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A Novel Behavior Management Technique for Children of Lesser God

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Abstract: ***Background: Management of children with cleft lip and palate is comprehensive, integrated, and multidisciplinary, requiring a different outlook to address the exaggerated anxiety response during multiple appointments until final rehabilitation. Therefore, more sophisticated behavior management techniques are the need of the hour. This study evaluated the effect of a novel distraction technique in reducing dental anxiety through play therapy using thumb lights and fidget toys. Aim: To evaluate and compare the effectiveness of thumb light and fidget toy as distraction techniques in reducing dental anxiety, pain perception, and improving behavior among children with CLP. Methods: A total of 24 children with CLP aged (3-6 years) were divided into three groups: Fidget Toy, Thumb Light, and Control. Children with a Facial Anxiety Scale score ranging from mildly to extremely anxious were included in the study and assess anxiety, pain, and behavior, respectively, during oral prophylaxis, restorative procedures and local anesthesia administration. Data were statistically analyzed using ANOVA and post hoc tests. Results: Facial anxiety and pain scores were significantly reduced in play therapy distraction groups compared to control, Cooperative behavior was highest with Fidget Toy, followed by Thumb Light, and lowest in the control group. Conclusion: Play therapy are effective, safe, and child-friendly distraction tools that significantly reduce dental anxiety and pain, and improve behavior in CLP children. Fidget toys demonstrated slightly higher efficacy. These techniques can be incorporated into routine pediatric dental practice for improved cooperation.***

Keywords: cleft lip and palate, anxiety, distraction, thumb light, fidget toy, anxiety scale, play therapy, cooperation, child friendly

1. Introduction

Pediatric Dentistry for cleft lip and palate is a comprehensive integrated, multidisciplinary domains and requires a different outlook for managing the exaggerated anxiety response during multiple appointments till the final rehabilitations, so a more sophisticated behavior management technique is the need of hour. Cleft lip and cleft palate (CLP) are common congenital disorders, occurring in approximately 1.7 per 1,000 live births. These conditions can significantly affect speech, hearing, appearance, and psychological well-being, leading to long-term adverse impacts on a child's overall health and social integration.

Dental anxiety is more pronounced in children with CLP, due to their repeated medical and surgical exposures early in life. These children often associate healthcare environments with discomfort or pain, making behavior management in the dental chair particularly difficult. Effective distraction techniques can therefore play a vital role in improving their treatment experiences and cooperation levels According to Systematic reviews by fathima et al, confirms that cleft lip and/or palate is associated with greater psychological distress, which includes dental anxiety and self-esteem issues affecting both children and their parents. Dentists adopt a variety of techniques to address dental phobia and anxiety. Examples include distraction, modelling, contingency management, behavior shaping, visualization, and positive reinforcement Dental fear and anxiety (dfa) is a common, deterring problem affecting children, which has a significant negative impact on children's oral health, leading to avoidance of dental care, poor dental hygiene, and an increased risk of dental caries and other oral health problems .managing children's dental anxiety is influenced by a wide range of circumstances. The emotional response of a child to dental care is greatly influenced by their developmental stage, temperament, previous dental experiences, and parental behavior studies suggests that the prevalence of dental anxiety among children ranges from 23.9% - 52% and it is more prevalent in preschool (36.5%) and school children (25.8%) than in adolescents (13.3%).

Distraction involves diverting a patient's attention from a procedure they may find uncomfortable. The purpose of distraction is to reduce pain perception and prevent avoidance or negative behavior. According to the theory of gate control, distraction activates bigger nerve fibres (type A and B), which can obstruct the passage of pain signals through the smaller fibres, therefore "closing the gate" to sense pain.

According to the cognitive-affective attention theory, a kid experiences less discomfort when their cognitive resources are diverted to stimulating activities rather than analysing pain or fear. Distraction techniques can be classified as: Active distraction: The child actively participates, such as playing video games, using interactive toys, or engaging in guided imagery. Passive distraction: The child passively observes or listens, such as watching cartoons, listening to music or using virtual reality and augmented reality. Contingent distraction: The child receives distraction as a reward for cooperative behavior

Common modalities include: Audiovisual aids (cartoons, movies, virtual reality), Music therapy, Interactive mobile apps or games, Guided imagery and relaxation exercises, Humor and storytelling. These techniques are safe, simple to use, and adaptable to the child's preferences and developmental stage. Thumb lights and fidget toys are innovative, active distraction tools which use effective, child-friendly active distraction tools in pediatric dentistry to manage anxiety and improve cooperation in young children during dental procedures.

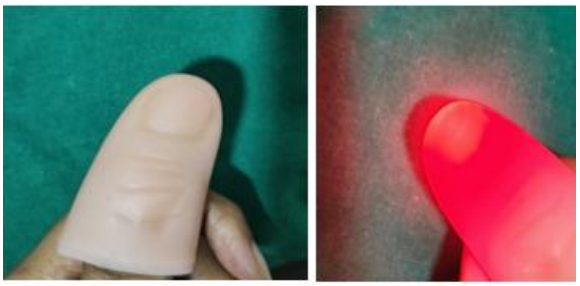


Figure 1: Thumb Light

According to Cognitive behavioral theory- Distraction interrupts negative thoughts and anxiety by redirecting the child's focus to a positive stimulus. This cognitive shift reduces the perception of threat and helps the child cope with anxiety.

Thumb Light technique, mainly works by capturing the child's attention and redirecting it toward the operator's hand movement and the mysterious appearance/disappearance of the light. According to Savitha NS et al (2024) and Konde et al. (2020), reported that magic-based techniques create a sense of wonder, helps reduce fear and resistance during dental treatment

Figure 2: FIDGET TOY

According to Classical conditioning theory- if dental treatment is repeatedly paired with positive distraction like a fun toy, then this makes the dental environment associated with more positive emotions, which reduces conditioned fear responses in these young children.

Fidget toys are one among them which acts by providing a source of sensory input through touch and movement, fidget toys can help channel excess energy and reduce stress

The aim of the present study is to determine the effect of distraction using thumb light and fidget toy in cleft children in the age group of 3 to 6 years based on the perception of patients' anxiety, pain, behaviour, during dental procedures like oral prophylaxis, restoration, and Local Anaesthesia administration.

Objective

1) To assess dental anxiety in cleft lip and palate children aged 3-6 years.
2) To assess the efficacy of the play therapy in the reduction of anxiety.
3) To compare the efficacy of distraction technique on dental anxiety with control group.

2. Methods and Materials

The study was conducted over a three-week period at the Cleft Center. Cleft children aged 3 to 6 years They were also asked to select the cartoon that best represented how they were feeling at that time. Children with a Facial Anxiety Scale score ranging from mildly anxious to extremely anxious (FIG-3) were included in the study. Children with physical or mental disabilities, as well as those requiring emergency treatment, were excluded. Samples were collected according to the inclusion criteria from the Cleft Center.

Figure 3: Cartoon Scale

The selected children were divided into 3 groups- The Fidget toy group, thumb light group and the control group.

GROUP A. would be Fidget toy group where the toy is displayed in front of the child patient.

GROUP B would be Thumb light group - The thumb light device is worn on the thumb of the operator which could be activated accordingly

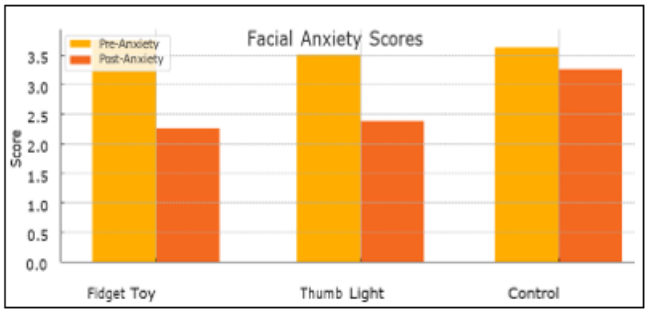
Group C: Control group without any distraction.

Dental procedures such as oral prophylaxis, restoration, and local anaesthesia were carried out, and the patients' perceptions of anxiety, pain, and behaviour were evaluated. All the readings were recorded and entered into an Excel spreadsheet. The data were collected and statistically analyzed.

3. Results

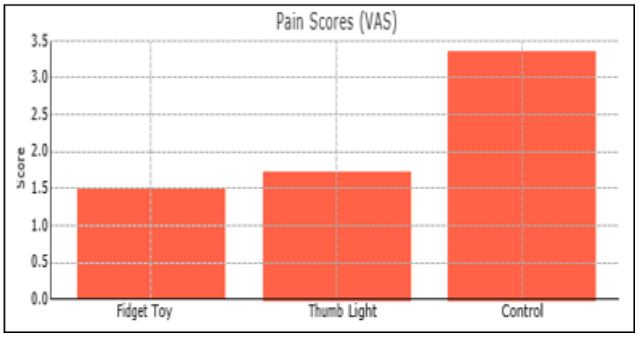
The study evaluated the effectiveness of two distraction techniques- Thumb Light and Fidget Toy-in reducing dental anxiety, pain perception, and improving cooperative behavior in children aged 3 to 6 years with cleft lip and palate. A total of 24 children were divided equally into three groups: Fidget Toy (Group A), Thumb Light (Group B), and Control (Group C).

Facial Anxiety Scale Scores



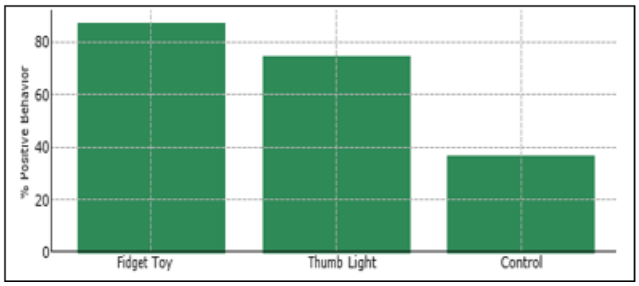
All groups showed a reduction in facial anxiety scores post-intervention. However, the reduction was statistically significant in Group A (mean score reduced from 3.75 to 2.25, P = 0.005) and Group B (3.5 to 2.375, P = 0.007). The control group showed a mild, non-significant reduction (3.625 to 3.25, P = 0.224). ANOVA revealed a significant difference between the groups (P = 0.003), indicating a strong effect of the distraction methods.

Pain Perception (VAS Scores)



Pain perception was lowest in the Fidget Toy group (mean 1.5), followed by the Thumb Light group (1.75). The control group showed a higher mean score (3.375). This difference was statistically significant (P = 0.001). Post hoc tests confirmed significant reductions in pain for both experimental groups compared to control, but no significant difference between Thumb Light and Fidget Toy (P = 0.619).

Behavior Ratings



Positive behavior, as measured by the Frankl scale, was highest in Group A (87.5%), followed by Group B (75%). Group C had the lowest cooperative behavior (37.5%). The differences were statistically significant (P = 0.004), with distraction techniques improving child cooperation during dental treatment.

4. Discussion

Dental anxiety is a common behavioral challenge in pediatric dentistry, and it can be even more pronounced in children with cleft lip and palate (CLP), due to their repeated medical and surgical exposures early in life. These children often associate healthcare environments with discomfort or pain, making behavior management in the dental chair particularly difficult. Effective distraction techniques can therefore play a vital role in improving their treatment experiences and cooperation levels.

This study investigated two novel distraction techniques-Thumb Light and Fidget Toy-and compared their impact against a control group receiving no distraction. The results clearly demonstrate that both techniques significantly reduced dental anxiety and pain, and improved behavioral responses during common dental procedures like oral prophylaxis, restorations, and local anesthesia administration.

Effectiveness of Distraction Techniques

Fidget Toys, showed the greatest reduction in anxiety, as measured by the Facial Anxiety Scale, by provided tactile and visual stimulation. These toys help regulate anxiety by offering children an outlet for nervous energy and sensory engagement. In children with cleft anomalies, who may also experience mild sensory integration difficulties due to early surgeries and feeding issues, such tools may offer an additional calming effect. While not as dramatic as the Thumb Light, the fidget toy still produced a statistically significant reduction in anxiety and pain scores compared to the control group. This aligns with the work of Shekhar et al. (2022) and Aditya et al. (2021), who emphasized the value of passive distraction in children prone to procedure-related distress.

Thumb Light technique, based on thaumaturgy or magic trick principles, works by capturing the child's attention and redirecting it toward the operator's hand movement and the mysterious appearance/disappearance of the light. The curiosity and engagement triggered by the trick help reduce focus on the clinical procedure, leading to a perceptible drop in anxiety. The finding is consistent with Konde et al. (2020), who reported that magic-based techniques facilitate rapport-

building and create a sense of wonder, helping reduce fear and resistance during dental treatment. White coat fear in children can be managed effectively using classical conditioning strategies that replace negative associations with positive ones. Counterconditioning helps by pairing the white coat with enjoyable experiences such as games, cartoons, or rewards, so the child begins to see it as friendly rather than threatening. Gradual exposure and desensitization also play a role, where dentists may first wear casual clothes and then slowly introduce the white coat once the child feels safe in the clinic. Systematic desensitization adds structure by breaking down the fear into smaller steps, combining each with relaxation or distraction until the child can handle the coat without distress. Pre-visit strategies like storybooks or videos showing kind dentists in white coats, along with short, non-treatment visits, further eases the process. Research shows that children respond better to colored or patterned coats and repeated positive encounters strengthen this shift, while consistent praise and small rewards reinforce the child's bravery, which makes dental visits more comfortable and even pleasant over time.

Pain Perception

Pain perception, assessed using the Visual Analog Scale (VAS), was significantly lower in both intervention groups. Fidget Toy again had a slight edge, although the difference with Thumb Light was not statistically significant. This suggests that the perceived intensity of discomfort is strongly influenced by cognitive distraction, where the child's attentional capacity is diverted from nociceptive stimuli to engaging external inputs. This supports previous cognitive-behavioral models which explain pain modulation through attentional control.

Behavioral Response

Behavior ratings, based on the Frankl scale, showed clear improvement in both experimental groups. The Fidget Toy group had the highest proportion of positive behavior (87.5%), indicating better cooperation. This finding is particularly relevant in the context of CLP children, who often require repeated and sometimes lengthy dental interventions. Maintaining positive behavior not only improves the quality of care but also builds long-term trust and compliance. The relatively low cooperation in the control group (37.5%) underlines the necessity of using behavioral guidance techniques in such populations.

Clinical Relevance

From a practical perspective, both distraction tools are inexpensive, portable, non-invasive, and easily adaptable to routine clinical practice. The Thumb Light may be especially suitable for situations that require close operator-patient interaction, such as LA administration or restorative work, whereas Fidget Toys may be more effective during passive procedures like scaling.

The results underscore that even simple interventions can meaningfully improve the treatment experience for anxious pediatric patients, particularly those with cleft conditions who have heightened medical sensitivities.

5. Conclusion

Play therapy are effective, safe, and child-friendly distraction tools that significantly reduce dental anxiety and pain, and improve behavior in CLP children. Fidget toys demonstrated slightly higher efficacy. These techniques can be incorporated into routine pediatric dental practice for improved cooperation.

6. Limitations

Future studies could explore combining distraction with other behavioral strategies or parental presence, and assess effects over multiple visits or different types of dental procedures.

References

[1] Konde S, Sumaiyya S, Agarwal M, et al. "Thaumaturgy"-A Novel Behavior-shaping Technique. Int J Clin Pediatr Dent 2020;13(4):318-321.
[2] Khandelwal M, Shetty RM, et al. Effectiveness of Distraction Techniques in Managing Pediatric Dental Patients. Int J Clin Pediatr Dent 2019;12(1):18-24.
[3] 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. European Journal of Paediatric Dentistry. 2021 Sep 1;22(3):230-6. 10
[4] Aditya PV, Prasad MG, Nagaradhakrishna A, Raju NS, Babu DN. Comparison of effectiveness of three distraction techniques to allay dental anxiety during inferior alveolar nerve block in children: A randomized controlled clinical trial. Heliyon. 2021 Sep 1;7(9):e08092.
[5] Shekhar S, Suprabha BS, Shenoy R, Rao A, Rao A. Effect of active and passive distraction techniques while administering local anaesthesia on the dental anxiety, behaviour and pain levels of children: A randomised controlled trial. European Archives of Paediatric Dentistry. 2022 Jun;23(3):417-27.
[6] Allani S, Setty JV. Effectiveness of distraction techniques in the management of anxious children in the dental operatory. IOSR J Dent Med Sci. 2016;15(10):69-73.
[7] Blomqvist M, Ek U, Fernell E, Holmberg K, Westerlund J, Dahllöf G. Cognitive ability and dental fear and anxiety. European journal of oral sciences. 2013 Apr;121(2):117-20.
[8] Peretz B, Gluck G. Magic trick: A behavioural strategy for the management of strong- willed children. International Journal of Paediatric Dentistry. 2015 Nov;15(6):429-36.
[9] Jain V, Sarkar S, Saha S, Haldar S. Basic behaviour guidance factors and techniques for effective child management in dental clinic-an update review. Int J Oral Health Med Res. 2016;2(6):177-82.
[10] Stark LJ, Allen KD, Hurst M, Nash DA, Rigney B, Stokes TF. Distraction: Its utilization and efficacy with children undergoing dental treatment. Journal of Applied Behavior Analysis. 2019 Sep;22(3):297-307.
[11] Al-Namankany A, Alhubaishi A. Effects of cleft lip and palate on children's psychological health: A systematic

review. J Taibah Univ Med Sci. 2018 Jun 5;13(4):311-318. doi: 10.1016/j.jtumed.2018.04.007. PMID: 31435341; PMCID: PMC6694901.

[12] Shokravi M, Maaboudi M, Amiri A, Mirzadeh M, Jabbarian R. The Effectiveness of Cognitive-Behavioral Intervention on Dental Anxiety during Pulpotomy in 7-10 Year-Old Children: A Clinical Trial. Front Dent. 2023 Aug 26;20:32. doi: 10.18502/fid.v20i32.13588. PMID: 37724248; PMCID: PMC10505444.

[13] Gürcan AT, Tamtekin EA, Aydın B, Esentürk G, Özen B, Marshman Z. Adaptation and Testing of Cognitive Behavioral Therapy Resource of Turkish Version to Reduce Dental Anxiety in Children. J Pediatr Res. 2022 Sep;9(3):242-251. doi:10.4274/jpr.galenos.2022.93584

[14] Lee KT, Chung MJ, Yen YF, Yang YC, Wang WL. Application of magic distraction therapy for the alleviation of dental fear and anxiety in children younger than 12 years: a systematic review and meta-analysis of randomized controlled trials. Journal of Clinical Pediatric Dentistry. 2025 Mar 1;49(2).