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Reprints available from E Wolf, Dept of Endodontics, Faculty of Odontology, Malmö Univ, Malmö, Sweden; e-mail: eva.wolf@mau.se

PEDIATRIC DENTISTRY

Audiovisual distraction to manage anxiety



BACKGROUND

Children often experience dental anxiety, which can be defined as a cognitive emotional response to an experience or stimulus related to the dental environment. Three main factors contribute: a difficult experience in the dental office, vicariously experiencing a difficult experience a role model has had in a dental setting, and psychodynamic and personality traits of the child. As a result of their anxiety, children avoid dental visits whenever possible and exhibit poor behavior control during visits, which has a negative effect on their oral health. This negative effect can result in more problems, which can then exacerbate the child's dental anxiety when they are addressed. The dentist plays a key role in diminishing or eliminating dental anxiety in pediatric patients and in promoting good oral hygiene habits. One of the nonpharmacological means for managing dental anxiety is audiovisual distraction. Its efficacy in managing children's dental anxiety was evaluated.

METHODS

The PubMed, Cochrane Central Register of Controlled Trials, and Embase databases were searched for randomized controlled trials (RCTs) that assessed dental anxiety, pain, behavior, vital signs, and patient satisfaction with the use of audiovisual distraction.

RESULTS

Nine cohort studies met the inclusion criteria, all including young patients who had previously had dental treatment. Five used a crossover design and 4 were RCTs. Altogether they reported on 697 children ranging in age from 3 to 16 years old. Comparisons were hampered by the fact that they employed many different scales to measure anxiety. All of the evidence was of low quality.

The Faces version of the Modified Child Dental Anxiety Scale was used to compare the efficacy of audiovisual distraction to that of control groups with respect to pain. Although several meta-analyses indicated that audiovisual distraction results were significantly different from the control group results, the overall results did not indicate a statistically significant difference between the 2 approaches. Significant differences were noted in 6 of the 9 studies between audiovisual distraction and traditionally managed groups (controls) for behavior. Children who were provided with audiovisual distraction had behavior that was

significantly better or showed a significant decrease in disruptive behavior compared to children in the control groups. One study showed the group given audiovisual glasses had better behavior than that given an iPad for distraction.

One study found no significant difference in blood pressure between groups using audiovisual distraction and control groups. Two reported on the relationship between blood oxygen saturation, with 1 finding no significant difference between the 2 groups and 1 citing significant differences. With respect to pulse rate, 6 studies reported results. Two indicated a significant reduction in pulse rate for the audiovisual distraction group compared to controls, One reported that average pulse rate was lower when the iPad was used than with the audiovisual glasses.

When the patient's satisfaction was measured, 3 of the 9 studies found a majority of children were satisfied with the results of audiovisual distraction. Among the methods used, video eyewear was preferred over wearing sunglasses. In addition, 3D video glasses or use of an iPad was preferred for future visits.

DISCUSSION

Because dental anxiety is a significant problem among pediatric dental patients, dentists need to find a way to address the

Clinical Significance

Significant differences were found in the levels of anxiety and the measurement tools used to quantify children's anxiety. This makes it difficult to compare results across the 9 studies identified in the search. Although further high-quality research is needed to verify the results obtained, it appears that using audiovisual distraction methods such as video glasses or an iPad that engages the child effectively can allow the dentist to perform needed dental work without having to deal with behaviors caused by dental anxiety.

problem, which can affect dental care and future dental hygiene behaviors. Audiovisual distraction provides a nonpharmacological intervention that diverts the patient's attention from unpleasant stimuli. It proved more efficacious than traditional distraction techniques based on the ability to engage the child in high-quality visual and auditory experiences. Methods that block out real-world stimuli are preferred by the child.

Liu Y, Gu Z, Wang Y, et al: Effect of audiovisual distraction on the management of dental anxiety in children: A systematic review. *Int J Paediatr Dent* 29:14-21, 2019

Reprints available from X Zhou, Dept of Cariology and Endodontics, West China Hosp of Stomatology, Sichuan Univ, Chengdu, China; e-mail: zhouxd@scu.edu.cn

Home remedies for cleaning pacifiers



BACKGROUND

Pacifiers are widely used and the source of controversial data concerning their benefits and risks for dental problems. It's also been suggested that the use of pacifiers may increase the child's susceptibility to diseases such as otitis media, dental caries, fungal infections, and intestinal parasitosis. Although the silicone nipples used today offer smoother surfaces and lower microbial adhesion, they are in direct contact with the oral microflora, so microbial biofilms could exist on their surfaces. Manufacturers recommend that pacifiers be decontaminated in boiling water for 5 minutes before use but that can be impractical. Antimicrobial sprays are a more viable and convenient option, but low-cost, low-toxicity, readily available sprays can be created using substances commonly found in homes. A combination of vinegar, hydrogen peroxide, and sodium bicarbonate was tested for its efficacy against common oral microbes.

METHODS

Researchers screened substances for their antimicrobial activity against the microbes commonly found in the mouth using the double-layer agar diffusion test. *Streptococcus mutans*, *Streptococcus pyogenes*, *Staphylococcus aureus*, and *Escherichia coli* were selected because they are often isolated from the oral milieu and have been associated with human disease. Various combinations were tested, and the substances that had positive bioactivity against enterobacteria/pseudomonas, *Streptococcus* spp, or *Staphylococcus* spp underwent determination of their minimal inhibitory concentration (MIC) and minimal microbicide concentration (MMC). The 2 solutions with the best performance were hydrogen peroxide and apple vinegar. These were tested in 70% concentrations against specimens that were experimentally inoculated with microbial suspensions and against samples from pacifiers used by children at a primary school in São Paulo, Brazil. The results of these tests were reported as colony-forming units per pacifier.

RESULTS

A spray of 70% apple vinegar was able to significantly reduce the viable cells in *S aureus* biofilms compared to other treatments of the experimentally prepared pacifiers. In addition, all the tested solutions were able to significantly reduce viable cells of *S pyogenes*, *S mutans*, and *E coli* from biofilms. Seventy percent hydrogen peroxide was especially effective against *E coli*.

When 70% hydrogen peroxide was used on in-use pacifier samples, the viable cells of Enterobacteriaceae/pseudomonas were reduced. The other solutions were not effective and had counts similar to the control groups.

DISCUSSION

Solutions of 70% hydrogen peroxide were able to perform well enough to be a good alternative to chlorhexidine digluconate when disinfecting pacifiers. Apple vinegar and hydrogen peroxide had the best antimicrobial activity against the bacterial strains commonly found in the oral cavity.

Clinical Significance

Dentists can help parents of pediatric patients to be aware of the need to disinfect their child's pacifiers regularly. In addition, they can suggest cost-effective and efficacious sprays that can be made from products the parents often have on hand. Apple vinegar and hydrogen peroxide offer good protection while being low in cost, readily available, and low in toxicity.

Pedroso JF, Sangalli J, Brighenti FL, et al: Control of bacterial biofilms formed on pacifiers by antimicrobial solutions in spray. *Int J Paediatr Dent* 28:578-586, 2018

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