




## Behavior management in pediatric dentistry in children aged two to eight years: Systematic review.

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**Abstract: Introduction:** Dental anxiety and fear are common situations in pediatric dental consultations and can affect the development of dental treatment. Therefore, establishing a good relationship of trust between the dentist and the child is crucial to maintain the child's cooperation. **Objective:** To determine the effectiveness of different strategies and techniques used in managing the behavior of pediatric dental patients aged two to eight years who present fear and anxiety. **Materials and methods:** A systematic review was conducted following the recommendations of the PRISMA guidelines. The Cochrane Risk of Bias Assessment Tool (RoB 2) version 2 was used to assess the risk of bias in randomized trials. **Results:** Nine articles were included. The techniques used include tell-show-do (TDD), auditory distraction (AD), audiovisual distraction (AVD), mobile phone game distraction (MTG), positive reinforcement, voice control, passive parental presence, active parental presence, conscious sedation, bubble breathing play therapy (BBPPT), and tell-play-do (TPD). The most used technique is tell-show-do, and although it is effective, studies demonstrate the superiority of other techniques such as audiovisual distraction and tell-play-do. **Conclusions:** When several strategies are combined, there may be a synergistic effect that further reduces levels of dental fear and anxiety in this population.

**Keywords:** dental fear, dental anxiety, tell-show-do technique, audiovisual distraction, pediatric dentistry.

## Manejo de conducta en odontopediatría en niños de dos a ocho años: Revisión sistemática.

**Resumen: Introducción:** La ansiedad y el miedo dental son situaciones frecuentes en la consulta de odontopediatría que pueden afectar el desarrollo del tratamiento odontológico. Por ello, establecer una buena relación de confianza entre el odontólogo y el niño es un factor crucial para mantener la cooperación del niño. **Objetivo:** Determinar la efectividad de distintas estrategias y técnicas utilizadas en el manejo de la conducta de pacientes odontopediátricos de dos a ocho años que presentan miedo y ansiedad. **Materiales y métodos:** Se realizó una revisión sistemática siguiendo las recomendaciones de la guía PRISMA. Para evaluar el riesgo de sesgo se utilizó la versión 2 de la herramienta Cochrane para evaluar el riesgo de sesgo en ensayos aleatorios (RoB 2). **Resultados:** Se incluyeron nueve artículos. Entre las técnicas utilizadas se encuentran decir - mostrar - hacer (DMH), distracción auditiva (DA), distracción audiovisual (DAV), distracción con juegos de teléfono móvil (JTM), refuerzo positivo, control de voz, la presencia pasiva de los padres, la presencia activa de los padres, la sedación consciente, la terapia de juego con respiración de burbujas (TJRB) y decir - jugar - hacer (DJH). La técnica más utilizada es la de decir - mostrar - hacer, y aunque es efectiva los estudios demuestran superioridad de otras técnicas como la distracción audiovisual y decir - jugar - hacer. **Conclusiones:** Cuando se combinan varias estrategias puede haber un efecto sinérgico que disminuye aún más los niveles de miedo y ansiedad dental en esta población.

**Palabras clave:** miedo dental, ansiedad dental, técnica decir - mostrar - hacer, distracción audiovisual, odontopediatría.

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## Manejo comportamental em odontopediatria em crianças de dois a oito anos: Revisão sistemática.

**Resumo: Introdução:** Ansiedade e medo odontológicos são situações comuns em consultas odontológicas pediátricas e podem afetar o desenvolvimento do tratamento odontológico. Portanto, estabelecer uma boa relação de confiança entre o dentista e a criança é crucial para manter a cooperação da criança. **Objetivo:** Determinar a eficácia de diferentes estratégias e técnicas utilizadas no manejo do comportamento de pacientes odontológicos pediátricos de dois a oito anos que apresentam medo e ansiedade. **Materiais e métodos:** Uma revisão sistemática foi conduzida seguindo as recomendações das diretrizes PRISMA. O Cochrane Risk of Bias Assessment Tool (RoB 2) versão 2 foi utilizado para avaliar o risco de viés em ensaios clínicos randomizados. **Resultados:** Nove artigos foram incluídos. As técnicas utilizadas incluem contar-mostrar-fazer (TDD), distração auditiva (AD), distração audiovisual (AVD), distração com jogo de celular (MTG), reforço positivo, controle de voz, presença parental passiva, presença parental ativa, sedação consciente, terapia de brincar com respiração com bolhas (BBPPT) e contar-brincar-fazer (TPD). A técnica mais comumente utilizada é a técnica "diga-mostre-faça" e, embora seja eficaz, estudos demonstram a superioridade de outras técnicas, como a distração audiovisual e a técnica "diga-brinque-faça". **Conclusões:** Quando várias estratégias são combinadas, pode haver um efeito sinérgico que reduz ainda mais os níveis de medo e ansiedade odontológicos nessa população.

**Palavras-chave:** medo odontológico, ansiedade odontológica, técnica "diga-mostre-faça", distração audiovisual, odontopediatria.

### Introduction

The pediatric dentist is responsible for the education, prevention, diagnosis, and treatment of oral diseases in children in a period of growth and physical, psychological, and social development<sup>1</sup>. Therefore, it is essential that the clinician understands how to modify the child's and family's response to care and, consequently, can modify treatment approaches<sup>2</sup>.

Dental anxiety is a negative mental state in dental patients, manifesting as excessive and irrational, and generally occurring without any obvious stimulus. On the other hand, dental fear differs from anxiety in that it is an emotional response to particularly alarming stimuli in situations related to dental treatment; that is, fear has a triggering stimulus, whereas anxiety does not<sup>3</sup>.

Variable prevalences of dental fear and anxiety have been reported. For example, a review published by Nydell et al.<sup>4</sup> showed

that dental anxiety was present in 12% of children, while a study by Alshuaibi et al.<sup>5</sup>, conducted in Saudi Arabia, reported dental anxiety rates of 50% in boys and 71% in girls. Furthermore, a meta-analysis by Grisolia et al.<sup>6</sup> identified dental anxiety rates of 24%, with specific rates of 36.5% in preschoolers, 25.8% in school-aged children, and 13.3% in adolescents.

Therefore, dental anxiety is considered a universal phenomenon that affects patients regardless of age and negatively impacts oral health-related quality of life in both children and adults<sup>7</sup>. The patient's experience is subjective and can vary greatly depending on their physical and mental condition. A child may express their fears and anxieties through behaviors such as crying, complaining, interrupting conversations or games, and even trying to run away from their caregiver. It can also be accompanied by significant physical changes, such as an increased heart rate, other hemodynamic changes, and the release of stress hormones<sup>8</sup>.

The main effects of dental anxiety are the deterioration of oral health and the perpetuation of a vicious cycle of avoiding or canceling scheduled appointments. Sometimes the reason for seeking dental care may be pain or significant discomfort, which can further increase feelings of anxiety. Fear of the dentist is one of the main reasons for avoiding dental visits, along with the lack of time, financial resources, and accessibility of the dental staff<sup>9</sup>.

Establishing a good relationship of trust between the dentist and the child is crucial for maintaining the child's cooperation during treatment. Once trust has been established between the child and the professional, a positive feeling toward dental visits is created and stored in the child's memory<sup>10</sup>.

However, Klatchoian et al.<sup>11</sup> stated that dentist-treating children must be able to implement a series of techniques to achieve behavioral adaptation. They must also assess the child's developmental level, attitudes, and temperament to predict their reaction to treatment. Effective communication is therefore necessary to alleviate fear and anxiety as well as teach appropriate mechanisms for the child to manage their feelings, guiding them to cooperate, relax, and feel confident in the dental office.

Behavior management can be achieved through various techniques that facilitate children's cooperation during procedures. These include, for example, communication and linguistic approaches, the tell-show-do technique, voice control, positive reinforcement, and distraction, among others<sup>12</sup>. In addition,

other approaches for managing dental anxiety have been described, including non-pharmacological strategies, such as audiovisual distraction<sup>13</sup>, music therapy and aromatherapy<sup>14</sup>, tell-show-do<sup>15</sup>, and animal-assisted therapy<sup>16</sup>; and pharmacological approaches, such as conscious sedation<sup>17</sup>. The relevance of this review lies in the fact that it focuses on children between the ages of 2 and 8 and does not aim to encompass other age groups.

The objective was to determine the effectiveness of different strategies and techniques used in managing the behavior of pediatric dental patients aged 2–8 years who present with fear and anxiety.

## Method

The study consisted of a systematic review developed according to the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines<sup>18</sup> and registered on the PROSPERO platform (Protocol CRD42025644471). This design for describing the research question considers the elements of population, intervention, comparison, and outcomes, leading to the PICO question. Each of these elements is described below, followed by the formulation of the research question.

**Population:** Pediatric dental patients aged 2–8 years.

**Intervention:** Assess fear and anxiety using different behavior management techniques (tell-show-do (TSD), auditory distraction (AD), audiovisual distraction (AVD), mobile

phone game distraction (MBG), positive reinforcement, voice control, passive parental presence, active parental presence, conscious sedation, bubble breathing play therapy (BBPT), and tell-play-do (TTD)).

Comparison: To compare the effectiveness of different behavior management techniques (tell-show-do (TSD), auditory distraction (AD), audiovisual distraction (AVD), mobile phone game distraction (MPG), positive reinforcement, voice control, passive parental presence, active parental presence, conscious sedation, bubble breathing play therapy (BBT), and tell-play-do (TTD)).

Outcome: Fear and anxiety control.

Therefore, the research question was: Which conventional and non-conventional behavior management techniques are most effective in controlling fear and anxiety in pediatric dental patients aged 2–8 years? Publications of primary studies that considered fear and anxiety control in pediatric dental patients aged 2–8 years were analyzed.

Search strategy and study eligibility criteria.

To locate the literature, articles from scientific journals were considered using databases such as PubMed and Web of Science. The searches were performed in English and Spanish, and the keywords and their combinations were as follows:

In English: (“behavior management in pediatric dentistry” OR “tell-show-do” OR “auditory distraction” OR “audio-visual distraction” OR “mobile phone game distraction” OR “positive reinforcement” OR “voice control” OR “passive parental presence” OR “active parental presence” OR “conscious sedation” OR “bubble breathing play therapy” OR

“tell-play-do”) AND (“dental fear” OR “dental anxiety” OR “fear of dentist”).

In Spanish: (“manejo de conducta en odontopediatría” OR “técnica decir – mostrar – hacer” OR “técnica distracción auditiva” OR “técnica de distracción audiovisual” OR “técnica de distracción con juegos de teléfono móvil” OR “refuerzo positivo” OR “control de voz” OR “presencia pasiva de los padres” OR “presencia activa de los padres” OR “sedación consciente” OR “terapia de juego con respiración de burbujas” OR “decir – jugar – hacer”) AND (“miedo dental” OR “ansiedad dental” OR “miedo al odontólogo”).

### **1. Inclusion Criteria:**

- Articles related to behavior management in pediatric dental patients aged 2–8 years.
- Articles from randomized clinical trials, crossover trials, and controlled clinical trials.
- Articles that evaluate scales related to fear and anxiety in pediatric dentistry.
- Articles on behavior management techniques in children.
- Articles published between 2017 and 2024.
- Articles written in English or Spanish.

### **2. Exclusion Criteria:**

- Articles with age outside the inclusion range.
- Articles related to serious systemic diseases or medical conditions that may interfere with dental treatment or the assessment of fear and anxiety.
- Patients with significant communication difficulties that prevent the accurate

assessment of their fear or anxiety level.

- Articles with research designs other than clinical trials.

### Evaluation of the methodological quality of publications

To assess the risk of bias, version 2 of the Cochrane Risk of Bias in Randomized Trials (RoB 2) tool was used<sup>19,20</sup>. This tool assesses the risk of bias through five distinct domains. Within each domain, one or more signaling questions are answered, and the responses result in judgments of "low risk of bias," "some concerns," or "high risk of bias." The judgments within each domain result in an overall judgment of risk of bias.

### Results

Figure 1 shows that the initial search identified 541 potentially inclusive articles, of which 119 duplicates were removed. In the screening phase, 297 articles were excluded. Ninety-four articles were reviewed in full text, of which 85 were excluded, and nine publications met the inclusion criteria for this review.

### Characteristics of the included studies

A total of nine articles were included, five of which were conducted in India and one each in Saudi Arabia, South Korea, Egypt, and Greece. All were randomized controlled trials (see Table 1).

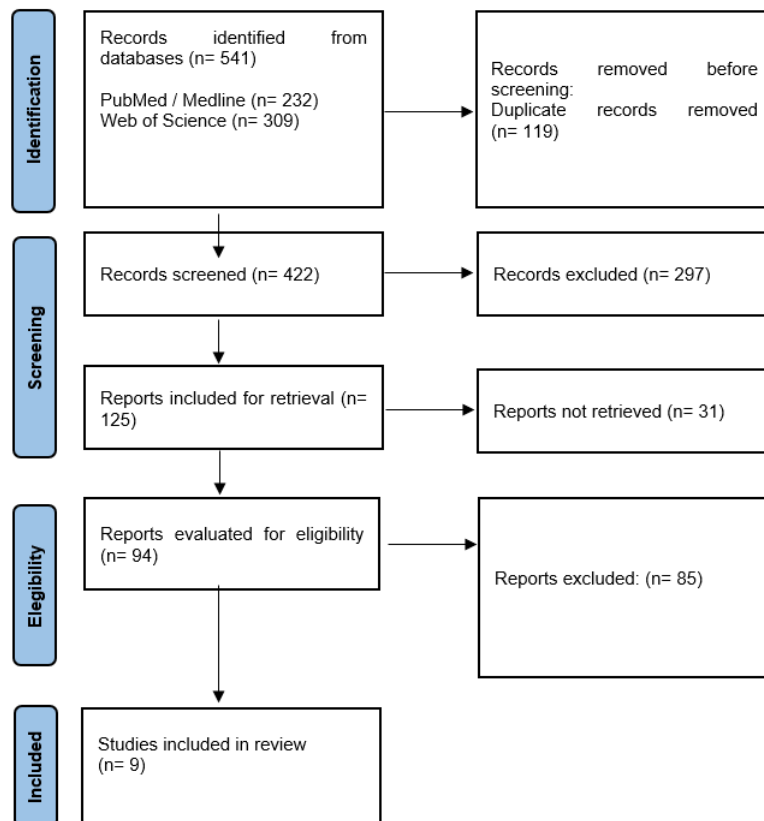


Figure 1. PRISMA flowchart. Process for selecting review articles.

**Table 1.** Identification of the studies included in the review.

Author	Country	Age of participants	Sample size
Janiani et al. <sup>21</sup>	India	3 to 5 years.	32
AIDhelai et al. <sup>22</sup>	Egipto	3 to 6 years.	150 Experimental group: 75 Control group: 75
Alsaadoon et al. <sup>23</sup>	Arabia Saudita	6 to 8 years.	88 Experimental group: 43 Control group: 45
Pande et al. <sup>24</sup>	India	5 to 8 years.	60 Group I: 15 Group II: 15 Group III: 15 Group IV: 15
Azher et al. <sup>25</sup>	India	6 to 8 years.	48. Group I: 24 Group II: 24
Khandelwal et al. <sup>26</sup>	India	5 to 8 years.	400 Group I: 100 Group II: 100 Group III: 100 Group IV: 100
Vishwakarma et al. <sup>27</sup>	India	5 to 7 years.	98 Group I: 49 Group II: 49
Song et al. <sup>28</sup>	Corea del Sur	3 to 9 years.	44 Experimental group: 24 Control group: 20
Boka et al. <sup>29</sup>	Grecia	3 to 8 years.	61 Experimental group: 31 Grupo control: 30

In preschool children, conscious sedation and active parental involvement combined with tell-show-do (TSD) were identified

as the techniques used, compared to passive parental involvement and tell-show-do (TSD) (Table 2).

**Table 2.** Behavior management techniques in preschool children (2–5 years) and the main findings of the studies included in the review.

Author	Behavior management technique	Data collection instruments	Results
Janiani et al. <sup>21</sup>	Sedation with intranasal midazolam and sedation with nitrous oxide via a mask.	The Ohio State University Behavior Rating Scale (OSUBRS) was used.	Children showed greater acceptance of the nasal mask compared to the intranasal route for administering midazolam. Temperament had a statistically significant influence on the acceptance of both the nasal mask and the intranasal spray device. Mean OSUBRS scores showed no statistically significant difference between the sedation groups ( $p = 0.14$ ).
AIDhelai et al. <sup>22</sup>	Experimental group: Active parental presence + tell-show-do. Control group: Passive parental presence + tell-show-do.	Facial Image Scale (FIS), Frankl Behavior Rating Scale (FBRS), and the Arabic version of the Stanford-Binet Intelligence Scale, Fourth Edition (SB-IV).	The active parental presence technique had a significant effect on children with both high and low IQs. Children with high IQs were significantly more likely to exhibit positive behavior than children with low IQs. The active parental presence technique was significantly more likely to elicit positive behavior than the passive parental presence technique.

In school-aged children, a wider variety of behavior management techniques were used. For example, Alsaadoon et al.<sup>23</sup> implemented the use of a dental storybook to reduce dental anxiety. Azher et al.<sup>25</sup> compared the effectiveness of bubble-breathing play therapy (BBPT) and the tell-show-do technique. Vishwakarma et al.<sup>27</sup> used live modeling

and compared it with tell-play-do (TPD). More complex studies were also included in which participants were divided into four groups, and individual techniques such as TSD, auditory distraction (AD), and audiovisual distraction (AD) were analyzed, as well as combinations of TSD and AD<sup>24,26</sup> (Table 3).

**Table 3. Behavior management techniques in school-aged children (6 to 8 years) and main findings of the studies included in the review.**

Author	Behavior management technique	Data collection instruments	Results
Alsaadoon et al. <sup>23</sup>	Experimental group: Dental storybook designed to reduce dental anxiety in children. Control group: No storybook.	Children's Fear Survey Scale-Dental Subscale (CFSS-DS), Venham Clinical Anxiety Scale (VCAS), and Frankl Behavior Rating Scale (FBRS).	The intervention group showed significantly less anxiety and more cooperative behavior during treatment than the control group ( $p < 0.0001$ ). The intervention group showed a significant decrease in anxiety scores and more cooperative behavior over time. The dental storybook can reduce children's dental anxiety and improve their behavior during dental treatment.
Pande et al. <sup>24</sup>	Group I: Tell-Show-Do (TSD) technique (control group). Group II: Auditory Distraction (AD) technique. Group III: Audiovisual Distraction (AD) technique. Group IV: Mobile Phone Game Distraction (MPD) technique.	Children's fear/anxiety levels before and after the intervention were measured using physiological (blood pressure and pulse rate) and non-physiological (facial imagery scale) parameters.	A statistically significant difference was observed in both physiological and non-physiological parameters after the intervention in the groups, with the greatest decrease observed in the AD group. The AD technique was determined to be the most effective, while the TSD behavior guidance technique alone was the least effective in reducing dental fear/anxiety in uncooperative pediatric dental patients.
Azher et al. <sup>25</sup>	Group I: Bubble Breathing Play Therapy (BBPT). Group II: Tell-Show-Do (TSD) technique.	The Venham Interval Rating Scale for Behavior and Anxiety was used, and heart rate was measured with a fingertip pulse oximeter.	The mean heart rate in the BBPT and TSD groups was 106.96 mmHg and 102.25 mmHg, respectively, at baseline. A decrease in heart rate was observed in both groups after the implementation of behavior modification strategies. However, after dental treatment, the mean heart rate increased slightly in the BBPT group, while it showed further improvement in the TSD group.
Khandelwal et al. <sup>26</sup>	Group I: No specific behavior management technique was applied during treatment (Control). Group II: DMH applied during treatment. Group III: DAV applied during treatment. Group IV: DMH and DAV applied during treatment.	Anxiety was recorded using the Facial Imagery Scale (FIS), the Venham Picture Test (VPT), blood pressure, pulse rate (PR), and oxygen saturation (SpO <sub>2</sub> ) at different stages of the visit.	DAV was found to be more effective at reducing anxiety than DMH. The combination of DMH and DAV had an additive effect on reducing anxiety levels and proved to be more beneficial.
Vishwakarma et al. <sup>27</sup>	Group I: Children were conditioned to receive various dental procedures using live modeling followed by oral prophylaxis. Group II: The Tell-Play-Do (TJD) technique was introduced using personalized dental play objects followed by oral prophylaxis.	Heart rate, the Facial Image Scale (FIS), and the 6-point Venham Index were used before, after, and during the dental procedure to quantify anxious behavior.	Mean heart rate, FIS scores, and Venham scores were significantly lower among children who received the TJD intervention compared to those who received the live modeling intervention. The TJD technique is effective in reducing children's fear and anxiety about dental treatment; children enjoy playing with personalized dental objects.

Some studies considered a broader age range, from three to nine years old.<sup>28,29</sup> One of these studies combined passive parental presence with manual desensitization (MD), voice control, and positive reinforcement for the experimental group and compared it to a control group that only used MD, voice

control, and positive reinforcement (Table 4).

Of the nine studies included, five (55.5%) had a low risk of bias, three were in the “some concerns” category (33.3%), and only one had a high risk of bias (11.1%) (Chart 1).

**Table 4.** Behavior management techniques in children aged 3 to 9 years and main findings of the studies included in the review.

Author	Behavior management technique	Data collection instruments	Results
Song et al. <sup>28</sup>	<p>Experimental group: During the first visit, they watched cartoons, and during the second, they watched a program on a tablet that promotes good behavior in the dental office.</p> <p>Control group: During both visits, they watched cartoons.</p>	<p>Stress, uncooperative behavior, and subjective pain were measured using heart rate, the Procedural Behavior Checklist (PBCL), and the Wong and Baker Pain Rating Scale (FPRS).</p>	<p>The experimental group showed a significantly lower mean heart rate, as well as lower levels of uncooperative behavior and subjective pain in the second treatment compared to the control group (<math>p &lt; 0.001</math>).</p> <p>The differences in heart rate and uncooperative behavior between treatments were also significantly greater in the experimental group than in the control group (<math>p &lt; 0.001</math>).</p> <p>The program was effective in alleviating fear and anxiety, as well as in learning cooperative behavior.</p>
Boka et al. <sup>29</sup>	<p>Experimental group: tell-show-do, positive reinforcement, voice control + passive parental presence.</p> <p>Control group: tell-show-do only, positive reinforcement, voice control.</p>	<p>Frankl Behavior Rating Scale (FBRS).</p>	<p>No statistically significant differences were observed between the study and control groups in terms of age, sex, mean Frankl score, Frankl score 2 minutes before/after the technique was applied, or in relation to the time at which the technique was first applied.</p> <p>Improved behavior was observed in 17 patients (54.8%) in the PPA group and in 23 patients (76.7%) in the control group.</p> <p>The PPA applied over several dental sessions as a behavior management technique showed no advantage over other basic non-pharmacological techniques.</p>

**Chart 1. Classification of the risk of bias of the studies based on the Cochrane Risk of Bias tool, version 2.0**



## Discussion

Anxiety and fear-related reactions are frequent occurrences in pediatric dental practice and have significant consequences for both the child and the dental staff, as the child may adopt disruptive behavior.<sup>30</sup> Both anxiety and dental fear make dental treatment costly, demanding, and time-consuming for both the dentist and the child, which could negatively impact the treatment outcome.<sup>31</sup>

This study aimed to identify the strategies and techniques used in managing the behavior of pediatric dental patients

aged 2–8 years who present with fear and anxiety, in order to evaluate effective interventions that improve the experience and outcomes of dental treatment in this population. A systematic review was conducted, including nine articles that met the pre-established criteria.

The included studies used various instruments to measure fear and anxiety, such as the Frankl Behavior Rating Scale (FBRS)<sup>29</sup>, the Facial Imagery Scale (FIS)<sup>27</sup>, and the Venham Picture Test (VPT)<sup>26</sup>; variables such as heart rate, blood pressure, and oxygen saturation were also measured<sup>25,26</sup>.

Regarding the techniques used, these included the tell-show-do (TSD) technique, auditory distraction (AD), audiovisual distraction (AVD), and mobile phone game distraction (MBG)<sup>24</sup>, as well as positive reinforcement, voice control, and passive parental presence<sup>29</sup>, active parental presence<sup>22</sup>, conscious sedation<sup>21</sup>, and bubble breathing play therapy (BBT)<sup>25</sup>, among others.

The techniques were selected according to the age group of the participants in each study. In preschool children aged 2–5 years, both conscious sedation<sup>21</sup> and active parental presence along with tell-show-do (TSD)<sup>22</sup> were used. Active parental presence was significantly more likely to result in positive behavior than the passive parental presence technique<sup>22</sup>.

In school-aged children, between six and nine years old, techniques such as the use of dental storybooks<sup>23</sup>, bubble breathing play therapy (BBT)<sup>25</sup>, and combinations such as tell-show-do (TBD) + TSD<sup>26</sup> were used. Although all the techniques used to reduce anxiety and fear showed some degree of improvement, the best results were obtained using the combination of several.

A cross-sectional study by Carrillo et al.<sup>32</sup> found a statistically significant correlation between dental fear and the age of the first visit, and between dental fear and the frequency of visits. They showed that initiating visits to the pediatric dentist early, before the age of two; and regular checkups, at least twice a year, could protect the child from dental anxiety.

Regarding different interventions, Boka et al.<sup>29</sup> found no statistically significant differences between the experimental group, in which the tell-show-do technique was used in combination with positive reinforcement, voice control, and passive parental presence, and the control group, in which only tell-show-do, positive reinforcement, and voice control were used. In contrast, AIDhelai et al.<sup>22</sup> reported that the active parental presence technique resulted in significantly higher rates of positive behavior than the passive parental presence technique.

On the other hand, in a clinical trial conducted by Vishwakarma et al.<sup>27</sup>, which employed the tell-play-do (TDD) technique, it proved effective in reducing children's fear and anxiety about dental treatment. The participating children enjoyed playing with personalized dental objects, and when heart rate and other applied scales were measured, the values observed in these children were significantly lower than those of the children who did not receive the TDD intervention.

Among the included studies, one of the most complex was the clinical trial published by Khandelwal et al.<sup>26</sup>. Their sample consisted of 400 children divided into four groups: a control group in which no specific behavior management technique was applied during treatment; and three experimental groups. In one experimental group, only the tell-show-do (TSD) technique was applied; in another, audiovisual distraction (AVD); and in the remaining group, TDD and AVD were combined. The results indicated that AVD was more effective at reducing anxiety

than TDD. However, the combination of both techniques had an additive effect on reducing anxiety levels and, therefore, proved to be more beneficial.

This has implications for the clinical practice of pediatric dentistry. The technique tell-show-do approach involves less economic effort since it requires no investment in acquiring any equipment or devices and remains the most viable to implement. However, there are interesting techniques to put into practice, such as tell-play-do, in which the child is allowed to play with personalized dental objects.

Although one might think that the presence of parents, whether passive or active, during the child's treatment could have a positive impact on the patient's cooperation or behavior, several studies have reported that it has neither a positive nor a negative impact<sup>33-35</sup>. In this regard, the results of a systematic review with meta-analysis conducted by Passos et al.<sup>34</sup> indicate that there were no differences in children's behavior in the presence or absence of parents, nor did it influence the children's anxiety or fear.

Along the same lines, Ahuja et al.<sup>33</sup> conducted a study involving 30 children in which two consecutive restorative procedures were performed. In the first visit, the parents were present, and in the second visit, they were separated. No significant difference was found in the child's behavior based on the presence or absence of the parents during the treatment. In fact, the researchers considered that parents could be excluded from these dental procedures

to eliminate many behavioral problems during treatment.

Regarding the limitations identified in this study, one is the selection of an age range of 2–9 years. This made it difficult to locate articles that focused on an age group within this range. Although this limitation hindered the location of primary articles, it can also be seen as an advantage, as it lends the research a sense of novelty. Future research could focus on expanding the age range and encompassing more behavior management techniques. If the data allow, a meta-analysis could be conducted to draw more robust conclusions that support pediatric dentistry practices in managing dental fear and anxiety.

## Conclusions

Different strategies and techniques have been used to manage the behavior of pediatric dental patients aged 2–8 years who present with fear and anxiety. These include tell-show-do, auditory distraction, audiovisual distraction, distraction with mobile phone games, positive reinforcement, voice control, passive parental presence, active parental presence, conscious sedation, bubble breathing play therapy, and tell-play-do. The techniques used are adapted to the child's age due to varying levels of development. Behavior may differ between preschool- and school-aged children.

Some of the techniques mentioned have demonstrated their effectiveness in controlling dental fear and anxiety in multiple clinical trials, while others, more recent, still require further studies to

support their efficacy. This study showed that the most frequently used technique is tell-show-do, and although it is effective, studies demonstrate the superiority of other techniques, such as audiovisual distraction and tell-play-do. However, combining several strategies can have a synergistic effect that further reduces levels of dental

fear and anxiety in this population. It is also necessary to educate parents and guardians to be more responsible for their children's oral health, as early visits to the pediatric dentist, before the age of two, and regular checkups, at least twice a year, have been shown to protect children from dental fear and anxiety.

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