Recent Advances in Non-pharmacological Behavior Management Technique in Children

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Abstract

A conventional communication along with a caring attitude develops an affinity with a pediatric patient. Non-pharmacological behavior modification approach allows pediatric dentists the ability to effectively alleviate behavioral issues by balancing their preference of treatment with that of the child's type of mutual practice. Whereas Activity informed adult patients with dental phobias is the product of an offensive approach employed in childhood. Hence to overcome these disadvantages newer non-pharmacological techniques were handled by Pediatric Dentists which provided long term reinforcement in younger children. This review will focus on reckoning the recent advances in non-pharmacological behavior management techniques in children.

Keywords: *Audiovisual distractions, videos games, virtual reality.*

Introduction

Wright (1975) defined behavior management as tohow the dental health team effectively and efficiently performs treatment for a child patient and at the same time instills a positive dental attitude. The strategies of governance include correspondence and schooling. The partnership with the infant, the families of the infant and the dental staff is a complex operation. It will begin before the patient arrives at the operation and may include written material as well as speech, voice sound, facial expression, body language and contact. Successful child patient care depends on the willingness of the dentist to meet immediate dental needs, which emphasize enhancing communication and patterning with children and parents to encourage a positive attitude and good oral health.[1] Child management in the dental office relates to the approach of gaining child care consent in the dental chair based on adequate child/parent interaction through empathy counseling and hearing the idea behind the action of a child is to handle them instead of simply running the tooth alone. No one approach would work in all cases, but the correct intervention techniques will be selected based on the particular requirements of the infant.[2]

The wide used non-pharmacological behavior modification method include Tell-Show-Do, Non-Verbal communication, enhancing control, voice Training, modeling, Distraction, Positive Reinforcement, Hand Over mouth movement and defensive stabilization, while these traditional strategies include successful in directing children,the invasiveness inherent with these method reduces the acceptability that leads to them in turn.[3]

Material and Method

This review article aims to expand on current advances in current advances in non-pharmacological behavioral treatment approaches in adolescents. A search was performed on the Pubmed online database using the following terms: behavior and children, child behavior, behavior management and pediatric dentistry, child behavior and Dental anxiety, behavioral therapy in dentistry, non-pharmacological clinical treatment

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and pediatric dentistry, infant and adolescent dentistry, clinical intervention and babies, augmented reality and dentistry, children's audiovisual entertainment, computer games and education, mobile gaming and virtual reality.[4]

Background: The aims are to create contact, to minimize apprehension and anxiety, to provide quality dental treatment, to develop a trusted relationship between dentist/staff and child/parent, and to foster a positive attitude of the child towards oral health care. (AAPD Reference Manual, 2011). The result of these strategies may preserve good coordination or bring an end to aggressive actions related to dental care. Behavior guidance should never be punished for misbehavior, power assertion, or use of any strategy that hurts, shames, or belittles a patient. Recently, innovations have been paired with therapeutic strategies to strengthen coordination and promote healthy dental behavior in a stress-free manner.[5]

Recent Behavior Management Technique:

A. Audiovisual Distraction: Audio-visual stimulation incorporates the idea of visualization and relaxation provided by audio-visual aids, thereby removing the emphasis on dental operations, preventing anxiety-provoking sensations and offering calming interaction during the procedure. The aims of audiovisual diversion are creativity (helps to divert children from the current situation), commitment (allows children to concentrate on one thing) and inspiration (helps children to seek care for dental disorders in the future).

I. Management of dental anxiety: Amal Al Khotani performed a study to assess the efficacy of watching videotaped cartoons through an eyeglass device as an audiovisual (AV) distraction technique for aggression and distress in children undergoing dental restorative care and found out that AV stimulation tends to be an efficient way to minimize apprehension and distress in children during dental care and also more favorable responses to injection of local anesthesia. Kaur R et al 2015 compared audio and audiovisual diversion to mitigate anxiety in children during their first dental appointment and found audiovisual relaxation decreases anxiety in nervous dental patients.[6]

II. Management of pain: Attar RH 2015 did a study on Comparative effects of active and passive diversion during vital pulp therapy of children using iPad vs audiovisual eyeglass and found out that its Effective on minimizing pain and behavior with an iPad displayed greater results than passive interference utilizing AV glasses. Oliveira NCAC et al 2016 found that audiovisual diversion could minimize pain severity during painful puncture procedures. Nuvvula S et al 2015 used three-dimensional audiovisual stimulation to relieve anxiety during local anesthesia administration.

B. Video game distraction: While a wide variety of behavioral intervention strategies are available to treat extremely distressed infants, it was difficult to redirect the child's attention during pain experience in intrusive procedures. The use of videogame as a coping device is based on the concepts of cognitive-behavioral therapy and neurofeedback strategies for children with anxiety disorders. Videogames are exciting and widely accessible resources that can help to promote diversion in children by active child involvement in dental procedures.

Used in the Following:

(a) Ko JS et al 2016 used Ipads to minimize anxiety in children during their orthopedic appointments. Sil et al 2013 and Wohlheiter KA et al 2013 used videogames to minimize pain tolerance during cold-pressure tests. Videogames may be an important distractor and improve oral health-related outcomes, but comprehensive trials are required in the field of pediatric dentistry.

(b) Aljafari A et al 2017 Used Oral health awareness-based video games to encourage safe eating and good oral hygiene for children at high risk of caries.[7]

C. Virtual reality-based distraction: In 1968, Ivan Sutherland and Bob Sproull invented augmented reality using a head-mounted system attached to a monitor. Earlier in 1998, Heim described virtual reality as an immersive computer-based platform that can be used to immerse children in a simulated world that fully obstructs the actual situation. The VR equipment includes a head-mounted monitor and a tracking device. The head-mounted unit includes a projection screen that shows the virtual reality world in a 3600 view. The tracking device tracks the rotation of the eyes. Equipment includes a keyboard, joystick or computer gloves accessory for playing sports.

Uses of Virtual Reality:

I. **Clinical Procedures**: Researchers used the virtual reality experience for children undergoing surgical operations involving anesthesia and found that there was an increase in the perception of perceived discomfort to drugs, fear and decreased levels of tension in children and parents. In 2020 Custodio NB did a study on the usage of virtual reality glass which is an important method for enhancing actions and the experience of pain during dental care of children. Children who used VR eyeglasses performed differently during caries removal and had a lower sense of pain during reconstruction. In 2011, Hoffman et al found that virtual reality decreased pain sensitivity in children by decreasing pain-related brain activity, however further research on VR as a method to train patients for dental care is needed due to the shortage of studies in this field.[8]

II. **For Distraction:** The augmented reality experience provides the potential to remove the child's mind from the emotions associated with therapy and to provide immersive entertainment in a simulated world. Factors that affect stimulation when utilizing a virtual reality system are the degree of curiosity displayed when the child and the extent of the child's absorption in the virtual environment.[9]

Contra indications for Virtual reality:

(a) Medically impaired children, particularly children with epilepsy, migraine and vestibular disturbances

(b) Children with a prior history of nausea or dizziness following use of VR.

D. Tell-show-do and Mobile dental app: In 2019, Elicheria SR performed a comparative appraisal review on the effectiveness of the mobile app and Tell-Show-Do methodology utilizing heart rate scales and the RMS scale and found that educating a child before a dental operation utilizing a smartphone application would dramatically minimize anticipatory distress and involve children in dental care during their first visit.[10]

Conclusion

Recent technology such as audiovisual aids, video games, smartphone devices and augmented reality can be used as an alternative to traditional method due to its immersive, exciting and creative capacity to handle children with behavioral difficulties and to enable dentists to administer successful care in a stress-free atmosphere.

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References

1. Dean JA, Avery DR, McDonald RE, Editors. Dentistry for the child and adolescent. Nineth edition. New Delhi: Elsevier; 2014.p27-40
2. Non-Pharmacologic approaches in behavior management. In: Wright G Z, Kupietzky A (Eds.) Behavior management in dentistry for children. Second edition. Iowa; England: Wiley Blackwell; 2014.p63-91
3. Managing the patient and parents in dental practice. In: Stephen H Y Wei. Pediatric Dentistry: Total Patient Care. First edition. Philadelphia: Lea & Febiger; 1988. p140-155
4. Nonpharmacologic Behavior Management. In: Marwah N (Ed.) Textbook of pediatric dentistry. Third edition. New Delhi: Jaypee Brothers medical publishers (P) Ltd 2014. p219-241
5. American Academy of Pediatric Dentistry: Clinical Guidelines on behavior management. Pediatr Dent 2015;37(6):180-193.
6. Vishwakarma AP, Bondarde PA, Patil SB, Dodamani AS, Vishwakarma PY, Mujawar SA. Effectiveness of two different behavioral modification techniques among 5–7-year-old children: A randomized controlled trial. J Indian Soc Pedod Prev Dent 2017;35:143-9
7. Patil VH, Vaid K, Gokhale NS, Shah P, Mundada M, Hugar SM. Evaluation of effectiveness of dental apps in the management of child behavior: A pilot study. Int J Pedod Rehabil 2017;2:14-8
8. Custódio NB, Costa FDS, Cademartori MG, da Costa VPP, Goettems ML. Effectiveness of Virtual Reality Glasses as a Distraction for Children During Dental Care. Pediatr Dent. 2020;42(2):93–102.
9. Oliveira NC, Santos JL, Linhares MB. Audiovisual distraction for pain relief in pediatric inpatients: A crossover study. Eur J Pain. 2017;21(1):178–187.
10. Al-Khotani A, Bello LA, Christidis N. Effects of audiovisual distraction on children's behavior during dental treatment: a randomized controlled clinical trial. Acta Odontol. Scand 2016;74(6):494-501.