number of appointments	5	10
The amount of treatment needed	23	47
For your child's safety	23	47
The distance you had to travel	3	6
Physical/Mental disability	4	8
I would not choose general anesthesia	6	12
B7. Your biggest concerns*		
The side effects	23	47
The risks	35	71
I have no fears	7	14
B8. If your child had a common medical condition, such as obesity, asthma, or premature birth, do you think it would increase his or her risk for anesthesia problems?		
N	13	27
Y	35	73

Table 5: Understanding Sedation and Anesthesia

Question	N	%
C1. My child has had the following for a medical or dental procedure		
Nitrous Oxide Anxiolysis (“laughing gas”)	18	38
Oral Conscious Sedation (medicine in a pill or liquid form)	12	25
General Anesthesia (placement of a breathing tube)	11	23
My child has not had any of the above	22	46
C2. I understand that nitrous oxide ("laughing gas") is used to:		
Lessen my child's fear and anxiety	38	79
Make my child sleepy and not remember treatment	8	17
Put my child to sleep and not move during treatment	7	15
I don't know what "laughing gas" is used for.	5	10
C3. Oral conscious sedation (medicine in a pill or liquid form) will help my child:		
Be less fearful or anxious	23	47
Be sleepy and not remember treatment	23	47
Be completely asleep and not move during treatment	6	12
I don't know how oral conscious sedation will help my child.	12	24
C4. With general anesthesia (breathing tube), I expect my child to:		
Be less fearful or anxious	4	8
Be sleepy and not remember treatment	5	10
Be completely asleep and not move during treatment	39	80
I don't know what general anesthesia will do to my child.	6	12

Table 6: Understanding the Risks

Question	N	%
D1. The risk of a very bad reaction (like brain damage or death) during general anesthesia is about 1 in 250,000 for a healthy child. With this, you think the risk of general anesthesia is:		
High	1	2
Medium	16	33
Low	32	65
D2. You think that a “1 in 250,000” risk is		
High	1	2
Medium	16	32
Low	33	66
D3. After looking at this bar graph, do you think that GA is “riskier” than a child walking or bicycling to school?		
N	48	96
Y	2	4
D4. The risk of a child dying while playing soccer is 5 times higher than the risk of a very bad reaction while under general anesthesia. Do you think that GA is “riskier” than playing soccer?		
N	45	92
Y	4	8
D5. The pie chart below shows the risk of a very bad reaction during general anesthesia compared to accidental death by ways people may travel everyday.		
High	16	32
Medium	25	50
Low	9	18
D6. The risk of dying while driving an car is 30 times more likely than the risk of a very bad reaction during GA. Do you think the risk of GA is higher than driving in an automobile?		
N	46	92
Y	4	8
D7. The glasses of water below show the risk of a very bad reaction during general anesthesia compared to dying by lightning strike or by skydiving.		
High	2	4
Medium	39	80
Low	8	16
D8a. Which do you understand or like the most? The Charts and Graphs		
N	19	40
Y	28	60
D8b. The numbers		
N	31	66
Y	16	34
D8c. The comparison to other activities		
N	30	64
Y	17	36

Table 7: Correlation between GA Risk Items and Number of Incorrect Questions

GA risk	D2	D5	D7	Incorrect
D1	0.78*	0.19	0.03	-0.12
D2		-0.03	0.12	-0.04
D5			0.42*	0.03
D7				0.02

APPENDIX

SURVEY TOOL

Parental Understanding of Anesthesia **Risk for Dental Treatment**

You are being asked to participate in a research study. As a participant:

1. Your participation is voluntary.
2. You may choose not to participate in this survey.
3. No identifiable (personal) data will be collected and responses will be kept anonymous.
4. Your responses will not affect your child's treatment.
5. This survey only asks questions about your children six years of age or younger.
6. Your treating dentist will be available at any time to answer any questions you may have.
7. You may withdraw or stop at any point while completing the survey for any reason.

Thank you for your consideration.

Part A: Background Information

1. What is your gender?

- Male Female

2. What is your age?

- <21 years 51-60 years
 21-30 years 61-70 years
 31-40 years 71-80 years
 41-50 years 80+ years

3. What is your race or ethnicity? Select all that apply.

- American Indian, Alaskan Native Hispanic, Latino
 Asian White, Caucasian
 Black, African American Other
 Native Hawaiian, Pacific Islander

4. What is the highest level of education you have completed?

- Less than high school 4-year college degree (BA, BS)
 High school degree/GED Graduate Degree
 Some college
 2-year college degree (Associates)

5. Have you ever had a bad experience at the dentist?

- No
 Yes, Explain:

6. How do you feel about going to the dentist?

- Very fearful Somewhat fearful Not fearful

7. Have you ever been put to sleep for a medical or dental procedure?
 Yes No
8. How do you view your current **general** health?
 Healthy Somewhat healthy Not healthy
9. How do you view your current **oral** health (teeth and gums)?
 Healthy Somewhat healthy Not healthy

Part B: Patient Information

PLEASE ANSWER THESE QUESTIONS ONLY ABOUT YOUR CHILDREN SIX YEARS OF AGE OR LESS.

1. How many children do you have? _____
2. How old are your children? Select all that apply.
 1 year or less 4 years
 2 years 5 years
 3 years 6 years
3. Have any of your children ever had a bad experience at the dentist or doctor?
 No
 Yes, Explain:

4. How do your children respond to dental treatment:
 Comfortable Scared Resistant
5. If Possible, would you prefer your children be put to sleep for all dental treatment (cleanings, fillings, x-rays)?
 Yes N

6. If your child did, or needed to be put to sleep for dental treatment, what would be your reasons? Select all that apply.

- So child would not remember treatment
- To decrease number of appointments
- The amount of treatment needed
- For you child's safety
- The distance you had to travel
- Physical/Mental disability
- I would not choose general anesthesia

7. If your child needed to be put to sleep for a dental or medical procedure, what would be your biggest concerns?

- The side effects (nausea, vomiting, fever, hospital stay)
- The risks (brain damage, coma, death)
- I have no fears

8. If your child had a common medical condition, such as obesity, asthma, or premature birth, do you think it would increase his or her risk for anesthesia problems?

- Yes
- No

9. How do you view your child's current **general** health?

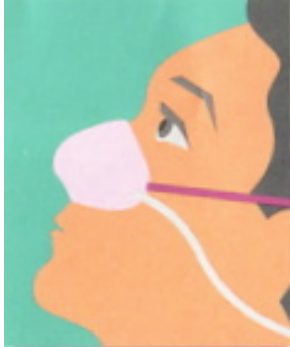
- Healthy
- Somewhat healthy
- Not healthy

10. How do you view your child's current **oral** health?

- Healthy
- Somewhat healthy
- Not healthy

Part C: Understanding Treatment

The following levels of sedation and anesthesia are used in dentistry:



Nitrous Oxide



Oral Conscious Sedation



General Anesthesia

1. My child has had the following for a medical or dental procedure (Select all that apply):
 - Nitrous Oxide Anxiolysis (“laughing gas”)
 - Oral Conscious Sedation (medicine in a pill or liquid form)
 - General Anesthesia (placement of a breathing tube)
 - My child has not had any of the above.

2. I understand that nitrous oxide (“laughing gas”) is used to (Select all that apply):
 - Lessen my child’s fear and anxiety
 - Make my child sleepy and not remember treatment
 - Put my child to sleep and not move during treatment
 - I don’t know what “laughing gas” is used for.

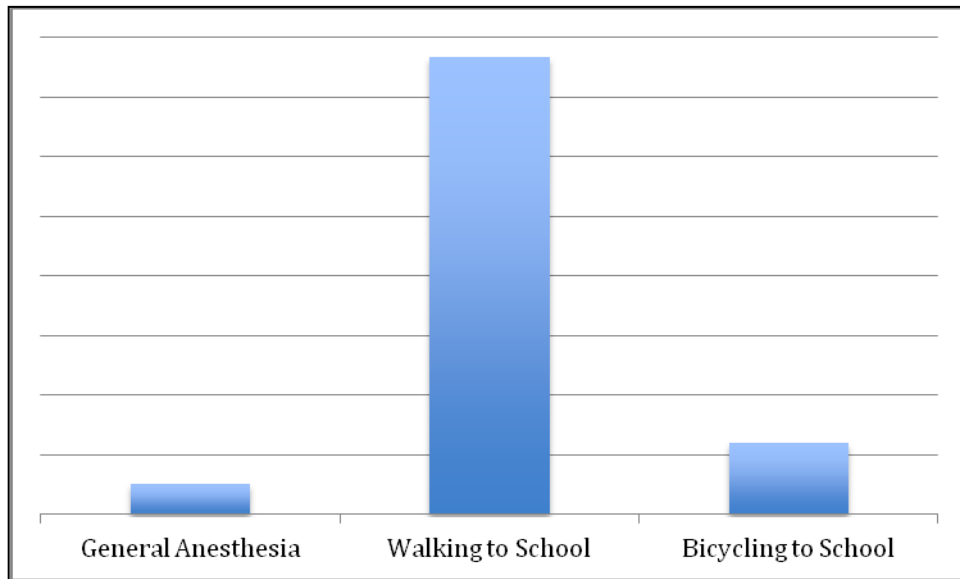
3. Oral conscious sedation (medicine in a pill or liquid form) will help my child (Select all that apply):
 - Be less fearful or anxious
 - Be sleepy and not remember treatment
 - Be completely asleep and not move during treatment
 - I don’t know how oral conscious sedation will help my child.

4. With general anesthesia (breathing tube), I expect my child to (Select all that apply):
- Be less fearful or anxious
 - Be sleepy and not remember treatment
 - Be completely asleep and not move during treatment
 - I don't know what general anesthesia will do to my child.

Part D: Understanding the Risks

1. The risk of a very bad reaction (like brain damage or death) during general anesthesia is about 1 in 250,000 for a healthy child. With this, you think the risk of general anesthesia is:
- High
 - Moderate
 - Low
2. You think that a "1 in 250,000" risk is:
- High
 - Moderate
 - Low

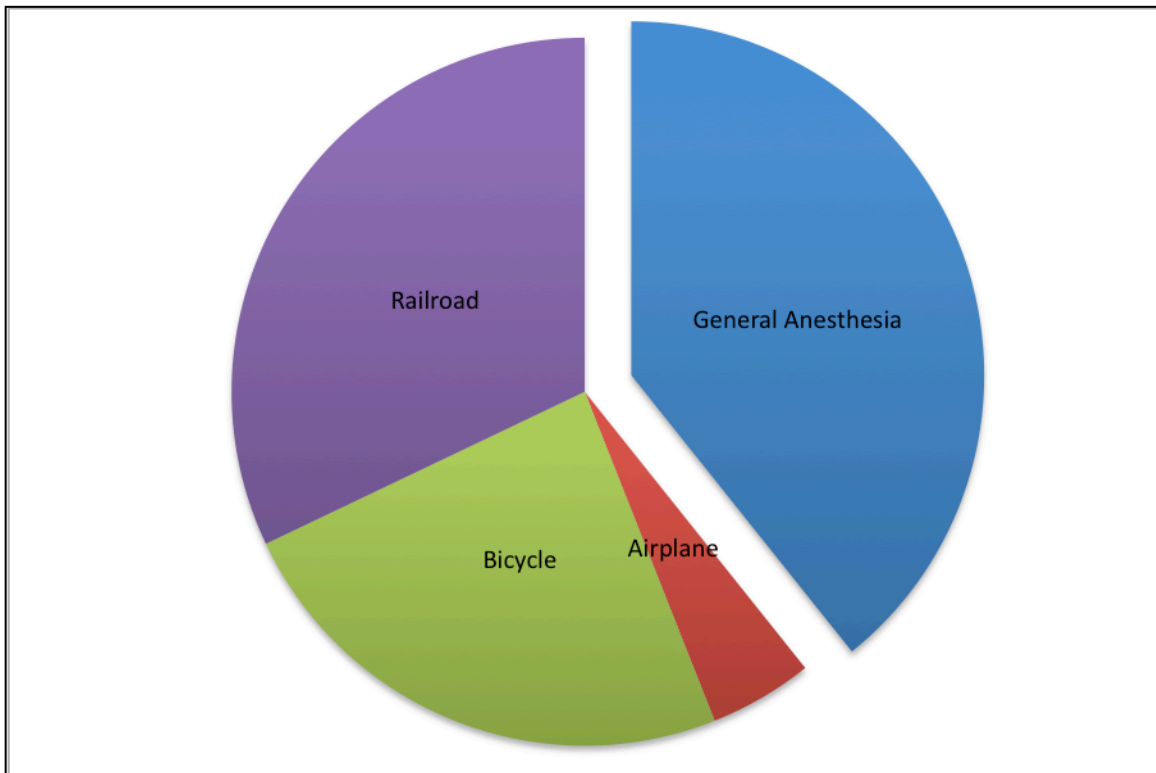
3. The graph below compares the risk of a very bad reaction during general anesthesia to the risk of dying when a child walks or rides a bicycle to school.



After looking at this, do you think that general anesthesia is “riskier” than a child walking or bicycling to school?

- Yes
 - No
4. The risk of a child dying while playing soccer is 5 times higher than the risk of a very bad reaction while under general anesthesia. Do you think that general anesthesia is “riskier” than playing soccer?
- Yes
 - No

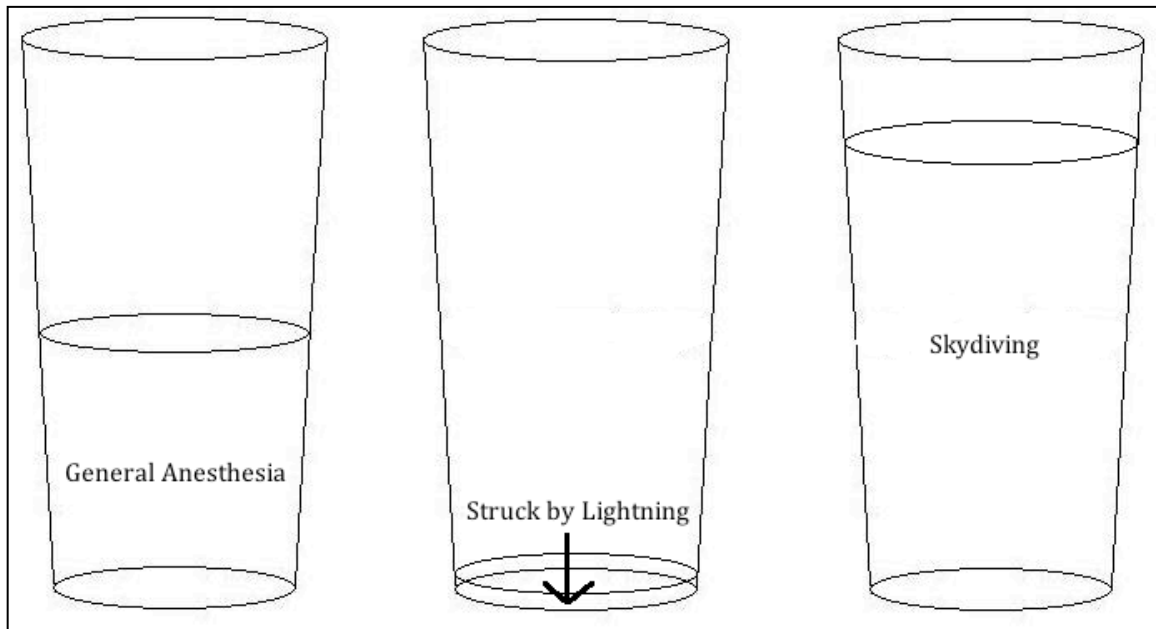
5. The pie chart below shows the risk of a very bad reaction during general anesthesia compared to accidental death by ways people may travel everyday.



After viewing this graph, you think the risk of general anesthesia is:

- High
 - Moderate
 - Low
6. The risk of dying while driving an automobile is 30 times more likely than the risk of a very bad reaction during general anesthesia. Do you think the risk of general anesthesia is higher than driving in an automobile?
- Yes
 - No

7. The glasses of water below show the risk of a very bad reaction during general anesthesia compared to dying by lightning strike or by skydiving.



After looking at this picture, you think the risk of general anesthesia is:

- High
 - Moderate
 - Low
8. Now that you've seen several ways of describing anesthesia risk, which one do you understand or like the most?
- The charts and graphs (like Question 3, 5, and 7)
 - The numbers (like Question 1 and 2)
 - The comparison to other activities (like Question 4 and 6)

---End Survey---

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VITA

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