

Qualitative Study of Parental Preferences in Difficult Child Behavior Scenarios

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Introduction

In pediatric dentistry, parents often face challenging scenarios and are required to consider multiple factors in making treatment decisions for their child. When a child is cooperative and the dentist can provide a durable, esthetic restoration, parents' choice of treatment is relatively simple. However, when advanced behavior guidance techniques are required, factors that parents value most are unknown. In the era of "shared decision making", pediatric dentists benefit from learning about the parental decision-making process [1]. The purpose of this study was to determine patient decision factors in order to develop a follow-up discrete choice experiment. This type of experiment is used to elicit preferences without asking directly for those preferences from participants. Patients state preferences based upon hypothetical scenarios that contain multiple variables, or attributes. The extent to which these individual attributes vary may be referred to as levels [2]. Attributes, that have been studied in the literature include restorative materials and durability [3-5], cost of treatment [3,6,7], esthetics [3,5,8-11], and risks and benefits of behavioral techniques [7,12,13]. However, these qualitative studies often study these as independent factors or a pair of variables. Few qualitative studies examine complex treatment planning factors concurrently. Other factors may influence the decision-making process: parental socioeconomic status, confidence in the dental provider, previous dental experiences of the patient and parent [14], parental presence or absence, and established fear or anxiety. Few attributes have been assigned levels, meaningful cut-off points at which different

choices might be preferred. For example, cost may determine the amount a parent will pay for an esthetic restoration before a less esthetic option is preferable. The purpose of this qualitative study is two-fold:

- a) Exploration and description of various aspects of treatment and child behavior that influence parents to choose one treatment modality over another: and
- b) Identify attributes and levels parents use to make treatment decisions. A qualitative study design allows participants to independently define attributes and levels considered during the shared decision-making process, rather than providing a set of pre-determined choices as in a typical discrete choice experiment [2].

Materials and Methods

Participants were recruited from three private pediatric dental practices and the University of Tennessee Health Science Center Graduate Pediatric Dentistry Clinic, Memphis, TN. Participants included legal guardians who spoke English and accompanied the child to the appointment. The study was approved by the IRB Review Committee (18-06173-XP), and consent was obtained from each participant. A forty-four open-ended question oral interview survey instrument was used. It consisted of queries regarding various dental treatment options. Sociodemographic information including age, gender, ethnicity, insurance type, education level, and income was collected (Table 1). Participants were asked how

many years a child needed his front teeth and back teeth and were asked their knowledge of the safety or risks of sedation and general anesthesia for dentistry. Participants were presented with 2 clinical scenarios using clinical photos as visual aids. The first scenario involved a three-year-old with caries on anterior teeth, and the second scenario involved a very apprehensive five-year-old with eight posterior occlusal carious lesions. Parents were asked to choose from a list of treatment options they would consider. A script was utilized which described different treatment options (along with clinical photographs), behavior guidance techniques, and risks and benefits of each option. Treatment options included Silver Diamine Fluoride (SDF), Interim Therapeutic Restorations (ITR), Stainless Steel Crowns (SSC), Pre-veneered Esthetic Stainless-Steel

Crowns, and Zirconia crowns. In scenario 1, behavior technique options, based on the type of treatment, included protective stabilization or moderate sedation, and in scenario 2, sedation or general anesthesia (Table 2). Respondents were asked to explain why they chose a particular treatment and behavior option and how certain they were (scale of 1-10) of their choice. If participants did not discuss attributes that might play a role in the decision-making process such as cost, the number of appointments, the site of the treatment, or what treatment the dentist recommended, then pre-determined supplemental, open-ended questions were asked to probe these variables. The survey instrument was piloted prior to administration.

Table 1: Characteristics and Sociodemographic of Respondents.

Characteristic	Percentage of Respondents (n = 42)
Gender	
Male	14.3%, n = 6
Female	85.7%, n = 36
Race/Ethnicity	
White	38.1%, n = 16
African American	50.0%, n = 21
Hispanic/Latino	11.9%, n = 5
Age of Parent	
Millennial or younger (0-38)	50.0%, n = 21
Generation X or older (≥ 38)	50.0%, n = 21
Type of Insurance	
Government/Public	47.6%, n = 20
Private	52.4%, n = 22
Education	
High School or less	26.1%, n = 11
Some College	30.9%, n = 13
Degree or More	42.8%, n = 18
No. of Children (more than 1 answer allowed)	
Infant/Toddler (0-2 y/o)	21.4%, n = 9
Young (3-6 y/o)	64.3%, n = 27
School-Age (7-12 y/o)	69.1%, n = 29
Teen (13-18 y/o)	40.5%, n = 17
Older than 18 y/o	9.5%, n = 4
Income	
<\$19,999 - \$39,999	38.1%, n = 16
\$40,000 - \$79,999	33.3%, n = 14
\$80,000+	26.2%, n = 11
Household Size	
Median/Mean	4.0/4.5
Min	2
Max	9

Table 2: Parent Preferences for Restoration and Behavior Guidance Techniques.

Scenario 1: 3-year-old child with anterior caries				Scenario 2: 5-year-old, scared, child with 8 posterior caries					
Which treatment option do you choose and why?				Would you choose to fix the teeth, why or why not?		If you choose to fix the teeth, which material do you choose and why?*			
Silver Diamine Fluoride	Interim Restorations	Pre-veneered SSCs	All White Zirconia Crowns	Yes	No	Zirconia Crowns	SSCs		
14.2% (n = 6)	40.4% (n = 17)	19.0% (n = 8)	26.2% (n = 11)	73.8% (n = 31)	26.2% (n = 11)	22.6% (n = 7)	74.2% (n = 23)		
Young age of patient (n = 5)	Least invasive option with esthetics (n = 16)	Cost/More affordable than all-white crowns (n = 6)	Better esthetics (n = 11)	Due to age/ how long the child needs the tooth (n = 25)	Risk of sedation/ GA (n = 11)	Esthetics (n = 6)	Cost (n = 12)		
Avoids risk of losing temporary filling (n = 1)	"Fixes" the tooth more than SDF (n = 1)	More research on SSCs than all-white crowns (n = 1) Easier to place than all-white crowns (n = 1)		Avoiding SDF (n = 4)			Durability (n = 1)	Durability (n = 5)	Durability (n = 1)
				Esthetics (n = 1)				More re-search (n = 4)	Easier placement (n = 2)
Advanced Behavior Techniques Are Not Required Child may be stabilized in knee-to-knee position and may cry for very short period of time		Which behavior option do you choose?		Advanced Behavior Guidance Options Are Not Required if the teeth are not chosen to be restored		Which behavior option do you choose?			
		Sedation 62.5% (n = 5)	Sedation 90.9% (n = 10)			Sedation 54.8% (n = 17)	GA 45.2% (n = 14)		
		Stabilization 37.5% (n = 3)	Stabilization 9.1% (n = 1)						

*One individual Combination chose SSC on the maxilla and white crowns on the mandible for a combination of esthetics and cost.

The interview was audio recorded and transcribed into a document (Microsoft Word, Redmond, WA, USA). Transcribed data were categorized and recorded into a spreadsheet (Microsoft Excel, Redmond, WA, USA). Data were analyzed using Statistical Analysis System software (SAS Institute Inc, Cary, NC, USA). Frequencies and percentage statistics were obtained for all categorical variables, including the mean and standard deviation. Categorical variables were utilized to identify attributes and levels. Categorical variables were compared between the two clinical settings, as well as cross-tabulations between participant characteristics of interest, utilizing Fisher's exact test or Wilcoxon-Mann-Whitney test depending on the type of variable.

Results

Forty-five individuals were recruited; three declined to participate. Table 1 depicts demographic information of 42 participants. At least 73.7% of respondents had attended some form of higher education. African Americans comprised 50% of the study participants, and over 60% reported having a child three to twelve years of age. The mean household size was 4.5 individuals. Respondents thought a child needed front and back teeth for a mean of 5.5 years and 9.1 years, respectively. Fifty percent of participants (n=21) reported not knowing of any risks of moderate sedation (MS) compared to 38% (n=16) reporting knowing no risks of general

anesthesia (GA); the most commonly noted concern for GA was fear of the child not recovering from GA. When knowledge of risks of either MS and GA was cross-tabulated against education, parents with some college education or higher, reported more knowledge of risks for MS and GA compared to participants with less education. However, these findings were not statistically significant ($p=0.07$ for MS and $p=0.78$ for GA). Respondents' preferences of treatment and behavior guidance options are reported in Table 2. For scenario 1, over 40% of participants elected for ITR as a compromise between less invasiveness and esthetics. Over one quarter (26.2%) of respondents selected zirconia crowns for esthetics (despite higher cost), and most chose sedation to obtain the esthetic result (90.9%). Few respondents opted for protective stabilization. When asked on a scale of 1-10 how certain the respondent was of their choice (10 being absolutely certain), the mean response was 8.86.

In scenario 2, 73.8% ($n=31$) of parents chose to restore the posterior teeth considering age of the patient and how long the patient would need his primary molars, while 11 individuals stated they would not restore teeth if MS or GA were required. Those who chose to restore posterior teeth, nearly 75% ($n=23$), opted for SSCs due to cost, anticipated durability, scientific evidence, and easier

placement of SSCs. Regarding behavior, in Scenario 2, individuals that chose MS (54.8%), reported wanting to avoid the perceived risk of GA, while the majority of participants that selected GA wanted to limit treatment to one visit. When asked how certain the respondents were of their choices, with 10 being absolutely certain, the mean response was 8.89. When asked how much a respondent valued the dentist's recommendation for treatment, 69.1% stated they fully relied on the dentist's opinion. Table 3 lists all attributes and levels identified through the survey instrument. The levels were determined based on the respondents' answers to the points at which a different choice might be selected. For example, when asked about behavior that may lead a parent to a pharmacologic technique, crying with screaming was the threshold for some while for others it was when the child was physically combative like kicking with crying. Others stated they would not choose pharmacologic techniques regardless of the extent of challenging behavior. Those factors parents reported as not influencing their decision included: need for local anesthetic, dental materials containing plastics or mercury, and fluoride in SDF. Table 4 offers examples of some responses of parents to probing about shared decision-making, beliefs about the effects of MS or GA on future visits, and views on passive stabilization.

Table 3: Attributes and Levels as defined by Study Respondents.

Attribute	Level
Age of child	Less than 3 years old 3-6 years old 3. 7-9 years old
Cost of Treatment	Less than \$100 per tooth \$100-150 per tooth \$150-\$300
Number of visits	2 visits 3 visits More than 3 visits
Longevity of Material	12 months or less 1-2 years 3-4 years Until the tooth exfoliates (>4 years)
Extent of Treatment	Number of cavities would have no influence on treatment chosen 1-2 cavities 3-4 cavities 5 or more cavities

Child behavior that may promote advanced behavior guidance techniques	Verbal protest (screaming/crying) Verbal and Physical protest (kicking/fighting/screaming) Child experiencing pain or vomiting Would not elect for more advanced procedures: seek other temporary measures/try treatment another day
Anterior Esthetics	Looks natural/white Semi-esthetic (tooth colored but doesn't match exactly) Non-esthetic (silver/black)
Posterior Esthetics	Looks natural/white Semi-esthetic (tooth colored but doesn't match exactly) Non-esthetic (silver/black)
Risk of Procedure (Oral Conscious Sedation and GA)	Will not tolerate any risks associated with sedation Can tolerate minor risks like nausea/vomiting Willing to tolerate rare but major risks like respiratory depression/death
Dentist's Recommendations	Chooses dentist's recommendation 50/50 Relationship Recommendation irrelevant to decision-making
Passive Stabilization	Not acceptable Urgent/emergency care Restorative care with pharmacology Restorative care without pharmacology
Experience effects on Future Visits	Helps future visits behavior Neutral effect May harm future visit behavior
Parental Presence/Absence	Must be present for any treatment Desires to be present for invasive treatment only Does not matter

Table 4: Parents Experiences With and Preferences for Dental Treatment.

Most parents surveyed stated that they rely fully or almost fully on what the dentist recommends as the best option. Some parents see it as a shared relationship, and thus, some things are a compromise.
"I think it's about like 90%. You get advice from your dentist, and then you do your own little research- google." (female, age 33)
"If we are dealing with cost or time- no it wouldn't make a difference to me. But, if we are dealing with reality as far as, what is best for the child- then I would want their opinion and their preference. If it's just cost and time, then I'm okay with making that decision." (female, age 44)
"I trust what the dentist recommends- I would say that I put a significant trust in the dentist more than just a 50-50 relationship. I trust that the dentist is recommending what they believe is best for the child given the background- not only the history, but the teeth and the history of the child and what they feel that the child would be able to handle." (female, age 39)

“(I rely) A lot, because this is the professional that you have chosen and in choosing our dentist, we did our research and looked at reviews. I know we are the generation that relies upon reviews. I mean- I would say a lot and our treatment planning and experience has changed and progressed along the way. Our dentist gave us the worst-case scenario type thing and said, “when we get there, we will cross that bridge”. (female, age 38)
Roughly one-third of the parents felt as if sedation and GA would definitely help their future dental visits, while another one-third of respondents felt that sedation would help their future dental visits if it was a pleasant experience.
“As long as everything went okay and there were no memories within the child’s mind about what went wrong or if they were panicky/scared, I think that in the future they would be comfortable. If they had a panic moment and they were scared- it may not even be long- but from then on, they would say, “Do I have to go to the dentist? If I go are they going to have to do what they did to me last time? Because that scared me” or something like that. So, that is what I think would affect them. Pretty much the memory of the child and their experiences.” (female, age 45)
“The more pleasant the experience is for the child, the better it will be in terms of their perception of the dentist and going to the dentist. Anything that makes them equate that to something that is calm, the better.” (female, age 39)
“They do affect future visits, because she feels comfortable. It has been a very comfortable process, and people our age have huge fears of going to the dentist, but my 5-year-old has no problem at all. So, it has been their procedure of sedation that has been comforting for her. It hasn’t been, “Okay we are going to come here and knock you out type thing” – it has been a gradual procession. So, yeah I think it is a good thing that will lay a foundation for her future visits for sure.” (female, age 38)
“It (sedation/GA) shouldn’t affect future visits. I talk to my child beforehand and tell her, ‘we are going to go through this...’, and they will know that it’s not every time that they come to the dentist. It is all about the parent and what you tell them.” (female, age 31)
“It (sedation/GA) makes it better- if they have a lot of cavities they get that taken care of and their cleanings are better. If you’re an adult and you have a pleasant experience as a child, you will see the value in that and that affects your overall health.” (female, age 32)
The overwhelming majority of parents were least likely to elect for passive immobilization overall as an advanced behavior modification technique.
“I think it is more so from the standpoint of the child- making sure that they are most comfortable. I know that sedation is typically recommended for younger kids, so I think I would want them to be as calm as possible. That is why I like the sedation option a little better than just the stabilization- just for the child’s sake more than anything.” (female, age 39)
“I don’t like it because it looks scary. It concerns me that they won’t be able to move. That instills fear in them to sit there and be wrapped up while they are getting work done. They may feel pain and they can’t move.” (female, age 21)
“Some kids would probably be okay with stabilization, but I just know with our child- that would freak her out to wrap her up in this versus “hey, drink this, it may make you a little sleepy and smell this fruit-smelling gas and everything is going to be okay.” (female, age 38)

Discussion

Parental demand for esthetics has increased over time, but many pediatric esthetic options are more technique sensitive than SSCs and may require advanced behavior techniques to provide the restorations [15]. Recent studies have shown parents as more tolerant of a less esthetic result if it meant avoiding advanced behavior techniques.⁸ In the current study, respondents were most concerned with esthetics in the anterior region; the majority of parents elected advanced techniques if restorations were desired. Participants who wished to avoid advanced behavior techniques accepted decreased esthetics such as SDF or ITR until the child tolerated treatment without pharmacologic methods. Respondents were more willing to compromise esthetics in the posterior quadrants in order to avoid pharmacologic techniques. In their qualitative study, Maciel et al. found that while children were highly satisfied with posterior SSCs, parents were more likely to choose glass ionomer or composite resin due to these restorations appearing “normal”.¹¹ In the current study there was a high selection (74.2%) of posterior SSCs despite an increase in the demand for overall esthetics. The script did describe each restoration type and included SSCs had long-term scientific evidence showing effectiveness and durability which may have swayed parental opinion. Bell et al. found that most parents were not concerned about SSCs’ appearance in the posterior and were satisfied with SSCs, as they believed the child’s tooth was protected.⁵ Similarly, respondents in this study reported a desire

for durability and long-term success. Passive stabilization was the least favored option of the advanced behavior guidance techniques, a finding similar to previous literature which indicates an increase in parental acceptance of pharmacologic techniques and decreased acceptance of passive immobilization [6].

Individuals who favored restoration did so in both scenarios, indicating that parents who prefer sedation for a young child would tolerate it for a slightly older child. Similarly, nearly all of the participants who selected SDF for Scenario 2 selected the less invasive ITR for Scenario 1. For scenario 2, parents were almost equally divided between MS and GA as a behavior technique. This is the second study for this region of the country that suggests parents readily accept MS and express little concern about adverse events related to in-office MS [12]. Parental perceptions in other regions of the country may vary. Parental confidence levels in their choices were high overall for both scenarios, indicating that parents were confident in their treatment selections when given the provider’s input. Limitations to this study include a small sample size due to the nature of a qualitative study. The findings do not consider an array of cultural differences as respondents were regional, native English speakers, of primarily two ethnicities. However, the study population was well distributed in regard to age, education level, income, and type of insurance. This qualitative study displayed hypothetical scenarios; therefore, there is a possibility for response or reporting bias, and social desirability bias. Social desirability bias may have been induced due to parents feeling compelled


to select a specific treatment option out of a desire to please the survey administrator or avoid judgment based upon social norms.¹⁶ Despite limitations, this study adds to the knowledge base of complex treatment decision-making in pediatric dentistry and lays the foundation for future discrete choice experiments as the authors identified 13 attributes and at least 3 levels with each attribute.

Conclusion

Parents value esthetics in the anterior region, even if achieved through advanced behavior techniques, while passive stabilization is rarely preferred. Parents who wish to avoid advanced techniques will accept fewer esthetic options such as SDF or ITR; overall, parents feel confident in their treatment decisions. This study identified characteristics (attributes) differentiated by values (levels) parents consider when choosing treatment options.

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