



The Challenge of Child Management During Dental Care: Use of Nonpharmacological Approaches

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ORAL DISEASES MAY affect a child's capacity for biting, chewing, smiling, and speaking, as well as his or her psychosocial well-being. Providing dental treatment for children can be a challenge, and having knowledge about available approaches to manage child behavior and to decrease anxiety and pain perception is of the outmost importance. In our systematic review published in the March 2017 issue of *Academic Pediatrics*,¹ we identified a variety of nonpharmacological techniques used in pediatric dentistry, most of which had a positive effect on a child's behavior, anxiety level, and pain perception. In this progress report, we describe the most important developments in this field since we published our systematic review.

Child management based on distraction has been widely studied over the last 2 years. Distraction is a cognitive-behavioral approach that seeks to unlink the child from what may be perceived as unpleasant stimuli, instead focusing the child's attention on more pleasurable stimuli. The Academy of Pediatric Dentistry² offers a guideline presenting many behavior guidance techniques used in contemporary pediatric dentistry, including conventional nonpharmacological techniques such as tell-show-do, ask-tell-ask, teach-back, and motivational interviewing. Giving the patient a short break during a stressful procedure is the distraction technique recommended by the guideline. Other recent studies evaluating nonpharmacological behavioral techniques have investigated technologies such as the use of virtual reality glasses or tablets. Because children are so interested in them, these tools have been shown to be particularly useful for young dental patients between the ages of 5 and 9 years.^{3,4}

Two recent studies with high methodological quality have evaluated the use of virtual reality glasses.^{3,4} The study by Al-Khotani et al³ included 56 school children who were 7 to 9 years old. This study evaluated the

effectiveness of virtual reality glasses during restorative dental procedures; the intervention group was compared to a control group that received no distraction technique. Results showed significantly lower scores of anxiety in the intervention group ($P = .029$). Also, anxiety levels decreased during the treatment ($P = .037$), and a difference in heart rate was found, reinforcing the benefits of the use of virtual reality for this age range. Al-Halabi et al⁴ compared 2 intervention groups with a control group without any type of distraction aids. The interventions were the use of virtual reality glasses or the use of audiovisual distraction (a tablet with wireless headphones attached to the dental chair). The authors included 101 children ages 6 to 10 years in their study, and they found that the use of the tablet was superior for the management of anxiety during inferior alveolar nerve block compared with the control group ($P = .037$). There were no significant differences between the control group and the virtual reality glasses group ($P = .671$) or between the virtual reality group and the group using tablets with wireless headphones ($P = .626$). According to the authors, the main advantage of the tablet was that it provided a useful audio and video distraction from the dental instruments, without blocking the vision of the child patient.

It has been suggested that music can have a biological and psychological impact on emotion; consequently, music has been used as an aid to moderate anxiety in clinical settings. A recent study reviewed the current literature on the effectiveness of using music as an intervention to reduce dental anxiety in children,⁵ but the search was not conducted systematically and no quality assessment of the studies found was performed. This study reported that the findings of 3 studies supported the use of music to reduce dental anxiety in children; however, 2 other studies showed that music did not significantly reduce children's dental anxiety. This review suggests that evidence for the

effectiveness of music to reduce anxiety remains inconclusive, and the evidence available was limited with regard to the participants' selection and allocation.

Direct observation and positive pre-visit imagery are common management techniques used in dental offices caring for children. A controlled clinical trial tested the impact on anxiety and behavior of exposure to neutral images (control group) and to positive images (intervention group) of dental treatment prior to the dental appointments of 60 children ages 4 to 6 years.⁶ Anxiety was assessed before and after the dental procedures, and behavior was assessed at various times during the visit. When comparing child behavior and anxiety between groups, no statistically significant difference was found; however, results showed an improvement in behavior in both groups, probably connected to the fact that the children's attention had been drawn away from the dental situation by exposure to the images.

There is also increasing interest in the application of hypnosis techniques, an area that has been previously overlooked. A study of 200 children ages 6 to 16 years investigated whether hypnosis could alter a patient's physical and/or verbal resistance and oxygen saturation or heart rate during the administration of local anesthesia.⁷ Children under hypnosis exhibited significantly less resistance to the administration of local anesthesia and a lower pulse rate, attributable to the hypnotic condition. Similarly, a controlled randomized clinical trial conducted with 40 children ages 5 to 9 years found that hypnosis combined with conventional behavior management techniques decreased heart rate during anesthetic infiltration, indicating that hypnotic therapy may alleviate anxiety and improve pain control.⁸

This progress report suggests that there is growing interest in determining the benefits of using nonpharmacological techniques during dental treatment. Studies published recently emphasize the potential benefits of various types of nonpharmacological techniques for children of all ages. The effectiveness of distraction techniques, such as virtual reality glasses, seems to be more established compared to the use of such techniques as music or

hypnosis. Evaluating the effectiveness of the various non-pharmacological techniques available is important so the proper approaches can be recommended to dentists and other health professionals treating children. This is especially important considering that nonpharmacological strategies could eliminate the use of more advanced behavior guidance techniques such as sedation and general anesthesia. Also, positive experiences during treatment may lead to far better behavior at subsequent dental visits. Despite the focus on the use of technologies to aid in distraction, it is important to note that children must be taught how to handle strong emotions and to calm down, including in dental situations, thus reinforcing the importance of professional communication skills to manage child behavior.

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