



**Original Research**

# **Breaking the fear barriers: New approaches in pediatric dental fear and anxiety**

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## **ABSTRACT**

**Background:** Pediatric dentistry is a specialized field dedicated to children's oral health, aiming to establish positive dental habits and manage challenges such as dental fear and anxiety (DFA). DFA is a significant public health concern, often leading to avoidance and neglect of necessary dental care. It stems from various psychological, experiential, and environmental factors. With advancements in technology and increased internet accessibility, innovative strategies are emerging to create a more comfortable and positive dental experience for children.

**Aim:** To explore innovative methods for managing dental fear and anxiety, highlighting their potential to transform pediatric dental practice.

**Methods:** A literature search was conducted using the keywords “behavior management” and “pediatric dentistry” in PubMed, CINAHL, and Medline. Only articles published in English and Italian since 2020 were considered. After applying inclusion criteria, 32 articles were included in the review.

**Conclusion:** This article examines groundbreaking approaches to reducing fear and anxiety in pediatric dental patients. It focuses on psychological techniques, environmental modifications, professional training, and technological advancements, all of which contribute to a more positive dental experience and improved long-term oral health.

**Keywords:** Rotary endodontics, pulpectomy, obturation quality, canal taper.

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## INTRODUCTION

Pediatric dentistry is a specialized branch of dentistry focused on the oral health of children from infancy through adolescence. It involves a comprehensive approach to oral healthcare, addressing a wide range of issues, from preventive measures such as fluoride treatments and dental sealants to managing oral diseases, dental trauma, and orthodontic concerns.<sup>1</sup> Pediatric dentistry encompasses both preventive and therapeutic care tailored to the unique needs of young patients.<sup>2</sup> Pediatric dentists receive specialized training in child psychology, growth and development, and behavior management techniques to create a comfortable and positive dental experience for children. Their goal is to establish good oral hygiene habits early in life and educate both children and parents on maintaining optimal oral health.<sup>3</sup>

A critical aspect of pediatric dentistry is managing children by overcoming many hindrances, particularly dental fear and anxiety (DFA), which can significantly impact a child's willingness to seek dental care and their overall oral health. DFA in children is a significant public health concern, characterized by irrational fear or anxiety associated with dental visits and procedures.<sup>4</sup> This often leads to avoidance and neglect of necessary dental care. DFA can stem from various factors, including previous negative experiences, fear of pain, the influence of parents or peers, and the inherently intimidating nature of the dental environment. Understanding and addressing DFA in children is crucial for fostering positive dental experiences and ensuring long-term oral health.<sup>5</sup>

Recently, people's perceptions of oral healthcare have evolved as a result of global technological advancements, increased internet accessibility, and social media.<sup>6</sup> New methods have been developed that incorporate these advancements by distracting patients from uncomfortable procedures. Innovative strategies are being created to provide a more comfortable and positive dental experience for children.<sup>7</sup>

This essay delves into groundbreaking strategies for alleviating fear and anxiety in pediatric dental patients, focusing on psychological techniques, environmental modifications, professional training, and technological advancements.

### What is Dental Fear and Anxiety?

Dental fear typically refers to an unpleasant emotional reaction to specific stimuli associated with dental treatment, while dental anxiety involves an excessive and irrational emotional state experienced by patients. In the past, dental fear and anxiety (DFA) were treated separately, but they are now recognized as a unified challenge in pediatric dental care. DFA is common across all age groups, with children and adolescents being the most affected. Reports show that dental anxiety and fear in children can range from 6% to 42%. It is an emotional response to the discomfort experienced during dental procedures and treatments. DFA can impact the mind, body, emotions, and behavior, varying with each child's personality. The development of DFA is influenced by multiple factors, which can be categorized into three main areas:

- **Social factors:** These include parental dental anxiety, family socioeconomic status, appointment preparation, and expectations for child behavior during dental visits.
- **Personal characteristics:** Age, gender, overall fear, temperament, and IQ play a role.
- **Dental visit-related factors:** These encompass the nature of dental treatments, the environment, and the dental procedures themselves.

DFA is a common reason for children delaying dental care, which can lead to worsening oral health over time. Many children experience fear during their first visit due to unfamiliar dental equipment and surroundings. A child's initial dental appointment is critical in shaping their attitude towards dental health and influencing future behaviors.

## How to Manage Anxious and Fearful Children?

Managing anxious and fearful children requires empathy, effective communication, and tailored strategies to create a calm and supportive environment. Recognizing that many children fear potential pain associated with dental visits, it is important to take a patient-centered approach that considers each child's developmental stage and individual concerns.

Various psychosomatic therapies have been used to manage discomfort, anxiety, and pain, while also promoting the development of coping mechanisms. Techniques such as music, virtual reality, magic tricks, in-ear headphones, gaming consoles, movies, traditional behavior management, and systematic desensitization help alleviate anxiety and discomfort.<sup>8</sup>

When choosing an appropriate method, dental professionals should consider the patient's personality, parental involvement, informed consent, capabilities, and the impact of modern cultural influences. Social factors such as parenting styles, children's self-control, dependency on technology, and adoption challenges also play a role in selecting and implementing an effective approach. By building trust and ensuring a gentle, reassuring experience, dental professionals can help children develop a positive attitude toward dental care.

## NOVEL APPROACHES FOR MANAGEMENT OF FEAR AND ANXIETY

Behavioral management aims at reducing and alleviating fear and anxiety, improving disruptive behavior and achieving full acceptance to undertake dental treatment. It seeks to lessen fear and anxiety, and gain complete acceptance for receiving dental care. It should be viewed as a succinct and constantly changing way of creating a strict rapport of trust between the patient and the physician rather than as the straightforward application of particular procedures to deal with children. It can fluctuate because kids show a broad spectrum of intellectual, emotional, and social development, but they also have distinct personalities and attitudes that are shaped by their upbringing and social milieu. This makes it very important for pediatric dentists to select the appropriate method to help the child overcome his/her dental fear and anxiety.

### Tell-Show-Do (TSD)

Tell-show-do is a foundational behavior management strategy introduced by Addleston (1959). It is a traditional approach for talking with children and preparing them for the dental experience. This technique entails verbal explanations of procedures in phrases appropriate to the patient's developmental level, followed by demonstrations of the visual, auditory, olfactory, and tactile aspects of the procedure in a carefully defined, non-threatening setting, and finally, without deviating from the explanation and demonstration, completion of the procedure.<sup>9</sup>

In recent times, various modifications have come up to effectively reduce the fear and anxiety in children.

### Modifications are:

1. **Ask-Tell-Ask:** This technique was given by clinical affairs committee in 2015. When clinician tells the child about the dental treatment, too much information regarding the treatment sometimes may alarm the patient. By using this technique, it is possible to improve child's knowledge regarding the procedure

This technique involves inquiring about the patients visit and feeling towards or about any planned procedures, explaining the procedures through demonstrations and non-threatening language appropriate to the cognitive level of the patient. Again, inquiring if the patient understands how she feels about the impending treatment.

2. **Tell-Play-Do:** It is a modification of TSD introduced by Vishwakarma et al., in 2017. It has a customized dental imitating cartoon character with a mouth wide open in the dental laboratory (Fig.1)



Fig 1: Tell-Play-Do dental framework model

The child is made to understand the basic dental framework and perform dental treatment on this cartoon model and become more comfortable with actual dental procedures with a decrease in anxiety levels (Fig 2).



Fig 2: Tell-Play-Do

As per the learning theory by Bandura age suited for this technique is 5-7 years. Learning occurs through observation, imitation, modeling influenced by factors such as attention, motivation, attitude, emotion. The child is allowed to play with the dental equipment to reduce the anxiety. Thereby develops co-operative behaviour.<sup>10</sup>

3. **Tell-Show-Play-Do:** It is a modified technique given by Radhakrishnan et al in 2019, using the concept of learning by doing, to reduce children's fear and anxiety towards dental treatment and promote adaptive behavior. It is a reusable modelling compound known as play-doh which is generally used by children. In this technique the dental instruments are camouflaged as toys (Fig 3).



Fig 3: Tell-Show-Play-Do armamentarium

The main aim of this is to familiarize the child with the dental equipment and to reduce the anxiety thereby preparing the child for the treatment. (Fig 4)



Fig 4: Tell-Show-Play-Do

4. **SADE (Sensory Adapted Dental Environment):** Importance of dental care and oral hygiene is often underestimated in people with Autism Spectrum Disorder (ASD). Comorbidity with dental anxiety is greater in ASD patients who also show unusual reactions to sensory stimuli. Recent studies have shown that Sensory Adapted Dental Environment (SADE) is effective in reducing anxiety and inducing relaxation. SADE intervention involves several modifications to the dental room, including darkening curtains, turning off direct overhead fluorescent lighting, and projecting slow moving visual color effects. A head-mounted lamp is used to reduce bright lights in the child's eyes.<sup>11,12</sup> Rhythmic music is projected through portable speakers, and a butterfly-like wrap is used to provide deep pressure. The wrap is washable and made of soft mesh-like fabric, decorated with colorful felt circles. The wings were detachable, allowing different sized wings to be used with children. This provides a calming experience for the child during dental treatments. (Fig. 5)

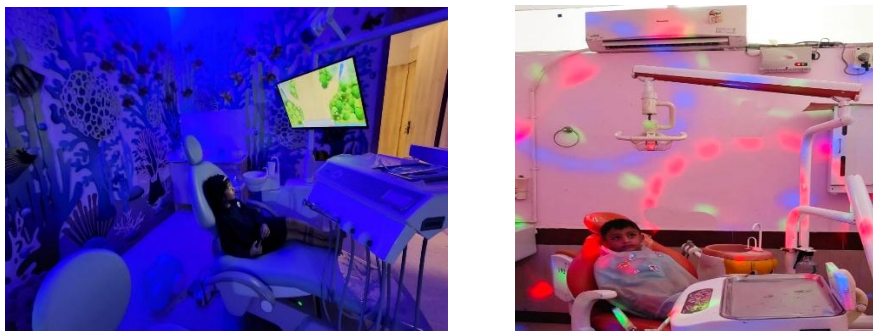


Fig 5: Sensory Adapted Dental Environment

5. **Chris's Birds Assisted Therapy:** Early in the morning, the sound of birds chirping is usually very calming. Whatever the variety, listening to birdsongs eases anxiety and lessens paranoia. They also make us happy and reduce our anxiousness. When we witness the bird chirping with our own eyes, these advantages multiply exponentially.<sup>13</sup> Birdsongs can provide our nervous system with much-needed relaxation and make us feel less stressed. The majority of the kids entering the dental operatory are seen to have gloomy faces or to be nervous or depressed. Majority of the children's facial expressions after the bird intervention shone with joy. (Fig. 6)

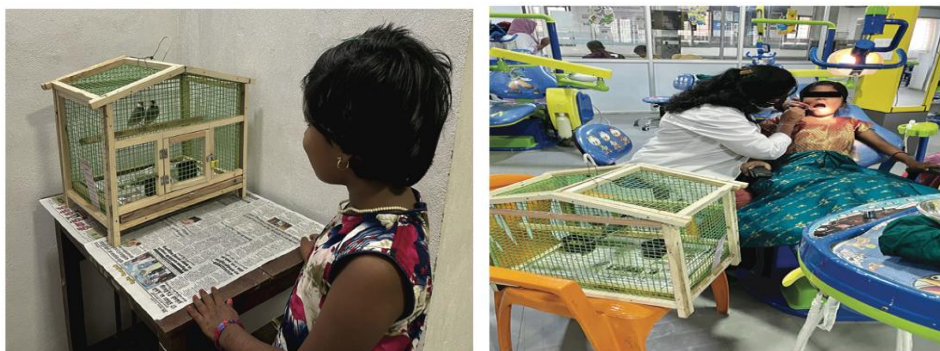


Fig 6: Chris's Birds Assisted Therapy

Children's heart rates typically range from 70 to 110 beats per minute. The majority of the kids had elevated heart rates prior to the commencement of the dental regimen, when birds were not utilized for therapy. Studies have shown that many children's heart rates returned to nearly normal levels while the birds were positioned next to the dental chair during the operation. Hearing birdsong is really beneficial since the chitter/chirping noises allow children to explore new therapeutic frontiers and breaking through their anxieties. Using chitters or bird songs as a backdrop soundscape might help soothe and lessen a child's jitters or anxiety, which could pave the way for oral wellness among juvenile dentistry patients. Thus, let the dental setting serve as a canopy under which the dentist and the birds collaborate to provide the young patient with high-quality dental care.<sup>14</sup>

6. **Chris's Fish Assisted Therapy :** Understanding the immature emotion of the child is highly useful to study and select the most appropriate behaviour management strategy during a dental appointment. It might be difficult to successfully communicate with children while also providing a positive experience. Modifying the dental environment with sounds and lights intended exclusively for paediatric patients can influence the child's behaviour. The paediatric dental setup should address the children's emotional immaturity. The youngsters may have a calm experience and take positive memories of the clinic home. Animal-Assisted Interventions (AAIs) are therapy methods that use animals to improve people' overall cognitive and social functioning. (Fig. 7)



**Fig 7:** Chris's Fish Assisted Therapy

It has been demonstrated that keeping fish lowers anxiety and enhances mental wellness. Simply looking at fish in an aquarium "led to noticeable reductions in participant's blood pressure and heart rate," according to research from Plymouth University.<sup>15</sup>

"Life is like a sea of fish; you never know what you gonna catch. "

### **7. Chris's Toys Assisted Therapy**

A child's behaviour is a composite mirror of their emotional immaturity. Anger, fear, worry, crying, phobias, and other immature emotions can all have an impact on a sense of security and familiarity, which helps to lessen the pain of separation and dread.

Handheld, multicoloured devices that rotate between the fingers are known as fidget toys. Playing with the device allows users to concentrate their mental energy, which may help release stored anxiety and prevent them from getting side-tracked.<sup>15</sup> Fidget toys are handheld tools designed to increase focus and reduce distractions. Typically marketed towards children, they come in various forms like fidget spinners, putty, and rubber band balls (Fig. 8).



**Fig 8:** Chris's Toys Assisted Therapy

Fidget spinners are three-pronged tools, while putty releases tension and stress. Putty, a sensory toy, is pocket-sized and silent, making it less distracting than other toys. The fidget cube is a six-sided toy with multiple activities, such as twisting, clicking, spinning, or flipping, allowing hands to stay occupied and the mind to focus elsewhere. These toys are believed to improve learning ability and reduce stress.<sup>16</sup>

Paediatric dental patients who receive toys in addition to dental care have a winning grin. With an outlet for their movements, fidget toys can help kids relax, release tension, and divert their attention from an overstimulating dental environment.

- Aromatherapy & Music Distraction:** Managing children's dental fear is a standard procedure for pediatric dentists since it prevents children from obtaining adequate oral health treatment. Aromatherapy combined with music is one technique to minimize dental anxiety.

Lavender and citrus oils are two of the most popular essential oils in aromatherapy. Lavender oil is an anxiolytic and analgesic essential oil extracted from *Lavandula angustifolia* flowers using hydrodistillation. It belongs to the Lamiaceae family and has a high concentration of linalool and linalyl acetate, both of which serve as sedatives and contribute to lavender's anxiolytic properties. Neroli is a citrus essential oil used in aromatherapy to relieve anxiety and discomfort caused by serious medical conditions. Hydrodistillation is used to extract essential oil from *Citrus arantium* blooms of the Rutaceae family. It has anxiolytic properties due to its major component, monoterpenes, which operate on the nervous system.<sup>17</sup>

Music is an effective, non-invasive, and non-pharmacological therapy that has grown in popularity for its ability to relieve dental anxiety. Music has an anxiolytic impact and improves mental abilities by boosting relaxing brain waves such as alpha, beta, and theta, as well as enhancing functional connectivity across brain areas.

- Bach TM Flower Therapy :** Bach flower therapy is a crucial aspect of dental medicine, providing a state of well-being for both patients and physicians. Flower remedies are used for various purposes, including children, pregnant women, patients undergoing complicated surgeries, and emotional imbalance. Bach remedies are easy to prepare and administer, using only wild, non-poisonous plants. They are prepared using the sun method and boiling method, with Dr. Bach choosing to prepare 20 remedies using the first method and 18 using the second method. (Fig. 9)



**Fig 9:** Bach TM Flower Therapy



The Bach Centre in Great Britain typically prepares high-quality mother-tinctures, which are then delivered to Nelsons™ for bottling. The 38 plants used in Bach therapy are divided into seven categories based on the personality characteristics identified by Bach, including remedies for fear, loneliness, over-care for others, uncertainty, over-sensitivity to influences, inadequate interest in current circumstances, and depression and despair. Bach Flower Therapy is considered supplementary medicine. It can be used alongside traditional dental procedures to enhance therapeutic maneuvers and promote healing. Bach therapy promotes good emotional changes, reducing anxiety and fear during dental appointments. Humans and the natural world are inextricably linked, making nature a constant source of healing.<sup>18</sup>

9. **Audiovisual Distraction technique:** Audiovisual Distraction is a common non-pharmacological behavior control strategy for children. Advanced audiovisual eyeglasses employ several sensory stimuli and promise to provide effective diversion from the hospital environment. Distraction strategies work by directing the patient's attention away from an unpleasant or harmful stimuli. To compete with signals from unpleasant stimuli, an optimum distractor often requires an optimal level of attention encompassing various sensory modalities, active emotional engagement, and patient participation.

Recent distraction methods utilizing current audiovisual technologies are more likely to meet these requirements. While some just use visual stimuli, the majority use visual stimuli in combination with aural stimulation to display the patient 2-D or 3-D films (Fig 10), often known as virtual reality audiovisual systems or A/V eyeglass systems. The degree of attention devoted to unpleasant stimuli affects pain perception. Distraction can be effective by engaging the child's several senses, including vision, hearing, and touch.



**Fig 10:** Audiovisual Distraction technique

10. **PediSedate:** Pediatric sedation is critical but difficult to implement. Fear and anticipatory anxiety prior to invasive operations results in uncooperativeness. A revolutionary gadget, PediSedate® (Fig 11), provides sedation through a mix of inhaled nitrous oxide and distraction (video game). This gadget combines non-pharmacologic and pharmacologic approaches of sedation. It combines a toy-like design with technology that includes monitoring to ensure patient safety. The device is applied, he/she plays a video game while listening to the audio portion of the game through the earphones. Nitrous oxide in oxygen is administered via the nasal piece of the headset starting at 50% and increasing to 70%, in 10% increments every 8 min.



**Fig 11:** Pedisdate technique

11. **Vibrotactile devices** : A possible method of reducing pain is vibratory stimulation. According to the "Gate-control theory," utilizing force and vibration could close the neural gate, hence lessening itchiness and stinging. When topical anaesthetic is unfavourable or insufficient to relieve sting, vibrating massages are used to divert children's attention and reduce their level of sensitivity. Patients with epilepsy, those with neurological disorders, or those requiring profound anaesthesia in certain regions of interest should not use it. If desired, it can be utilized in conjunction with an anaesthetic technique.<sup>19</sup>
- a. **VibraJect:** Miltex Inc. released the VibraJect power source in 2002. It's a device that fits the traditional dental syringe perfectly and vibrates the needle at a greater frequency so the patient can feel when the knob is turned clockwise. Children feel less pain when VibraJect is used compared to receiving local anaesthetic injections. (Fig. 12)



**Fig 12:** VibraJect technique

- b. **Dental Vibe:** Dr. Steven Goldberg invented this handheld vibrotactile intention in 2008; it is rechargeable and cordless. At the administration station, it administers injections with calming percussion micro vibrations. It has a U-shaped vibrating tip that is connected to a microprocessor-controlled Vibra pulse motor, which quietly activates the sensory receptors at the injection site. This closes the gate and stops the excruciating injection slash feeling. When pediatric kids receive dental injections, the dental vibe lessens their pain. (Fig. 13)



**Fig 13: Dental Vibe**

- c. **Accupal:** The device uses force and vibration to condition the mouth mucosa. This device was designed by Michael Zweifler and closes the "pain gate" with pressure and vibration. The needle is then positioned at the injection location by the device using moderate force. (Fig. 14)

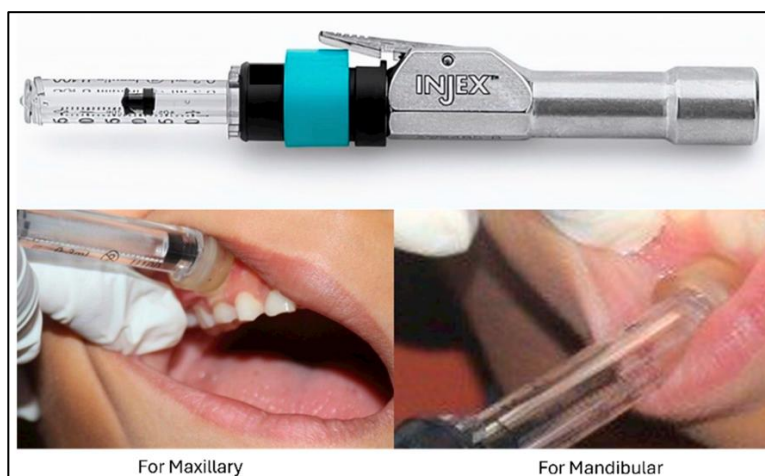


- d. **Buzzy Device:** The buzzy body and the detachable ice wings make up the device shaped like a bee. It functions by means of the descending inhibitory controls and the gate control theory, both of which lessen pain. A-delta and C fibers that are sensitive to pain are blocked by the buzzy body's vibration, while A-delta signals are blocked by the detachable ice wings' prolonged (30–60 seconds) stimulation of cold. Research indicates that children's pain and anxiety during the delivery of local anesthesia for dental operations can be decreased by placing the BuddyR gadget near the location where local anesthesia is being administered and applying cold and vibration. (Fig. 15)



**Fig 15:** Buzzy Device

- e. **Jet injector (INJEX):** Pain management is a crucial element in paediatric dentistry, and it is often achieved by the injection of local anaesthesia, which allows for operations to be performed with minimum pain or discomfort. Although this procedure is very successful, individuals frequently become resistant and uncomfortable when a needle is used to provide local anaesthesia. One of the primary causes of worry in young children undergoing dental operations is their dread of receiving local anaesthesia. It has tremendous control over their emotions and frequently creates anguish and anxiety.<sup>20</sup> A child's experience with painless and fearless dental care will greatly improve their comfort during subsequent visits to the dentist. As a result, a jet injection device was designed to provide needleless local anaesthetic. With the INJEX®, (Fig. 16) an anaesthetic solution is pumped under high pressure into the oral mucosa, causing mechanical infiltration of the compound through it. Jet injection method generates enough pressure to force a liquid drug through a very small aperture and into the subcutaneous tissue without using a needle. This needle-free way of giving anaesthesia offers various advantages, including a painless injection, minimum tissue injury, faster administration, and quicker drug absorption into the tissues as compared to traditional needle delivery.



**Fig 16:** Buzzy Device

- f. **INJEX:** It can greatly minimize children's pain and help them retain a cheerful attitude during the pulpotomy. It is found to be more effective in terms of both delivery time and anesthetic volume for the procedure. As a result, INJEX can be used as a feasible alternative to established anesthetic administration methods in juvenile patients.

- g. **Camouflage Syringe Sleeve :** Children become nervous at the sight of a needle and view the dental syringe as a terrifying tool, which intensifies their sense of pain and makes them feel greater pain for longer periods of time. Recently, innovative methods are coming up to reduce fear in kids and promote a pleasant dental experience, like disguising syringes as objects of desire. One such example is modified alligator-shaped sleeve on camouflaged syringes which diverts the patient's attention while hiding the needle. (Fig17). The major limitation for this is sleeve's bulky size which makes it challenging to manage. Children's conduct is positively impacted and their anxiety is reduced with camouflaged syringes.<sup>21</sup> The child's uneasiness is lessened by the camouflaged sleeve's ability to divert their attention away from the needle and onto the sleeve's shape. Since the most terrifying aspect of a child's treatment is administering LA, using concealed syringes could be a game-changer in the field of behaviour control in paediatric dentistry.<sup>22</sup>



**Fig 17:** Camouflage Syringe Sleeve

## CONCLUSION

Pediatric dentistry plays a pivotal role in promoting the oral health and well-being of children. Addressing dental fear and anxiety is a critical aspect of this specialty, as it is not just about easing their discomfort—it's about building a foundation for lifelong oral health. Dental fear and anxiety in children is a multifaceted issue that requires a comprehensive and compassionate approach. By understanding the roots of their fears and anxieties, and implementing compassionate, child-friendly approaches, we can transform the dental experience from a source of fear into a positive and empowering journey. Investing in strategies to alleviate these fears ensures that children grow up with healthy smiles and a positive attitude toward dental care, setting the stage for a future where dental visits are seen not as burdens but as essential, routine parts of life. Through empathy, education, and proactive care, we can turn dental dread into dental delight, paving the way for a generation of confident, cavity-free kids.

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## CONFLICTS OF INTEREST

There are no conflicts of interest

**REFERENCES**

1. Sun IG, Hung CC, Lo EC, Duangthip D. Global prevalence of early childhood dental fear and anxiety: A systematic review and meta-analysis. *Journal of Dentistry*. 2024 Jan 20:104841.
2. Kapil D, Saraf BG, Sheoran N, Kalra G, Elizabeth S. Contemporary behavior guidance techniques to outsmart child's anxious mind. *Journal of South Asian Association of Pediatric Dentistry*. 2021 Jan;4(1):42.
3. Cameron AC, Widmer RP, editors. *Handbook of Pediatric Dentistry E-Book: Handbook of Pediatric Dentistry E-Book*. Elsevier Health Sciences; 2021 Sep 1.
4. Custódio NB, Costa FD, Cademartori MG, da Costa VP, Goettems ML. Effectiveness of virtual reality glasses as a distraction for children during dental care. *Pediatric dentistry*. 2020 Mar 15;42(2):93-102.
5. Aminabadi NA, Golsanamlou O, Halimi Z, Jamali Z. Assessing the different levels of virtual reality that influence anxiety, behavior, and oral health status in preschool children: Randomized controlled clinical trial. *JMIR Perioperative Medicine*. 2022 Apr 18;5(1):e35415.
6. Grisolia BM, Dos Santos AP, Dhyppolito IM, Buchanan H, Hill K, Oliveira BH. Prevalence of dental anxiety in children and adolescents globally: A systematic review with meta-analyses. *International Journal of Paediatric Dentistry*. 2021 Mar;31(2):168-83.
7. Eli I. *Oral psychophysiology: stress, pain, and behavior in dental care*. CRC press; 2020 Apr 28.
8. Como DH, Stein Duker LI, Polido JC, Cermak SA. Oral health and Autism Spectrum Disorders: A unique collaboration between dentistry and occupational therapy. *International journal of environmental research and public health*. 2021 Jan;18(1):135.
9. Arslan I, Aydinoglu S, Karan NB. Can lavender oil inhalation help to overcome dental anxiety and pain in children? A randomized clinical trial. *European journal of pediatrics*. 2020 Jun;179:985-92.
10. Murad MH, Ingle NA, Assery MK. Evaluating factors associated with fear and anxiety to dental treatment—A systematic review. *Journal of family medicine and primary care*. 2020 Sep 1;9(9):4530-5.
11. Ko YC, Chou AH, Wu CF, Chen J, Chen CY. Using guided imagery to relieve the anxiety of preschool children undergoing dental procedures. *Journal of PeriAnesthesia Nursing*. 2021 Feb 1;36(1):18-23.
12. Hutajulu JM, Agustiani H, Setiawan AS. Special Characteristics of Alpha Generation Children Behavior in Dentistry: A Literature Review. *European Journal of Dentistry*. 2024 Jan 10.
13. Shehani F, Samuel V, Kavitha R, Mani R. Effectiveness of brainwave entrainment on pre-operative fear and anxiety in pediatric dental patients: a randomized controlled trial. *European Archives of Paediatric Dentistry*. 2024 Aug;25(4):577-87.
14. Girón CB, Ramírez-Carrasco A, Cappello OS, Pozos-Guillén A, Pierdant-Pérez M. The efficacy of hypnosis compared with the tell/show/do technique for the reduction of anxiety/pain in children undergoing pulpotomies: a randomized controlled trial. *Journal of Clinical Pediatric Dentistry*. 2024 Jan 1;48(1).
15. Joybell CC. Toys+ Dentistry= Winning Smiles-Combining The Magic Of Play With The Importance Of Oral Health For A Lifetime Of Happy Grins. *Journal for ReAttach Therapy and Developmental Diversities*. 2024 Feb 16;7(2):90-103.
16. Shams SA, Reddy A, Vaghela LL, Jain M, Naik H, Krishnan P. Comparison of Effectiveness of Audio and VR Distraction Techniques in Managing Pediatric Dental Patients. *Journal of Pharmacy and Bioallied Sciences*. 2024 Feb 1;16(Suppl 1):S504-6.
17. Adeghe EP, Okolo CA, Ojeyinka OT. Navigating early childhood caries management in children with autism and developmental disorders: A US perspective. *International Journal of Biological and Pharmaceutical Sciences Archive*. 2024;7(01):129-40.
18. Gizani S, Seremidi K, Katsouli K, Markouli A, Kloukos D. Basic behavioral management techniques

in pediatric dentistry: A systematic review and meta-analysis. *Journal of dentistry*. 2022 Nov 1;126:104303.

19. Hamdy MN, Mohamed Esmail AE, Abbas AN. Assessment of VibraJect and DentalVibe Comfort Systems Efficacy in Relieving of Pain Associated with Local Injection in Children. *Al-Azhar Journal of Dental Science*. 2022 Apr 1;25(2):203-10.
20. Denman WT, Tuason PM, Ahmed MI, Brennen LM, Soledad Cepeda M, Carr DB. The PediSedate® device, a novel approach to pediatric sedation that provides distraction and inhaled nitrous oxide: clinical evaluation in a large case series. *Pediatric Anesthesia*. 2007 Feb;17(2):162-6.
21. Cermak SA, Stein Duker LI, Williams ME, Dawson ME, Lane CJ, Polido JC. Sensory adapted dental environments to enhance oral care for children with autism spectrum disorders: a randomized controlled pilot study. *Journal of autism and developmental disorders*. 2015 Sep;45:2876-88.
22. Janthasila N, Keeratisiroj O. Music therapy and aromatherapy on dental anxiety and fear: A randomized controlled trial. *Journal of Dental Sciences*. 2023 Jan 1;18(1):203-10.



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