Review Article

Academia Journal of Medicine
Year 2025, Volume-8, Issue- 2 (Jul-Dec)

Distraction in Pediatric Dentistry: A Scoping Review

[1]Dr. H. L Gupta, [2]Dr. Sumit Bhatt, [3]Dr. Kanak Joshi, [4]Vudem Shruthi Reddy, [5]Dr. Syed Fazil Hasan

[1]HOD & Professor, Principal, Department of Periodontology and Oral Implantology, Rajasthan Dental College and, Hospital, Nirwan University, Jaipur, Rajasthan.
[2]PhD Scholar, Assistant Professor, Department of Oral and Maxillofacial Surgery, Rajasthan Dental College & Hospital, Nirwan University, Jaipur, Rajasthan.
[3]B.D.S, Govt. Dental Officer, CHC Bhimtal, Nainital, Uttarakhand.
[4]MSc. Health Data Science, Saint Louis University, California, USA
[5]Postgraduate Student, Department of Pediatric and Preventive Dentistry, School of Dental Sciences, Manav Rachna International Institute of Research Studies, Faridabad, Haryana - 121002

ARTICLE INFO

Keywords:
Distraction techniques, Pediatric dentistry, Anxiety management.

doi:10.48165/ajm.2025.8.02.10

ABSTRACT

Distraction techniques play a vital role in managing anxiety and fear among pediatric dental patients. This scoping review aims to explore the various distraction methods used in pediatric dentistry, emphasizing their effectiveness and incorporation into clinical practice. The review encompasses a range of distraction strategies, including visual, auditory, and interactive approaches, to assess their impact on children's emotional responses and cooperation during dental treatments. By synthesizing existing literature, the findings highlight the benefits of distraction in alleviating anxiety, improving patient experience, and enhancing treatment outcomes. The review also identifies gaps in current research and suggests directions for future studies to optimize the application of distraction techniques in pediatric dental settings.

Introduction

The emotional and behavioral responses of young children to dental treatment are significant concerns for pediatric dentists and researchers. Fearful or uncooperative behavior can obstruct the efficient delivery of dental care and compromise the quality of treatment. If not adequately addressed, these negative responses may develop into a persistent aversion, creating barriers to routine dental care.1,2 Various fear management techniques have been documented in the literature. The American Academy of Pediatric Dentistry (AAPD) classifies these strategies into basic and advanced behavior guidance methods. Basic techniques include communication with age-appropriate language, the Tell-Show-Do approach, voice control for reassurance, nonverbal communication through supportive gestures, positive reinforcement for good behavior, distraction to divert attention, and parental presence or absence tailored to comfort the child. Advanced techniques may involve protective stabilization, sedation, and general anesthesia for more complex cases. Clinical and research findings indicate varying levels of effectiveness for these methods, highlighting the importance of personalizing strategies to foster positive dental experiences and establish a foundation for lifelong oral health.3,4

Clinical and research reports indicate varying levels of support for the effectiveness of each fear management method. However, certain techniques also present notable disadvantages. For instance, physical restraint and pharmacological interventions can pose potential physical risks to the child. Additionally, modeling and reinforcement strategies can be time-consuming, requiring consistent effort and attention. In contrast, distraction methods are often safe, effective, and economical for clinicians to

Corresponding author: Dr. H. L Gupta

Email id: hlgupta7@yahoo.co.in

implement. Distraction techniques can include engaging a child with toys, games, music, or visual stimuli, helping to shift their focus away from the dental procedure.2,5,6 By captivating their attention, these methods reduce anxiety and fear, making the dental experience more pleasant for young patients. Utilizing distraction allows practitioners to create a calmer environment, ultimately facilitating better cooperation during treatment

Distraction: In 1984, McCaul and Mallet introduced a theory focused on distraction, highlighting that humans have a limited capacity for attention. They noted that in order to truly perceive pain, an individual must focus on the painful stimulus; thus, when a person's attention is diverted from it, their perception of pain diminishes.7 Later, in 2016, the American Academy of Pediatric Dentistry (AAPD) characterized distraction as a non-invasive behavior management technique. This technique involves redirecting a patient's attention away from potentially unpleasant experiences to engage them with different sensations or activities.[8]

Objectives: The primary goals of distraction techniques are to:[9]

1. Reduce the Perception of Unpleasantness: Distraction aims to lessen the individual's awareness of discomfort or pain by diverting their focus to more engaging or enjoyable stimuli. By shifting attention away from the source of unpleasantness, individuals are likely to experience a diminished perception of the negative sensations they might be encountering.

2. Prevent Negative or Avoidance Behaviour: Another objective of distraction is to prevent individuals from exhibiting negative reactions or avoidance behaviors that can arise in response to discomfort. By occupying their minds with alternative stimuli or activities, distraction can help individuals remain calm and cooperative, reducing anxiety and fear that may be linked to the original source of discomfort. Overall, these objectives contribute to a more positive experience during potentially distressing situations.

Classification of Distraction: Distraction techniques in pediatric dentistry can be classified into two main categories: active and passive distraction. Each type serves to redirect a child's focus away from dental procedures, thereby reducing anxiety and fear.[2,9]

Active Distraction: Active distraction involves engaging the child in activities that require participation and mental involvement. This type of distraction draws the child's attention towards something enjoyable or entertaining, helping to shift their focus away from the dental procedure. Examples of active distraction methods include:

1. Interactive Games: Using handheld devices or tablet games that require the child's active participation can effectively divert their attention during treatment.

2. Storytelling or Role-Playing: Engaging children with stories or imaginative play where they can be a character helps create a fun atmosphere.

3. Physical Activities: Simple movements, like playing with stress balls or using fidget toys, can keep children occupied and distract them from what is happening.

Passive Distraction: Passive distraction, on the other hand, involves methods that do not require active engagement from the child. Instead, these techniques provide a calming presence or entertaining stimuli that the child can enjoy without much effort. Examples include:

1. Visual Distractions: Using colorful murals, videos, or animations on screens can keep a child visually engaged, allowing them to watch instead of focusing on the dental procedure.

2. Music or Audio Stories: Playing soothing music or engaging audio stories can create a relaxing atmosphere and divert the child's attention from the dental work being performed.

3. Environmental Enhancements: Creating a kid-friendly environment with comforting settings—like themed decor, bright colors, or cozy seating—can help soothe anxious feelings passively.

Both active and passive distraction techniques can significantly improve the dental experience for children by minimizing fear and encouraging cooperation during treatment. By utilizing a combination of these strategies, dental practitioners can foster a more comfortable and positive environment for their young patients.

Discussion

Various distraction methods have been utilized in pediatrics over the years. In this discussion, we will explore different distraction techniques that can be applied effectively.

Audiovisual Distraction: The audio-visual distraction technique involves using engaging visual and auditory stimuli, such as videos or music, to divert a patient's attention away from discomfort or anxiety during medical procedures. This method has been explored in various studies, including those conducted by Jafarimofrad et al. (2022),10 Navit et al. (2015)11, Kaur et al. (2015)12, Guinot et al. (2021)13, Halabi et al. (2018)14, Khandelwal et al. (2018)2, Chaturvedi et al. (2016)15. Each of these studies contributes valuable insights into the effectiveness of this technique in pediatric care. Recent

studies have highlighted the effectiveness of audiovisual distraction in managing anxiety and pain in children during dental procedures. Jafarimofrad et al. (2022)10 examined 60 children aged 4-7 years and found that audiovisual distraction (AVD) significantly reduced anxiety and pain compared to muted video distraction (MVD) ($P < 0.05$). Similarly, Shetty et al. (2019) involved 120 children aged 5-8 years and demonstrated that AVD methods led to significant decreases in anxiety and pain, with p-values of 0.002 and <0.001, respectively, affirming its value as a behavioral adaptation technique during invasive treatments.16 Guinot et al. (2021) conducted a randomized controlled trial with 84 participants aged 6-8 years, revealing significant differences in pain levels between active audiovisual distraction (PlayStation video games) and passive methods (cartoon films), with p-values of 0.013 and 0.016, respectively.13

Overall, the supremacy of audiovisual distraction lies in its ability to engage multiple senses, making it a highly effective tool for alleviating children's anxiety and discomfort during dental procedures.

Music Distraction: Music distraction is an effective technique used to alleviate anxiety and discomfort in patients during dental procedures by engaging their attention through soothing sounds. This approach has been studied by James J et al. (2021)[17], Marwah N et al. (2005)[18], and Gupta N et al. (2017)[19], all of which reported positive effects of music distraction. The beneficial impact of this method is attributed to its ability to divert attention, promote relaxation, and enhance the overall experience for patients, making it particularly useful for reducing stress and pain in children.

Virtual Reality Distraction: Virtual reality (VR) has emerged as an innovative tool in medicine and dentistry, significantly enhancing anxiety and pain management in children. By creating an artificial environment that replicates the real world, VR allows users to immerse themselves in an alternative reality. This virtual experience offers multi-sensory information through the use of a head-mounted display helmet—providing images with a sense of space and depth—along with motion sensors, headphones, and joysticks, resulting in a fully immersive simulation. Studies conducted by Nuvvula et al.[20], Niharika et al.[21], and Greeshma et al. have shown that VR distraction effectively reduces pediatric anxiety, yielding promising results.[22]

VR glasses, by obstructing real-world vision, can create a sense of isolation that may heighten anxiety, especially when faced with unpleasant stimuli. In the context of managing dental anxiety, VR effectively employs several mechanisms. One key mechanism is cognitive distraction; it shifts patients' focus away from the dental procedures, helping to diminish negative thoughts and fears and ultimately reducing anxiety. Additionally, VR fosters a calming environment, enhancing relaxation during dental visits.

Magic Distraction: Magic, as an art of illusion, captivates audiences by defying cognitive expectations, and its effects can be highly beneficial in distraction therapy. It leverages children's belief in magic along with their developing executive attention as they grow older. The cognitive conflict created by magic tricks fosters curiosity and demands intense focus, redirecting attention away from dental treatments and significantly reducing dental fear and anxiety. Furthermore, magic encourages social interaction, strengthening the bond between children and dentists, promoting a collaborative treatment environment, and ultimately enhancing treatment compliance and success rates. Chandana Krishna Shree CH et al. (2022) conducted a study involving 60 strong-willed children aged 4–13 years undergoing endodontic and surgical procedures requiring local anesthesia. The children were assessed using three distraction aids: audio, audio-video, and magic. Anxiety levels were measured before and after the procedures with the Chotta Bheem and Chutki anxiety scale. All three strategies effectively reduced anxiety, with the magic group showing the greatest alleviation. The findings suggest that magic can be a powerful tool in dentistry to help diminish anxiety, especially for children hesitant to approach the dental chair, and could mark a new era in patient care if applied effectively.

Mobile Dental App: The mobile dental app provides an interactive experience where children can virtually perform various dental treatments. The study concluded that familiarizing children with different dental instruments can help reduce fear and promote more cooperative behavior. Rahaman SKM and colleagues conducted a study to assess the effectiveness of a dental treatment simulation app called Baby Panda: Dental Care in managing dental anxiety during restorative procedures. The findings suggest that this app can significantly reduce both preoperative and postoperative anxiety in young patients, potentially improving their overall experience at the dentist.[24]

Video Game Distraction: Video game distraction is rooted in cognitive behavioral therapy principles and neural feedback mechanisms for managing anxiety disorders. This widely accessible medium engages children actively during dental procedures, making the experience more enjoyable. The study found that video games could enhance a child's cooperation compared to traditional distraction methods.

Eye Movement Distraction: The concept of eye movement distraction stems from Shapiro's EMDR therapy, which posits that alternating bilateral stimulation or eye movements can help reduce fear and anxiety. Eye Movement Desensitization and Reprocessing (EMDR) is an integrative therapy that

"unlocks" and reprocesses distressing memories or beliefs, making them less debilitating. It is effective for various psychological issues, particularly traumatic imagery related to post-traumatic stress disorder. Developed by Francine Shapiro, EMDR emerged when she observed that rapid involuntary eye movements seemed to lessen the intensity of troubling thoughts. She later found that by intentionally controlling her eye movements, she could further reduce this distress. Tirupathi S and colleagues found that eye movement distraction is an effective technique for reducing anxiety related to intraoral needle-prick pain in needle-phobic children aged 8 to 13 years.[25]

Visual Distraction and Taste Distraction: It involves creating an image that helps the mind shift focus away from pain and anxiety, ultimately reducing these feelings. Similarly, taste distraction introduces a new flavor that captures attention, helping to lessen pain and anxiety. For instance, in a study by Tyagi P et al., taste distraction was implemented using a lollipop. The lollipop was attached to the lingual side of an X-ray film and given to a child to lick. All children, regardless of age, used the same size lollipop. Once the child became familiar with the lollipop's taste, the investigator removed it and proceeded to take an intraoral periapical radiograph.[26]

WITAUL: The WITAUL (writing in the air using leg) technique is a unique distraction method developed by the author and commonly used in clinical practice. This technique involves lifting the right leg and pretending to write in the air. Although the content of what is "written" is not important, the author often instructs the child to write their name, making the experience feel more personalized. The technique has proven successful in distracting children during multiple instances. Kamath PS evaluated the efficacy of the WITAUL method on pain behavior observed in children receiving local anesthesia injections prior to dental treatment. Overall, the WITAUL technique appears to be a simple and effective approach for distraction during local anesthesia administration in pediatric patients.[27]

Advantages and Limitation of Distraction: Distraction can be an effective strategy in behavior management, particularly in educational or therapeutic settings. Here are some advantages and limitations of using distraction in this context:

Advantages of Distraction

Redirection of Attention: Distraction can redirect an individual's focus away from negative behaviors or stressful situations, helping to diffuse tension and prevent escalation.
Emotional Regulation: For individuals, especially children, who struggle with emotional regulation, distraction can provide a temporary break from overwhelming feelings, giving them space to calm down.
Skill Development: Engaging in distracting activities can encourage the development of new skills or hobbies, promoting positive behaviors in the long run.
Increased Engagement: Distraction can lead to increased engagement in educational or therapeutic activities, making learning or coping more enjoyable and effective.
Positive Reinforcement: Using distraction as a tool can be framed positively; if a child engages in a constructive distraction, they may receive praise, reinforcing good behavior.

Limitations of Distraction

Temporary Solution: Distraction is often a short-term fix that may not address the underlying issues causing the undesirable behavior. It might require additional strategies for long-term change.
Inconsistency: Not all individuals respond well to distraction. What diverts one person may not work for another, leading to potential frustration if techniques are inconsistent.
Avoidance of Issues: Continuous reliance on distraction can lead to avoidance rather than confrontation of the actual behavior or emotional challenge, hindering personal growth.
Potential Misuse: If distraction techniques are overused, individuals may begin to rely on them excessively, neglecting necessary coping strategies or problem-solving skills.
Distraction Overload: In an attempt to keep an individual distracted, one may introduce too many stimuli, leading to confusion or overwhelm instead of calm.

Conclusion

In pediatric dentistry, distraction techniques play a crucial role in managing children's anxiety and enhancing their treatment experience. By utilizing engaging and interactive methods, such as visual aids, storytelling, or virtual reality, dentists can help children feel more at ease during procedures. This not only contributes to a smoother dental visit but also fosters a positive relationship with oral health.
However, it is essential to remember that while distraction can be an effective tool, it should not replace proper communication and behavioral management strategies. Understanding a child's individual needs and responses is critical for implementing the most effective techniques. Ultimately, combining distraction with empathetic care can

create a more comfortable environment for young patients, promoting both immediate compliance and long-term positive attitudes towards dental care.

References

Dahlan M, Alsaywed R, Alamoudi R, Batarfi AA, Basodan OY, Gazzaz Y, Alqarni YA, Alamoudi A. Assessment of Different Distraction Behavioral Methods in Pediatric Dental Clinic: A Systematic Review. Cureus. 2023 Jul 24;15(7):e42366.

Khandelwal M, Shetty RM, Rath S. Effectiveness of Distraction Techniques in Managing Pediatric Dental Patients. Int J Clin Pediatr Dent. 2019 Jan-Feb;12(1):18-24.

American Academy of Pediatric Dentistry (AAPD). Clinical Affairs Committee-Behavior Management Subcommittee, American Academy of Pediatric Dentistry. Guideline on Behavior Guidance for the Pediatric Dental Patient. Pediatr Dent 2015;37(5):57–70.

Shetty RM, Khandelwal M, et al. RMS Pictorial Scale (RMS-PS) – An innovative scale for the assessment of child's dental anxiety. J Indian Soc Pedod Prevent Dent 2015;33(1):48–52.

Venham LL, Goldstein M, et al. Effectivenes of a distraction technique in managing young dental patients. Pediatr Dent 1981;3(1):7–11.

Yamini V, Bailwad SA, et al. Effectiveness of music distraction in the management of anxious pediatric dental patients. Ann Essences Dent 2010;2(2):1–5.

McCaul KD, Mallot JM. Distraction and coping with pain. Psychol Bull 1984;95:516–33.

Wright GZ, Stigers JI. Nonpharmacologic management of children's behaviors. In: Dean JA, Avery DR, Mc- Donald RE, eds. McDonald and Avery's Dentistry for the Child and Adolescent. 9th ed. Maryland Heights, Mo.: Mosby-Elsevier, 2011:27-40.

Fatma N, Navit S, Khan SA, Upadhyay M. Contemporary Distraction Tools Used in Pediatric Dentistry: An Overview. University Journal of Dental Sciences. 2021;7(3): 154-162.

Jafarimofrad S, Sarlak H, Nourmohammadi S: Is audio a mandatory component of multimedia distraction for reduction of pain and anxiety of pediatric dental patients? A split-mouth crossover randomized controlled clinical trial. Dent Res J (Isfahan). 2022, 19:10.

Navit S, Johri N, Khan SA, et al.: Effectiveness and comparison of various audio distraction AIDS in management of anxious dental paediatric patients. J Clin Diagn Res. 2015, 9:ZC05-9.

Kaur R, Jindal R, Dua R, Mahajan S, Sethi K, Garg S: Comparative evaluation of the effectiveness of audio and audiovisual distraction aids in the management of anxious pediatric dental patients. J Indian Soc Pedod Prev Dent. 2015, 33:192-203.

Guinot F, Mercadé M, Oprysnyk L, Veloso A, Boj JR: Comparison of active versus passive audiovisual distraction tools on children's behaviour, anxiety and pain in paediatric dentistry: a randomised crossover clinical trial. Eur J Paediatr Dent. 2021, 22:230-6

Al-Halabi MN, Bshara N, AlNerabieah Z: Effectiveness of audio visual distraction using virtual reality eyeglasses versus tablet device in child behavioral management during inferior alveolar nerve block. Anaesth Pain Intensive Care. 2018, 55-61.

Chaturvedi S, Walimbe H, Karekar P, et al.: Comparative evaluation of anxiety level during the conventional dental procedures with and without audiovisual distraction eyeglasses in pediatric dental patients. J Int Oral Health. 2016, 1:1016.

Shetty V, Suresh LR, Hegde AM: Effect of virtual reality distraction on pain and anxiety during dental treatment in 5 to 8 year old children. J Clin Pediatr Dent. 2019, 43:97-102

James J, Retnakumari N, Vadakkepurayil K, et al. Effectiveness of Aromatherapy and Music Distraction in Managing Pediatric Dental Anxiety: A Comparative Study. Int J Clin Pediatr Dent 2021;14(2):249–253.

Marwah N, Prabhakar AR, Raju OS. Music distraction--its efficacy in management of anxious pediatric dental patients. J Indian Soc Pedod Prev Dent. 2005 Oct-Dec;23(4):168-70.

Gupta N, Gupta H, Gupta P, et al.: Evaluation of the role of music as a nonpharmacological technique in management of child patients. J Contemp Dent Pract. 2017, 18:194-7.

Nuvvula S, Alahari S, Kamatham R, Challa RR. Effect of audiovisual distraction with 3D video glasses on dental anxiety of children experiencing administration of local analgesia: a randomized clinical trial. Eur Arch Paediatr Dent. 2015;16(1):43–50

Niharika P, Venugopal Reddy N, Srujana P, Srikanth K, Daneswari V, Sai GK. Effects of distraction using virtual reality technology on pain perception and anxiety levels in children during pulp therapy of primary molars. J Indian Soc Pedod Prev Dent. 2018;36(4):364–369.

Gs G, George S, Anandaraj S, et al.: Comparative evaluation of the efficacy of virtual reality distraction, audio distraction and tell-show-do techniques in reducing the anxiety level of pediatric dental patients: an in vivo study. Int J Clin Pediatr Dent. 2021, 14:S173-8.

CH CKS, Nagar P, HR P, et al. Magic: A Modern Alleviating

Constituent of Anxiety Levels in Children. J South Asian Assoc Pediatr Dent 2022;5(3):121-126.

Rahaman SKM, Maiti N, Harish S, Achanur M, Pramanik MS, Ahmed A. Impact of Dental Treatment Simulation App on Anxiety of Pediatric Dental Patients: An Observational Study. J Pharm Bioallied Sci. 2024 Dec;16(Suppl 4):S3610-S3612.

Tirupathi S, Krishna N, Rajasekhar S, Nuvvula S. Eye Movement Distraction: A New Distraction Technique for Management of Dental Anxiety during Intraoral Local Anesthesia Administration in Children. Int J Clin Pediatr Dent. 2019 Nov-Dec;12(6):507-509.

Tyagi P, Mali S, Rathi SV, et al. Comparative Evaluation of Visual and Taste Distraction Techniques using RMS Pictorial Scale in making of Periapical Radiographs. J South Asian Assoc Pediatr Dent 2022;5(1):32-37.

Kamath PS. A novel distraction technique for pain management during local anesthesia administration in pediatric patients. J Clin Pediatr Dent. 2013 Fall;38(1):45-7.