

Pediatric Dentists' Approaches to Dental Treatment of Children with Dental Fear and Anxiety

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Abstract

BACKGROUND/AIMS: Dental fear and anxiety (DFA) are important facets of pediatric dental treatment and may cause oral health neglect and dental treatment evasion. This study aimed to collect and share opinions and experiences of pediatric dentists in treating children with DFA worldwide.

MATERIALS AND METHODS: Using the Google form survey tool (Google LLC, Mountain View, USA), an online questionnaire was created in five different languages and submitted to pediatric dentistry specialists. The questionnaire included 9 questions in total and gathered data on demographics, causes of DFA, preferred non-pharmacological and pharmacological behavior management techniques, used systems for local pain control, and methods while treating children.

RESULTS: A total of 1,054 pediatric dentists completed the questionnaire. For treating pediatric patients with DFA, >50% reported utilizing both pharmacological/non-pharmacological approaches, whereas 41.8% reported using only non-pharmacological techniques. The most frequently reported causes of DFA were extraction (55.7%), seeing a syringe (55.5%), and injection with a syringe (54.3%). Most participants (84.06%) preferred the conventional syringe technique, whereas only 15.08% reported using other delivery systems of local anesthetics for dental treatments of children with DFA. The most commonly utilized minimally invasive techniques were atraumatic restorative treatment (62.5%), silver diamine fluoride (55.2%), and hall technique (49.4%).

CONCLUSION: Our findings demonstrated that pediatric dentists mostly used behavior management techniques for the dental treatment of children with DFA. However, various minimally invasive dentistry approaches and advanced systems for local pain control could be used more extensively.

Keywords: Behavior management, children, dental fear and anxiety, pediatric dentistry

INTRODUCTION

Dental fear is a normal, unpleasant reaction to certain threatening stimuli associated with dental treatment. It refers to the response to a specific external threat. However, dental anxiety is a tense, pessimistic,

and uncertain feeling that is not related to any object. Dental fear and anxiety (DFA) are often used interchangeably with each other; or used together as DFA.^{1,2} Both environmental and genetic factors may play a role in the etiology of DFA.^{3,4} In a recent systematic review, the prevalence of DFA was reported as 12.2% among 0-13-year-olds.⁵

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For many children, a visit to the dentist's office might be stressful. Dental treatments are considered a threatening event and a source of fear, anxiety, pain, and discomfort for some patients. Children who are tense cooperative may exhibit disruptive behaviors, which can be a key indicator of DFA, increasing the child's risk of injury and treatment time.^{6,7} Positive thoughts established during childhood also positively affect children's behavior. Therefore, many factors, such as the impression of the child about dental treatments or the clinic environment, experiences in the dental clinic, and the attitude of the parent and dentist, determine the child's behavior and may play a role in the development of dental anxiety in the future.² If DFA is effectively managed in childhood, dental anxiety may not continue into adulthood.⁸ This suggests that pediatric dentists should employ suitable treatment modalities and provide effective behavioral shaping.⁹

Hence, DFA have been proven to be one of the most fundamental and challenging situations in pediatric dentistry, consequently making it pivotal to share experiences in this field with colleagues. According to all this information, this study aimed to collect and share opinions and experiences of pediatric dentists regarding causes of DFA among children, preferred non-pharmacological and pharmacological behavior management techniques, used systems for local pain control, and methods of pediatric dentists while treating children with DFA worldwide.

MATERIALS AND METHODS

Ethical Considerations

The study was approved by Near East University Scientific Research Ethics Committee (approval number: YDU/2021/98-1440, date: 23.12.2021).

Questionnaire Design

An online questionnaire was prepared using the Google form survey tool (Google LLC, Mountain View, USA). The objectives of the study and the willingness to participate were included at the beginning of the questionnaire. Participants who provided consent were allowed to proceed to the questionnaire. Five languages were used in the questionnaire: Turkish, English, Russian, Spanish, and Portuguese.

The self-administered questionnaire prepared in each language was first piloted on 10 colleagues for feasibility and clarity. After necessary corrections, the questionnaire was accepted as appropriate and understandable, and no further corrections were applied.

The questionnaire included 9 questions in total. An English version of the questionnaire is available as a supplementary file. The first part of the questionnaire gathered data on demographics and asked participants if they had ever treated a child with DFA. The causes of DFA among children, preferred non-pharmacological and pharmacological behavior management techniques, used systems for local pain control, and methods while treating children with DFA were asked. The questionnaire included closed-ended and open-ended questions. In this way, the participants were given the opportunity to share their methods that were not included in the questionnaire.

Participants

The online questionnaire was sent to pediatric dentistry specialists' societies and groups throughout the world. A convenience sample of subjects was obtained through heads of pediatric associations in different countries, by posting the survey to social media platforms

(Facebook, WhatsApp and Telegram-based dental pediatric groups), and through referral of participating pediatric dentists who had already completed the questionnaire. No information revealing the identity of the participants was not obtained. No reminder was sent. The average time required to complete the questionnaire is 5-10 minutes.

The appropriate sample size was determined to be 384 using Cochran's sample size calculation algorithm for cross-sectional design with a 95% confidence interval and a 5% margin of error. Finally, we determined 460 individuals to be the required sample size after factoring in 20% for possible non-respondents. After completing the forms, they were translated back to English by dentists with dual languages.

Statistical Analysis

Data were evaluated using a Google Form Survey tool and Microsoft Excel (2016). Frequency and percentage were used as descriptive statistics. Statistical analysis was performed using the SPSS software version 24 (IBM SPSS Statistical Package for the Social Sciences) (Chicago, Illinois, USA).

RESULTS

Demographics Features

A total of 1,204 dentists completed the questionnaire. Of the 1,054 patients, 1,054 were pediatric dentists. The remaining 150 participants were not pediatric dentistry specialists, and their questionnaire answers were not included in the final analysis. Participants were from 90 countries distributed in Asia (n=288; 27.3%), Europe (n=261; 24.7%), North America (n=220; 20.8%), South America (n=185; 17.5%), Africa (n=97; 9.2%), and Oceania (n=3; 0.2%). The geographic distribution of participants is presented in Table 1.

The sample of pediatric dentists consisted of 824 female (78.2%) and 230 male (21.8%) (Table 2). The average number of years of experience was 10 among participants. It was observed that all respondents had experience treating patients with DFA.

The Causes of DFA in Children

More than 50% of respondents (n=588; 55.7%) reported extraction as the main cause of DFA, making it the most prevalent reported cause. The remaining causes of DFA as reported by respondents are, in descending order of frequency: seeing a syringe (n=585; 55.5%), injection with a syringe (n=573; 54.3%), root canal treatments (n=204; 19.3%), previous medical treatments performed in the hospital (n=195; 18.5%), restorative treatments (n=91; 8.6%), dental cleaning (n=16; 1.51%), and preventive treatments (n=12; 1.3%) (Table 2). In addition to these causes of DFA enumerated in the questionnaire, 50 respondents (4.7%) mentioned other causes of DFA: pain and ineffective local anesthesia during dental treatments (n=21; 1.9%), previous negative dental experience (n=20; 1.8%), family and parents' negative effects (n=5; 0.4%), using restraints (n=3; 0.2%), placing rubber dam (n=3; 0.2%), sound of the dental handpiece and suction (n=3; 0.2%), parent separation during dental treatment (n=2; 0.1%), dental traumatic injuries (n=2; 0.1%), and numbness after anesthesia (n=1; 0.09%) (Table 3).

Non-Pharmacological Behavior Management Techniques

Of the 1,054 total respondents, 441 participants (41.8%) reported using non-pharmacological techniques alone for treating pediatric patients

with DFA. 611 (57.9%) patients used both pharmacological and non-pharmacological techniques. When asked to select a preferred non-pharmacological behavior management technique used to treat a child with DFA, 920 respondents (88.2%) selected the tell-show-do technique, 822 (77.9%) selected positive reinforcement, and 629 (59.6%) selected distractions. The remaining results in descending order of selection

are: modeling (n=453; 42.9%); relaxation (n=428; 40.6%), voice control (n=426; 40.4%), systematic desensitization (n=386; 36.6%), music (n=188; 17.8%), signaling (n=178; 16.8%), video modeling (n=100; 9.5%), physical restraint (n=100; 9.4%), videogame (n=64; 6.07%), negative reinforcements (n=40; 3.7%), and virtual reality (n=38; 3.6%) (Table 4). When respondents chose another technique, they reported

Table 1. Geographic distribution of pediatric dentists who participated

Continents	Country (n)	Total n (%)
Asia	India (115), Jordan (78), Iraq (15), Iran (14), Saudi Arabia (10), Lebanon (7), Syria (7), Nepal (6), Malaysia (5), Qatar (3), Oman (3), Philippine (3), Japan (3), Indonesia (3), Thailand (2), Pakistan (2), United Arab Emirates (2), Yemen (2), Myanmar (2), Kuwait (1), Bahrain (1), Taiwan (1), Palestine (1), Kyrgyzstan (1), Kazakhstan (1)	288 (27.32%)
Europe	Ukraine (33), Turkey (32), Spain (25), Russia (26), Germany (21), Romania (21), Portugal (21), Greece (15), Italy (12), United Kingdom (6), Poland (5), France (6), Slovakia (5), Israel (5), Switzerland (3), Belarus (3), Netherland (3), Czech public (3), Serbia (2), Austria (2), Belgium (2), Slovenia (2), Cyprus (1), Sweden (1), Ireland (1), Romania (1), Lithuania (1), Croatia (1), Armenia (1), Transnistrian (1)	261 (24.76%)
North America	Mexico (136), United States of America (54), Canada (16), Cost Arica (3), Honduras (3), Cuba (3), Guatemala (2), Trinidad and Tobago (1), Panama (1), Puerto Rico (1)	220 (20.87%)
South America	Brazil (106), Ecuador (21), Peru (19), Argentina (12), Columbia (10), Bolivia (6), Paraguay (4), Chile (3), Venezuela (3), Uruguay (1)	185 (17.55%)
Africa	Egypt (57), South Africa (7), Nigeria (7), Kenya (7), Sudan (5), Libya (4), Uganda (3), Morocco (2), Tanzania (2), Ghana (1), Zimbabwe (1), Botswana (1)	97 (9.20%)
Oceania	New Zealand (1), Australia (2)	3 (0.28%)
Total	(n=90)	1054 (100%)

Table 2. Distribution of answers from pediatric dentists regarding their gender and whether they had ever seen a child with DFA

Questions	Answers	n (%)
What is your gender?	Male	230 (21.8%)
	Female	824 (78.2%)
Have you ever seen a child with dental fear and anxiety?	Yes	1,054 (100%)
	No	0

DFA: Dental fear and anxiety.

Table 3. Distribution of answers from pediatric dentists regarding the causes of DFA in children

Question	Answers	n (%)	Answers	n (%)
What are the causes of dental fear and anxiety in children? (You can choose more than one option)	Extraction	588 (55.7%)		
	Seeing a syringe	585 (55.5%)		
	Injection using a syringe	573 (54.3%)		
	Root canal treatment	204 (19.3%)		
	Medical treatments	195 (18.5%)		
	Restorative treatments	91 (8.6%)		
	Dental cleaning	16 (1.51%)		
	Preventive treatments	12 (1.3%)		
	Other (please specify in the blank)	50 (4.7%)	Pain and ineffective local anesthesia during dental treatments.	21 (1.9%)
			Previous negative dental experience.	20 (1.8%)
		Negative effects of family and parents.	5 (0.4%)	
		Using restraints.	3 (0.2%)	
		Placing a rubber dam.	3 (0.2%)	
		Sound of dental handpiece and suction.	3 (0.2%)	
		Parental separation during dental treatment.	2 (0.1%)	
		Dental trauma.	2 (0.1%)	
		Numbness after anesthesia.	1 (0.09%)	

DFA: Dental fear and anxiety.

aromatherapy (n=5; 0.4%), a combination of techniques (n=5; 0.4%), hypnosis (n=4; 0.3%), parent separation (n=2; 0.1%), time out policy (n=1; 0.09%), and storytelling (n=1; 0.09%) (Table 4).

Pharmacological Behavior Management Techniques

The preferred pharmacological technique for treating children with DFA was general anesthesia, as reported by 527 respondents (50%). Nitrous oxide oxygen sedation was preferred by 419 respondents (39.7%), and other types of sedation were preferred by 330 respondents (31.3%) (Table 5).

Systems for Local Pain Control

Of the participants, 886 (84.06%) preferred the conventional syringe technique, whereas 159 (15.08%) reported using other delivery systems for local anesthetics. The Wand STA System was preferred by most pediatric dentists who reported using other delivery systems (Table 6).

Minimally Invasive Dentistry Approaches

For treating pediatric patients with DFA, minimally invasive techniques were preferred by most respondents. The techniques preferred, in descending order, were: Atraumatic restorative treatment (n=659; 62.5%), silver diamine fluoride (n=582; 55.2%), hall technique (n=521;

49.4%), laser application for caries removal (n=143; 13.5%), air abrasion (n=66; 6.2%), chemo mechanical caries removal (n=7; 0.6%), preventive treatments (n=5; 0.4%), selective caries removal without dental anesthesia (n=3; 0.2%), lesion sterilization and tissue repair (n=3; 0.2%), interim therapeutic restorations (n=2; 0.1%), ozone application (n=1; 0.09%) (Table 6). Some pediatric dentists suggested aromatherapy, psychological therapy, and cognitive behavioral therapy for behavioral support, and buffered anesthesia solution to decrease pain during anesthesia (Table 6).

DISCUSSION

This study aimed to collect, analyze, and share the opinions and experiences of pediatric dentists worldwide regarding DFA experienced by children during dental treatments. Pediatric dentists frequently encounter disruptive behaviors in children when conducting dental treatments. These children often report a history of unfavorable treatment experiences.² All of our respondents in this study had experienced pediatric patients with DFA.

Cademartori et al.¹⁰ stated because of the possibility of painful/forceful removal of the tooth; extractions may cause DFA during dental treatments, thus resulting in uncooperative behavior among children.¹¹

Table 4. Distribution of answers from pediatric dentists regarding non-pharmacological behavior management techniques used among children with DFA

Question	Answers	n (%)	Answers	n (%)
Which non-pharmacological behavior management techniques do you use in children with dental fear and anxiety? (You can choose more than one option)	Tell-show-do technique	920 (88.2%)		
	Positive reinforcement	822 (77.9%)		
	Video and audio distractions	629 (59.6%)		
	Modeling	453 (42.9%)		
	Relaxation	428 (40.6%)		
	Voice control	426 (40.4%)		
	Systematic desensitization	386 (36.6%)		
	Music	188 (17.8%)		
	Signaling	178 (16.8%)		
	Video modeling	100 (9.4%)		
	Physical restraint	101 (9.5%)		
	Videogames	64 (6.07%)		
	Negative reinforcements	40 (3.7%)		
	Virtual reality	38 (3.6%)		
	Other (please specify in the blank)	21 (1.57%)		Aromatherapy
			Combination of the above techniques	5 (0.4%)
			Hypnosis	4 (0.3%)
			Parent separation	2 (0.1%)
			Time-out policy	1 (0.09%)
			Storytelling	1 (0.09%)

DFA: Dental fear and anxiety.

Table 5. Distribution of answers from pediatric dentists regarding pharmacological behavior management techniques used among children with DFA

Question	Answers	n (%)
Which pharmacological behavior management techniques do you use in children with dental fear and anxiety? (You can choose more than one option)	General anesthesia	527 (50%)
	Nitrous oxide oxygen sedation	419 (39.7%)
	Other types of sedation	330 (31.3%)

DFA: Dental fear and anxiety.

Table 6. Distribution of answers from pediatric dentists regarding the use of systems for local pain control and minimally invasive dentistry approaches among children with DFA

Question	Answers	n (%)	Answers	n (%)
What do you use to control pain in children? (You can choose more than one option)	Conventional syringe technique	886 (84.06%)		
	Other local anesthetic delivery systems (please specify in the blank)	159 (15.08%)	The Wand STA system	38 (3.6%)
			The Quick Sleeper® system	14 (1.32%)
			Morpheus anaesthesia unit	7 (0.6%)
			Insulin injector	6 (0.56%)
			Needleless pressure injection technique	6 (0.56%)
			Dentapen-powered injector	4 (0.37%)
Which minimally invasive dental approach is most appropriate for children with dental fear and anxiety? (You can choose more than one option)	Atraumatic restorative treatment	659 (62.5%)		
	Silver diamine fluoride	582 (55.2%)		
	Hall technique	521 (49.4%)		
	Laser treatment for caries removal	143 (13.5%)		
	Air abrasion	66 (6.2%)		
	Chemomechanical caries removal	7 (0.6%)		
	Preventive treatments	5 (0.4%)		
	Selective caries removal	3 (0.2%)		
	Interim therapeutic restoration	2 (0.1%)		
	Ozone application	1 (0.09%)		
	Lesion sterilization and tissue repair	3 (0.2%)		

DFA: Dental fear and anxiety.

In the present study, extraction was the most common cause of DFA. This study also indicated that seeing a syringe before injection and injection with a syringe were the second and third most reported causes of DFA, respectively. In line with this, Ghibban et al.¹² reported dental injection as the major reason of DFA. Peng et al.¹³ reported that pre-schoolers have a high rate of dental anxiety and show a significant fear of needles, dentists, tooth extraction, drilling, and oral anesthesia.

The quality of dental treatment is affected by pain during dental procedures. Children frequently cite the conventional syringe as an image of pain and fear. New technologies have been developed to provide near-painless injections and reduce dental anxiety.¹⁴ Therefore, we asked our study participants about their usage of different systems for local pain control that could be more acceptable, suitable, and effective. The Wand System was preferred by most pediatric dentists who reported using other local anesthetic delivery systems in this study. Previous studies^{15,16} have evaluated the advantages of different systems for local pain control. In the study of Chavhan et al.¹⁵ the Wand system was found to be superior in terms of lower pain for 12-year-olds compared with the conventional injection technique, but no difference was detected in the 6- and 9-year-old age groups. Patini et al.¹⁶ reported that dental anesthesia administered to children using a computer-controlled delivery system reduced pain better than that administered with a conventional syringe. Vitale et al.¹⁷ compared the discomfort felt by patients using a conventional syringe with the computer-controlled local anesthetic delivery system SleeperOne. Researchers have reported that the SleeperOne device is beneficial for reducing pain related to anesthetic injection, especially in children. Muller-Bolla et al.¹⁸ reported computer-controlled local anesthetic delivery systems as preferable for primary dentition. Despite all the developments in this field, the participants of this study mostly preferred the conventional syringe

technique. The conventional syringe technique may still be preferred due to the pain-reducing effect of topical anesthesia prior to injection and their price/accessibility.

Among the non-pharmacological behavior management techniques, Dhar et al.¹⁹ reported tell-show-do, audiovisual distraction, breathing relaxation, biofeedback relaxation, cognitive behavior therapy, animal-assisted therapy, positive reinforcement, and modeling showed a significant reduction in anxiety among patients undergoing dental treatments. Nagaveni et al.²⁰ demonstrated videos of various non-pharmacological behavior management techniques to 68 children between 9 and 12 years. These techniques included tell show do, voice control, magic trick, parental presence/absence, non-verbal communication, positive reinforcement, distraction, and protective stabilization. Researchers reported that the least accepted techniques were voice control and protective stabilization; however, positive reinforcement was the most accepted technique, followed by distraction and magic trick. It was recommended that the opinions of children should always be considered. In another study, the use of virtual reality notably decreased the pain and anxiety of children and the duration of dental treatment.²¹ Hypnosis is also recommended to resolve anxiety during dental treatments.²² In this study, participating pediatric dentists preferred the tell-show-do method as the most effective technique for treating children with DFA. There has been confirming proof for the tell-show-do approach to decreasing anxiety in children.^{12,23} This could be from the step-by-step principle of this technique, which gives the child an idea about what is going to happen in the next step and helps the child believe that the dentist will not hurt them. This supports the building of a trust relationship between the child with DFA and the dentist. In contrast, Abbasi et al.²⁴ reported most widely used "tell-show-do" technique did not help reduce anxiety levels. Greeshma et

al.²⁵ reported that children were most relaxed in virtual reality, followed by audio recordings, and were least relaxed in “tell-show-do” technique during dental visits. Positive reinforcement, video-audio distractions, modeling, relaxation, voice control, and systemic desensitization were detected as the other widely used non-pharmacological behavior management techniques among participants in their study.²⁵ The combined use of behavioral guidance techniques is also recommended for successful results.²⁶ In the current study, the most preferred techniques after the tell-show-do were, positive reinforcement and distraction. Then, modeling, relaxation, voice control, systematic desensitization, music, and signaling were conducted. The least preferred techniques were video modeling, physical restraint, video games, negative reinforcement, and virtual reality. When respondents chose another technique, few reported aromatherapy, hypnosis, parent separation, time-out policy, or storytelling. Following current developments in this field and using various behavioral support techniques together may help clinicians manage the behaviors of pediatric dental patients.

Pharmacological management techniques are the only options available to children who cannot overcome dental anxiety using non-pharmacological management approaches.^{27,28} A retrospective cross-sectional study reported that one-third of patients were treated with pharmacological interventions. General anesthesia was used most frequently. Patients treated with general anesthesia required restorative treatment and extractions that involve pain. However, two-thirds of the patients were treated with non-pharmacological interventions, which required treatments with less pain.²⁹ In the current study, half of the participants reported that they conducted dental treatment for children with DFA under general anesthesia if necessary. Moreover, nearly 40% of participants preferred nitrous oxide oxygen sedation, while 30% used other types of sedation.

Conventional methods for the restoration of dental caries may cause distress in patients. To lower the levels of anxiety experienced by children, minimal intervention dentistry principles can be used to minimize dental anxiety.³⁰ To manage caries in young children, minimally invasive dentistry (MID) approaches should be considered as a junction between restorative treatments and preventive strategies. This way of thinking has a favorable effect on how well a child behaves in the dentist chair since many procedures can be completed without the use of high-speed rotating equipment, rubber-dam isolation, or local anesthetic, which all help patients feel less scared and anxious. MID approaches should be promoted and used in the pediatric dentistry community because of their advantages over conventional restorative treatments, even though many dental professionals are still resistant to it.³¹ According to Arrow et al.³² minimally invasive treatments that support family- and child-centered care are a suitable option for general anesthesia and should be considered for the management of early childhood caries. The use of atraumatic restorative treatment may reduce the risk of worsening dental anxiety in children and may therefore be a valuable alternative to dental practice.³³ However, Barreto et al.³⁴ reported no significant difference in the anxiety of children related to the types of treatment and observed higher anxiety levels during atraumatic restorative treatment and silver diamine fluoride applications. The current study demonstrated that participants preferred minimally invasive procedures that do not involve sound/drilling and avoided painful stimuli. In the current study, the most preferred techniques were atraumatic restorative treatments, silver-diamine fluoride applications, and the Hall Technique. In this way, children may be able to overcome DFA and eliminate previous traumatic dental experiences.

With this study, we provided a perspective on current management strategies for DFA, which is a situation most frequently encountered by pediatric dentists, with participants from all around the world. The experiences of more than one thousand pediatric dentistry specialists from different regions of the world gave us an opportunity to provide an overview of the current situation of DFA management strategies. The provision of questionnaire forms in most spoken languages in the world made the current study available to non-English speakers.

However, we could not get samples from every part of the world. Using an online questionnaire causes some details to be lost, which can be overcome by face-to-face sample taking. This study was conducted immediately after the COVID-19 lockdowns, and there were many online questionnaire studies. Therefore, we made our questionnaire as short as possible to get enough sample. In addition, the questionnaire did not ask about the age of the participants and whether they worked in a private or government institution. However, further studies including a larger sample of participants from all parts of the world with more detailed analysis of the findings are needed to share the most possible and diverse experiences about dental treatment of children with DFA.

CONCLUSION

Applying dental treatments with the desire, harmony, and happiness of children is the key point of success in pediatric dentistry today. For this reason, pediatric dentists make an effort to perform the necessary treatments without causing fear and anxiety in children. The fact that all participants encountered a child with DFA in our study indicates that this situation is indeed quite widespread. Our findings demonstrated that pediatric dentists mostly use behavior management techniques for the dental treatment of children with DFA. However, various MID approaches and advanced systems for local pain control could be used more extensively. We believe that the findings of our investigation provide a mechanism needed to better understand the issue of DFA and to design a proper method for its avoidance and treatment among children and adolescents.

MAIN POINTS

- In the current study, the extraction procedures and conventional syringe appearance/injection were the most reported causes of dental fear and anxiety (DFA). However, the conventional syringe technique was preferred by participating pediatric dentists.
- Tell-show do, positive reinforcement, and video/audio distractions are the most commonly used non-pharmacological behavior management techniques.
- The most preferred pharmacological technique for treating children with DFA was general anesthesia followed by nitrous oxide-oxygen sedation.
- Atraumatic restorative treatment, silver diamine fluoride, and the Hall technique are the most commonly used minimally invasive treatment approaches for children with DFA.

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ETHICS

Ethics Committee Approval: The study was approved by Near East University Scientific Research Ethics Committee (approval number: YDU/2021/98-1440, date: 23.12.2021).

Informed Consent: It was obtained.

Authorship Contributions

Concept: D.A.B., T.O.H., G.K., Design: T.O.H., Data Collection and/or Processing: T.O.H., Analysis and/or Interpretation: D.A.B., T.O.H., G.K., Literature Search: D.A.B., T.O.H., G.K., Writing: D.A.B., T.O.H., G.K.

Footnotes

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