








# Parental acceptance toward behavior guidance techniques for pediatric dental visits: a meta-analysis

Carla MASSIGNAN<sup>(a)</sup>   
Josiane Pezzini SOARES<sup>(b)</sup>   
Maria Marlene de Souza PIRES<sup>(c)</sup>   
Bruce DICK<sup>(d)</sup>   
André Luís PORPORATTI<sup>(e)</sup>   
Graziela De Luca CANTO<sup>(e)</sup>   
Michele BOLAN<sup>(e)</sup> 

<sup>(a)</sup>Universidade de Brasília – UnB, School of Dentistry, Department of Pediatric Dentistry, Brasília, DF, Brazil.

<sup>(b)</sup>Universidade Federal de Santa Catarina – UFSC, School of Dentistry, Department of Pediatric Dentistry, Florianópolis, SC, Brazil.

<sup>(c)</sup>Universidade Federal de Santa Catarina – UFSC, Department of Pediatrics, Florianópolis, SC, Brazil.

<sup>(d)</sup>University of Alberta, Department of Anesthesiology and Pain Medicine, Edmonton, Canada.

<sup>(e)</sup>Universidade Federal de Santa Catarina – UFSC, School of Dentistry, Brazilian Center for Evidence-Based Research, Florianópolis, SC, Brazil.

**Declaration of Interests:** The authors certify that they have no commercial or associative interest that represents a conflict of interest in connection with the manuscript.

**Corresponding Author:**

Michele Bolan  
E-mail: michele.bolan@ufsc.br

<https://doi.org/10.1590/1807-3107bor-2022.vol36.0127>

**Abstract:** This study aimed to answer the following question: What is the proportion of acceptance reported by parents toward pediatric behavior guidance techniques (BGTs)? Observational studies that evaluated parental acceptance of BGTs during pediatric dental visits among parents of non-special health care need (non-SHCN) and SHCN children were included. A search of the Cochrane Library, Latin American and Caribbean Health Sciences (LILACS), MedLine/PubMed, PsycINFO, Scopus, and Web of Science databases, in addition to gray literature, was performed until October 2021. The Joanna Briggs Institute Critical Appraisal Checklist for Analytical Cross-Sectional Studies was used for quality assessment. The certainty of evidence was assessed using the Recommendation, Assessment, Development, and Evaluation (Grade). Fifty-three studies with 4868 participants were included, and 42 were retained for the random-effects proportion meta-analysis. The methodological quality varied from low to high. The agreement with the BGTs varied from 85.6% (95%CI: 77.5–92.1;  $p < 0.001$ ;  $I^2 = 93.6\%$ ; 16 studies;  $n = 1399$ ) for tell-show-do to 25.7% (95%CI: 17.8–34.4;  $p < 0.001$ ;  $I^2 = 90.4\%$ ; 12 studies;  $n = 1129$ ) for passive protective stabilization among non-SHCN children’s parents; meanwhile, among the parents of SHCN children, it varied from 89.1% (95%CI: 56.1–99.7;  $p < 0.001$ ;  $I^2 = 95.7\%$ ; 3 studies;  $n = 454$ ) for tell-show-do to 29.1% (95%CI: 11.8–50.0;  $p = 0.001$ ;  $I^2 = 84.8\%$ ; 3 studies;  $n = 263$ ) for general anesthesia. The effect estimates varied greatly, as substantial heterogeneity across studies was observed, thus limiting the confidence in the results. Parents were more likely to agree with basic BGTs over advanced BGTs, with very low certainty of evidence. Dentists should discuss BGT options with parents. Protocol registration: PROSPERO CRD42018103834.

**Keywords:** Parents; Behavior; Systematic Review; Dental Care for Disabled; Pediatrics.

## Introduction

The long-term success of any dental treatment provided to children depends on the behavioral guidance technique (BGT) employed. The dentist’s approach needs to be integrated into the overall BGTs while taking into account children’s individuality, the practitioner’s

Submitted: August 18, 2021  
Accepted for publication: June 2, 2022  
Last revision: June 21, 2022



skills, and parents' opinions.<sup>2</sup> Given the changes in society in the past years, where more fathers, mothers, and siblings accompany children to their dental appointments,<sup>3</sup> there is considerable interest in families that take part in treatment decisions. Consequently, the attitudes of modern parents have influenced the use of BGTs.<sup>4</sup>

The techniques utilized by dental teams have evolved through time, accompanied by societal and parenting changes.<sup>4</sup> Currently, according to the American Academy of Pediatric Dentistry (AAPD), BGTs can be divided into basic BGTs, which includes communication and communicative guidance, positive pre-visit imagery, direct observation, tell-show-do, ask-tell-ask, voice control, nonverbal communication, positive reinforcement and descriptive praise, distraction, memory restructuring, parental presence/absence, communication techniques for parents and age-appropriate patients, and nitrous oxide/oxygen inhalation; it can also be divided into advanced BGTs, which includes protective stabilization, sedation, and general anesthesia.<sup>5</sup> Furthermore, protective stabilization can involve another person, a device, or a combination thereof.<sup>6</sup>

Behavioral guidance techniques are used to reduce anxiety and fear, establish a positive attitude, and provide oral health care with physical and emotional security for children with and without special health care needs (SHCN).<sup>6</sup> Some patients find it very difficult to cooperate during treatment, and the use of non-pharmacological techniques alone may be insufficient. In such cases, behavioral guidance can be individualized according to the patient's needs and parents' preferences.<sup>5</sup> In addition, the acceptance of parents of children with special needs may be different from that of parents of children without special needs. One of these factors is access to health services. Access for children with special needs may be more restricted, and because of this, the parents of these children may be more likely to accept more BGTs.

Considering that treatment plans also depend on parents' opinions about BGT use, exploring parents' opinions is critical when identifying BGT application priorities. More invasive procedures can produce clinical situations of greater stress, demanding

greater professional performance in the management of a child's behavior. Such cases may require more restrictive techniques.<sup>7</sup> Therefore, dentists should pay particular attention to parents' acceptance of BGTs in order to accomplish their children's treatment. However, it is noteworthy that no scientific evidence is available to attest to parents' agreement with available BGTs. Thus, the purpose of this systematic review was to evaluate parental agreement with BGTs during their children's dental visits.

## Methodology

### Study design

The protocol of this systematic review was planned following the recommendations of the Preferred Reporting Items for Systematic Reviews and Meta-Analysis Protocols (PRISMA-P).<sup>8</sup> It was registered in the International Prospective Register of Systematic Reviews (PROSPERO) under file number CRD42018103834. The research is reported following the PRISMA Statement.<sup>9</sup>

### Study question

We addressed the acronyms CoCoPop (Condition, Context, and Population) to formulate the focused question: "What is the proportion of acceptance reported by the parents toward pediatric BGTs?" where the first Co is the use of BGTs in dental pediatric visits, the second Co is the proportion of the parent's acceptance of the BGTs, and the Pop is the parents of children with special healthcare needs (SHCN) and the parents of children without special healthcare needs (non-SHCN) that were submitted to dental care.

### Eligibility criteria

Observational designs were required for inclusion in this systematic review. Studies that evaluated parental agreement with the BGT employed during the child's dental treatment were included. Parents and legal guardians were also included. Parents of non-special health care needs (non-SHCN) and special health care needs (SHCN) children of all ages were evaluated. Any kind of parental awareness of BGTs (*e.g.*, questionnaires, videos, and verbal or written information) was accepted. Due to limitations in the

publication records for some newer BGTs, most BGTs described by the AAPD in the current guidelines<sup>6</sup> were evaluated, including general anesthesia (GA). Although the hand over mouth (HOM) technique is no longer recommended by the guidelines, it was included in the study, as many older studies have evaluated this technique. Hypnosis is not listed as one of the behavior management technique. However, it is worth mentioning that primary studies evaluated parents' acceptance of hypnosis; therefore, it was also evaluated. All dental procedures described in the studies were considered, and all measures of the parents' agreement were accepted.

The exclusion criteria were as follows: a) studies that did not evaluate the parents' agreement of BGTs but instead addressed the parents' satisfaction/preferences and/or the associated success rates and treatment costs; b) studies that lacked data regarding parents' agreement with the BGTs employed; c) secondary studies (review articles, letters to the editors, books, book chapters, and so on); d) studies whose full texts were not available; and e) articles that duplicated participants from other publications.

### Information sources and search strategies

Detailed search strategies for each database were developed with the help of a health science librarian, including the determination of the applied Medical Subject Heading terms and important synonyms (Table 1). The databases used were the Cochrane Library, Latin American and Caribbean Health Sciences (LILACS), MEDLINE via PubMed, PsycINFO, Scopus, and Web of Science. A partial grey literature search was also carried out using the System for Information on the Grey Literature in Europe (OpenGrey), the ProQuest Dissertations and Theses Database, and Google Scholar. The search was conducted up to October 20, 2021. No publication periods or language restrictions were applied. The reference lists from the included studies were also examined for relevant studies.

EndNote® X7 (Thomson Reuters, New York, USA) and Rayyan software<sup>10</sup> programs were used to manage the references. The identified duplicates were removed.

### Selection process, data collection process and data items

Two reviewers (CM and JPS) independently selected studies in two phases. First, based on the titles and abstracts, and in phase two, based on the full texts. A third reviewer (MB) made the final decision. The same procedure was applied for meta-analysis data collection.

The following structured information was collected from each included study in the pre-piloted forms: authors, year of publication, country, study design and setting, sample size, participants' sex, children's age, BGT employed, BGT assessment measures, main findings, and conclusions. In addition, studies were stratified by video-based and non-video-based research in terms of the explanations provided to the parents before the BGTs were employed.

When a selected study was not written in the Latin-Roman alphabet, attempts were made to contact the corresponding author via email to obtain the necessary information, and when it was not possible, Google Translator was used.

### Study risk of bias assessment

The Joanna Briggs Institute Critical Appraisal Checklist for Analytical Cross-Sectional Studies<sup>11</sup> was used to assess the methodological quality of the individual included studies. The critical appraisal tool is composed of eight questions addressing the sample characteristics, the measurement of exposure, the condition being studied, and any confounding factors. The possible answers to the tool's questions are: "yes" if the study addressed the issue proposed in the question; "no" if the study did not address the issue; "unclear" in the case of unclear or information not completely reported; and "NA" for not applicable if a specific questions do not suit the issue addressed in the systematic review. The tool assesses the methodological quality of a study to determine the extent to which it has addressed the possibility of bias in its design, conduct, and analysis. The same two reviewers independently evaluated the included studies, and disagreements were solved by consensus. As recommended by the reviewer's manual, decisions about ratings were discussed and agreed upon by

**Table 1.** Search strategy.

Database	Search
Cochrane	((("dental" OR "dentistry") AND ("visit" OR "visits" OR "treatment" OR "treatments" OR "restoration" OR "restorations" OR "Tooth Extraction" OR "Extraction" OR "Extractions" OR "Dental Prophylaxis" OR "Prophylaxis")) OR "Dental Care" OR "Dental Care for Children" OR "Dental Offices" OR "Dental Office" OR "Pediatric Dentistry" OR "oral health" in Title Abstract Keyword AND "Operant Conditioning" OR "Operant Conditionings" OR "Instrumental Learning" OR "Physical Restraint" OR "Physical Restraints" OR "Physical Immobilization" OR "Immobilization" OR "Persuasive Communication" OR "Conscious Sedation" OR Reinforcement OR "Reinforcements" OR "Collaboration" OR "Collaborations" OR "co-operation" OR "co-operations" OR "cooperation" OR "cooperations" OR "Accepting" OR "acceptance" OR "Behavior Control" OR "Behavior Therapy" OR "Problem Behavior" OR "Cooperative Behavior" in Title Abstract Keyword AND "parents" OR "parent" OR "Parent-Child Relations" OR "parental" OR "mothers" OR "mother" OR "fathers" OR "father" in Title Abstract Keyword AND "child" OR "children" OR "childhood" OR "preschool" OR "preschools" OR "pediatrics" OR "pediatric" OR "paediatrics" OR "paediatric" OR "Child Behavior" in Title Abstract Keyword
LILACS	(tw:(("dental" OR "dentistry") AND ("visit" OR "visits" OR "treatment" OR "treatments" OR "restoration" OR "restorations" OR "Tooth Extraction" OR "Extracción Dental" OR "Extração Dentária" OR "Extraction" OR "Extractions" OR "Dental Prophylaxis" OR "Prophylaxis")) OR "Dental Care" OR "Dental Care for Children" OR "Dental Offices" OR "Dental Office" OR "Pediatric Dentistry" OR "Odontologia Pediátrica" OR "Odontopediatria" OR "oral health")) AND (tw:(("Conditioning, Operant" OR "Operant Conditioning" OR "Operant Conditionings" OR "Condicionamiento Operante" OR "Condicionamento Operante" OR "Instrumental Learning" OR "Restraint, Physical" OR "Physical Restraint" OR "Physical Restraints" OR "Physical Immobilization" OR "Restricción Física" OR "Restrição Física" OR "Immobilization" OR "Persuasive Communication" OR "Comunicación Persuasiva" OR "Comunicação Persuasiva" OR "Conscious Sedation" OR "Sedación Consciente" OR "Sedação Consciente" OR "Reinforcement(Psychology)" OR "Refuerzo (Psicología)" OR "Reforço (Psicologia)" OR "Reinforcement" OR "Reinforcements" OR "Reinforcement, Verbal" OR "Refuerzo Verbal" OR "Reforço Verbal" OR "Collaboration" OR "Collaborations" OR "co-operation" OR "co-operations" OR "cooperation" OR "cooperations" OR "Accepting" OR "acceptance" OR "Patient Acceptance of Health Care" OR "Aceptación de la Atención de Salud" OR "Aceitação pelo Paciente de Cuidados de Saúde" OR "Behavior Control" OR "Behavior Therapy" OR "Problem Behavior" OR "Cooperative Behavior" OR "Conducta Cooperativa" OR "Comportamento Cooperativo")) AND (tw:(("parents" OR "Padres" OR "Pais" OR "parent" OR "Parent-Child Relations" OR "Relaciones Padres-Hijo" OR "Relações Pais-Filho" OR "parental" OR "mothers" OR "madres" OR "mães" OR "mother" OR "madre" OR "mãe" OR "fathers" OR "father" OR "padre" OR "pai")) AND (tw:(("child" OR "Niño" OR "criança" OR "children" OR "childhood" OR "child, preschool" OR "preschool" OR "Preescolar" OR "Pré-Escolar" OR "preschools" OR "pediatrics" OR "pediatric" OR "paediatrics" OR "paediatric" OR "Child Behavior")) AND (instance:"regional") AND ( db:(("LILACS"))
PsycInfo	((Any Field: "Conditioning, Operant" OR Any Field: "Operant Conditioning" OR Any Field: "Operant Conditionings" OR Any Field: "Instrumental Learning" OR Any Field: "Restraint, Physical" OR Any Field: "Physical Restraint" OR Any Field: "Physical Restraints" OR Any Field: "Physical Immobilization" OR Any Field: "Immobilization" OR Any Field: "Persuasive Communication" OR Any Field: "Conscious Sedation" OR Any Field: "Reinforcement(Psychology)" OR Any Field: "Reinforcement" OR Any Field: "Reinforcements" OR Any Field: "Collaboration" OR Any Field: "Collaborations" OR Any Field: "co-operation" OR Any Field: "co-operations" OR Any Field: "cooperation" OR Any Field: "cooperations" OR Any Field: "Accepting" OR Any Field: "acceptance" OR Any Field: "Behavior Control" OR Any Field: "Behavior Therapy" OR Any Field: "Problem Behavior" OR Any Field: "Cooperative Behavior") AND (Any Field: "parents" OR Any Field: "parent" OR Any Field: "Parent-Child Relations" OR Any Field: "parental" OR Any Field: "mothers" OR Any Field: "mother" OR Any Field: "fathers" OR Any Field: "father") AND (Any Field: "child" OR Any Field: "children" OR Any Field: "childhood" OR Any Field: "child, preschool" OR Any Field: "preschool" OR Any Field: "preschools" OR Any Field: "pediatrics" OR Any Field: "pediatric" OR Any Field: "paediatrics" OR Any Field: "paediatric" OR Any Field: "Child Behavior") AND (((Any Field: "dental" OR Any Field: "dentistry") AND (Any Field: "visit" OR Any Field: "visits" OR Any Field: "treatment" OR Any Field: "treatments" OR Any Field: "restoration" OR Any Field: "restorations" OR Any Field: "Tooth Extraction" OR Any Field: "Extraction" OR Any Field: "Extractions" OR Any Field: "Dental Prophylaxis" OR Any Field: "Prophylaxis")) OR Any Field: "Dental Care" OR Any Field: "Dental Care for Children" OR Any Field: "Dental Offices" OR Any Field: "Dental Offices" OR Any Field: "Dental Office" OR Any Field: "Pediatric Dentistry" OR Any Field: "oral health") AND Document Type: Journal Article
PubMed	((("Conditioning, Operant"[Mesh] OR "Operant Conditioning"[All Fields] OR "Operant Conditionings"[All Fields] OR "Instrumental Learning"[All Fields] OR "Restraint, Physical"[Mesh] OR "Physical Restraint"[All Fields] OR "Physical Restraints"[All Fields] OR "Physical Immobilization"[All Fields] OR "Immobilization"[Mesh] OR "Immobilization"[All Fields] OR "Persuasive Communication"[Mesh] OR "Persuasive Communication"[All Fields] OR "Conscious Sedation"[Mesh] OR "Conscious Sedation"[All Fields] OR "Reinforcement(Psychology)"[Mesh:noexp] OR "Reinforcement"[All Fields] OR "Reinforcements"[All Fields] OR "Collaboration"[All Fields] OR "Collaborations"[All Fields] OR "co-operation"[All Fields] OR "co-operations"[All Fields] OR "cooperation"[All Fields] OR "cooperations"[All Fields] OR "Accepting"[All Fields] OR "acceptance"[All Fields] OR "Behavior Control"[Mesh] OR "Behavior Therapy"[Mesh] OR "Problem Behavior"[Mesh] OR "Cooperative Behavior"[Mesh] OR "Behavior Control"[All Fields] OR "Behavior Therapy"[All Fields] OR "Problem Behavior"[All Fields] OR "Cooperative Behavior"[All Fields] OR "cognitive therapy"[All Fields] OR "play therapy"[All Fields] OR "music therapy"[All Fields]) AND ("parents"[MeSH] OR "parents"[All Fields] OR "parent"[All Fields] OR "Parent-Child Relations"[Mesh] OR "parental"[All Fields] OR "mothers"[MeSH] OR "mothers"[All Fields] OR "mother"[All Fields] OR "fathers"[MeSH] OR "fathers"[All Fields] OR "father"[All Fields]) AND ("child"[MeSH Terms] OR "child"[Title/Abstract] OR "children"[Title/Abstract] OR "childhood"[Title/Abstract] OR "child, preschool"[MeSH Terms] OR preschool[All Fields] OR preschools[All Fields] OR "pediatrics"[MeSH Terms] OR "pediatrics"[Title/Abstract] OR "pediatric"[Title/Abstract] OR "paediatrics"[Title/Abstract] OR "paediatric"[Title/Abstract] OR "Child Behavior"[Mesh]) AND (((("dental"[Title/Abstract] OR "dentistry"[Title/Abstract]) AND ("visit"[All Fields] OR "visits"[All Fields] OR "treatment"[All Fields] OR "treatments"[All Fields] OR "restoration"[All Fields] OR "restorations"[All Fields] OR "Tooth Extraction"[Mesh:noexp] OR "Extraction"[All Fields] OR "Extractions"[All Fields] OR "Dental Prophylaxis"[Mesh:noexp] OR "Prophylaxis"[All Fields]) OR "Dental Care"[Mesh:noexp] OR "Dental Care"[All Fields] OR "Dental Care for Children"[Mesh] OR "Dental Offices"[Mesh] OR "Dental Offices"[All Fields] OR "Dental Office"[All Fields] OR "Pediatric Dentistry"[Mesh] OR "oral health"[Title/Abstract])

Continue

## Continuation

Scopus	( TITLE-ABS-KEY ( ( ( "dental" OR "dentistry" ) AND ( "visit" OR "visits" OR "treatment" OR "treatments" OR "restoration" OR "restorations" OR "Tooth Extraction" OR "Extraction" OR "Extractions" OR "Dental Prophylaxis" OR "Prophylaxis" ) ) OR "Dental Care" OR "Dental Care for Children" OR "Dental Offices" OR "Dental Office" OR "Pediatric Dentistry" OR "oral health" ) ) AND ( TITLE-ABS-KEY ( "Operant Conditioning" OR "Operant Conditionings" OR "Instrumental Learning" OR "Physical Restraint" OR "Physical Restraints" OR "Physical Immobilization" OR "Immobilization" OR "Persuasive Communication" OR "Conscious Sedation" OR reinforcement OR "Reinforcements" OR "Collaboration" OR "Collaborations" OR "co-operation" OR "co-operations" OR "cooperation" OR "cooperations" OR "Accepting" OR "acceptance" OR "Behavior Control" OR "Behavior Therapy" OR "Problem Behavior" OR "Cooperative Behavior" ) ) AND ( TITLE-ABS-KEY ( "parents" OR "parent" OR "Parent-Child Relations" OR "parental" OR "mothers" OR "mother" OR "fathers" OR "father" ) ) AND ( TITLE-ABS-KEY ( "child" OR "children" OR "childhood" OR "preschool" OR "preschools" OR "Child Behavior" ) ) AND ( LIMIT-TO ( DOCTYPE , "ar" ) ) AND ( LIMIT-TO ( SRCTYPE , "i" ) )
Web of Science	((("Conditioning, Operant" OR "Operant Conditioning" OR "Operant Conditionings" OR "Instrumental Learning" OR "Restraint, Physical" OR "Physical Restraint" OR "Physical Restraints" OR "Physical Immobilization" OR "Immobilization" OR "Persuasive Communication" OR "Conscious Sedation" OR "Reinforcement" OR "Reinforcement" OR "Reinforcements" OR "Collaboration" OR "Collaborations" OR "co-operation" OR "co-operations" OR "cooperation" OR "cooperations" OR "Accepting" OR "acceptance" OR "Behavior Control" OR "Behavior Therapy" OR "Problem Behavior" OR "Cooperative Behavior") AND ("parents" OR "parent" OR "Parent-Child Relations" OR "parental" OR "mothers" OR "mother" OR "fathers" OR "father") AND ("child" OR "children" OR "childhood" OR "child, preschool" OR "preschool" OR "preschools" OR "pediatrics" OR "pediatric" OR "paediatrics" OR "paediatric" OR "Child Behavior") AND (((("dental" OR "dentistry") AND ("visit" OR "visits" OR "treatment" OR "treatments" OR "restoration" OR "restorations" OR "Tooth Extraction" OR "Extraction" OR "Extractions" OR "Dental Prophylaxis" OR "Prophylaxis")) OR "Dental Care" OR "Dental Care for Children" OR "Dental Offices" OR "Dental Office" OR "Pediatric Dentistry" OR "oral health"))) Refined by: DOCUMENT TYPES: ( ARTICLE )
Google Scholar	((("parental" OR "mothers" OR "mother" OR "fathers" OR "father") AND ("acceptance")) AND ((("child" OR "children") AND "dental" AND ("Behavior Control"))
OpenGrey	((("Conditioning, Operant" OR "Operant Conditioning" OR "Operant Conditionings" OR "Instrumental Learning" OR "Restraint, Physical" OR "Physical Restraint" OR "Physical Restraints" OR "Physical Immobilization" OR "Immobilization" OR "Persuasive Communication" OR "Conscious Sedation" OR "Reinforcement(Psychology)" OR "Reinforcement" OR "Reinforcements" OR "Collaboration" OR "Collaborations" OR "co-operation" OR "co-operations" OR "cooperation" OR "cooperations" OR "Accepting" OR "acceptance" OR "Behavior Control" OR "Behavior Therapy" OR "Problem Behavior" OR "Cooperative Behavior") AND ("parents" OR "parent" OR "Parent-Child Relations" OR "parental" OR "mothers" OR "mother" OR "fathers" OR "father") AND ("child" OR "children" OR "childhood" OR "child, preschool" OR "preschool" OR "preschools" OR "pediatrics" OR "pediatric" OR "paediatrics" OR "paediatric" OR "Child Behavior") AND (((("dental" OR "dentistry") AND ("visit" OR "visits" OR "treatment" OR "treatments" OR "restoration" OR "restorations" OR "Tooth Extraction" OR "Extraction" OR "Extractions" OR "Dental Prophylaxis" OR "Prophylaxis")) OR "Dental Care" OR "Dental Care for Children" OR "Dental Offices" OR "Dental Office" OR "Pediatric Dentistry" OR "oral health"))
ProQuest	noff(("Conditioning, Operant" OR "Operant Conditioning" OR "Operant Conditionings" OR "Instrumental Learning" OR "Restraint, Physical" OR "Physical Restraint" OR "Physical Restraints" OR "Physical Immobilization" OR "Immobilization" OR "Persuasive Communication" OR "Conscious Sedation" OR "Reinforcement(Psychology)" OR "Reinforcement" OR "Reinforcements" OR "Collaboration" OR "Collaborations" OR "co-operation" OR "co-operations" OR "cooperation" OR "cooperations" OR "Accepting" OR "acceptance" OR "Behavior Control" OR "Behavior Therapy" OR "Problem Behavior" OR "Cooperative Behavior" OR "Cooperative Behavior") AND ("parents" OR "parent" OR "Parent-Child Relations" OR "parental" OR "mothers" OR "mother" OR "fathers" OR "father") AND ("child" OR "children" OR "childhood" OR "child, preschool" OR "preschool" OR "preschools" OR "pediatrics" OR "pediatric" OR "paediatrics" OR "paediatric" OR "Child Behavior") AND (((("dental" OR "dentistry") AND ("visit" OR "visits" OR "treatment" OR "treatments" OR "restoration" OR "restorations" OR "Tooth Extraction" OR "Extraction" OR "Extractions" OR "Dental Prophylaxis" OR "Prophylaxis")) OR "Dental Care" OR "Dental Care for Children" OR "Dental Offices" OR "Dental Office" OR "Pediatric Dentistry" OR "oral health"))

all reviewers before the critical appraisal began. The grading system was determined by the authors as follows: the studies that presented "yes" for all questions were rated as having good methodological quality and therefore a low risk of bias; those that presented at least one "unclear" answer were rated as having an unclear risk of bias; and those with at least one "no" answer were rated as having a high risk of bias (Table 2). The plot was generated with the web app robvis.<sup>12</sup>

## Effect measures and synthesis methods

The primary outcome was the proportion of parents' acceptance of BGT use during pediatric dental visits. The proportion of the parents' acceptance of the use of BGTs was measured by a dichotomous outcome using the parent's acceptance of each technique (yes/no) and a continuous outcome using the mean ratings of the parents' agreement and the differences in means using a Visual Analog Scale (VAS) measured in millimeters (mm).



For data analysis, when the studies presented the mean VAS scores of the parents' agreement using rating anchors of zero mm as the most accepted and 100 mm as the least accepted behavior technique, the data were transformed by reversing the value from 100 to zero to represent the least accepted and 100 mm as the most accepted. When the studies used a VAS measured in centimeters, the ratings were converted to millimeters. When the studies used a Likert scale, the "most acceptable" grades were pooled with the acceptance responses of "yes" from the studies that used "yes" or "no" to assess acceptance.

The subgroup analyses included the differences in agreement with the BGTs employed between the parents of non-SHCN children and the parents of SHCN children, as well as the differences in agreement with the BGTs employed between the parents who received an explanation before the presentation of the technique and those who did not.

In addition, "conscious sedation" and "sedation" were pooled together as sedation, "parents' separation" was combined with "parents present/ absent" and presented as "parental presence/absence" (PP/A);

"protective stabilization" and "physical restraints" were coded as "active protective stabilization (APS)," and "papoose board" and "passive restraint" were coded as "passive protective stabilization (PPS)."

Regarding SHCN children, independent of their specific health care needs, the parents' agreement with the BGTs employed for all children were pooled together.

Studies with sufficient information were included in four different meta-analyses: a) Proportion of acceptance of the BGTs separately for the parents of non-SHCN and SHCN children, with the aid of MedCalc Statistical Software version 14.8.1 (MedCalc Software, Ostend, Belgium); and b) the mean of the agreement with the BGTs employed was measured using the VAS for the parents of both non-SHCN children and SHCN children separately, with the aid of the Comprehensive Meta-Analysis Software (Biostat, Englewood, USA). All studies with parental acceptance measured using the VAS were included, and a separate meta-analysis was performed for each BGT; c) differences in the means of the agreement with the BGTs, as measured using the VAS, among the parents of non-SHCN children were compared with the parents of SHCN children using the RevMan Software (Review Manager, version

**Table 2.** Joanna Briggs Institute Critical Appraisal Checklist for Analytical Cross-Sectional Studies classification determined by the review authors'.

Checklist for Analytical Cross-Sectional studies	Classification		
	Y	N	U
Were the study subjects and the setting described in detail?	Study sample described with sufficient detail, if were in clinic attendance, type of selection, and time period	No description of the population details	No clear description of the population details
Was the exposure measured in a valid and reliable way?	Clearly description of the behavior guidance techniques that were evaluated	No description of behavior guidance techniques	Not clear description of the behavior guidance techniques
Were objective, standard criteria used for measurement of the condition?	Clearly description of the clinical situations for children dental visits (type of treatment, type of behavior) for measure parents acceptance of behavior guidance techniques	No definition of the clinical situation was presented	When no clear definition of the clinical situation was available
Were confounding factors identified?	Identified confounding factor such as children's age, previous experience in the dental visits, parents educational/house holding status	No identified confounding factor	Not clear if the study identified these confounding factor
Were strategies to deal with confounding factors stated?	All identified confounding factors were included in data analysis such as subgroup analysis	Confounding factors were not included in data analysis	Presented confounding factors but did not use all of the presented in the analysis
Were the outcomes measured in a valid and reliable way?	Clearly description of the use of a questionnaire or visual methods for measure parents acceptance of behavior guidance techniques	No description of the method of measurement parents acceptance	Not clear description of the method of measurement parents acceptance
Was appropriate statistical analysis used?	All identified confounding factors were included in data analysis	Confounding factors were not included in data analysis	Presented confounding factors but did not use all of the presented in the analysis

Y: yes; N: no; U: unclear.

5.3, Cochrane Collaboration, Copenhagen, Denmark); and d) differences in the means of agreement with the BGTs, as measured using the VAS, among the parents of non-SHCN children who received an explanation before the presentation of the technique and those who did not, were also measured using RevMan. Since the included studies were selected based on the inclusion and exclusion criteria, there was a potential for effects to be dissimilar; therefore, a random-effects model was applied.<sup>13</sup> Heterogeneity was assessed using the  $I^2$  test (ratio of true heterogeneity to the total observed variation), and a value  $> 50\%$  was considered an indicator of substantial heterogeneity between studies.<sup>13</sup> The level of significance was set at 5%.

### Reporting bias

The risk of bias due to missing results in the synthesis (arising from reporting biases) assessment was performed based on the methods described in the reports of the included studies and compared with the results reported.

### Certainty of the evidence assessment

Two independent reviewers (CM and JPS) assessed the certainty of evidence using the Grading of Recommendations, Assessment, Development, and Evaluation (GRADE)<sup>14</sup> criteria. Disagreements were resolved through consensus. Aspects such as risk of bias, inconsistency, indirectness, imprecision, and publication bias can lower the certainty of the evidence, and the presence of a large effect, dose response gradient, or if the study controlled for plausible confounders can increase the certainty of the evidence in observational studies. The certainty of evidence starts with low in observational studies and can be either upgraded or downgraded.

## Results

### Study selection

A literature search identified 2349 citations across six databases. After deduplication, 1,440 articles remained. An additional 144 studies were identified in the gray literature search. The full text of 84 studies was accessed, and 53 met the inclusion criteria for the review. One of these studies had two publications<sup>39,67</sup>.

Of these, 42 contained sufficient information to allow for quantitative analysis. The detailed search and selection criteria are shown in Figure 1. The excluded studies with their exclusion rationales are included in Table 3.

### Study characteristics

The 53 studies had cross-sectional designs, included a total of 4868 participants overall, and were published between 1984 and 2021. Most of the studies were conducted in clinics and pediatric hospitals (Table 4).

Seven studies evaluated parents of children with SHCNs. The children were medically or physically compromised with neuropathological disorders,<sup>15</sup> intellectual disabilities,<sup>16</sup> physical or mental disabilities,<sup>17</sup> physical or congenital disabilities, mental, intelligence, or behavioral deviations, and/or systemic chronic diseases<sup>18</sup> and included a range of disabilities such as Down's syndrome, cerebral palsy,<sup>19</sup> autism,<sup>20</sup> and cleft lip and/or palate<sup>21</sup> (Table 4).

### Risk of bias in studies

The assessment of the risk of bias is shown in Figure 2. According to the Joanna Briggs Critical Appraisal Tool assessment, 36 studies were assessed as having low methodological quality, 5 as having unclear quality, and 12 as having high methodological quality. A major concern regarding methodological quality was observed, mainly regarding issues with response rates, representativeness, and confounding factors.

### Results of syntheses

The pooled analysis results for the primary outcome, namely, the proportion of parents' agreement with the use of BGTs for pediatric dental visits, were as follows:

- a. The proportion of agreement with the BGTs by the parents of non-SHCNs, reported based on acceptability/unacceptability, was examined using a separate meta-analysis for each technique. Overall, the analysis included 30 studies ( $n = 2647$ ) that evaluated 16 BGTs. A random effects model was used. The proportion

of acceptance varied from 85.6% (95% confidence interval (CI) 77.5–92.1;  $p < 0.001$ ;  $I^2 = 93.6\%$ ) to 23.5% (95%CI: 12.7–36.4;  $p < 0.001$ ;  $I^2 = 92.5\%$ ), with tell-show-do (TSD) found as the most acceptable and hand over mouth as the least accepted (Figure 3 and Table 5) technique. The  $I^2$  statistic, which refers to the proportion of the observed variance that reflects the differences in the true effect sizes (in log units),<sup>13</sup> varied from not important at 32.5% (oral premedication) to considerable at 97.7% (modeling and sedation (SE)). Since  $I^2 > 50\%$  was considered an indication of high heterogeneity, most meta-analyses showed considerable heterogeneity.

The analysis of the proportion of agreement with the BGTs by the children’s parents included five studies ( $n = 748$ ), with nine BGTs analyzed. The most accepted BGT in this analysis was tell-show-do, with 89.1% (95%CI: 56.1–99.7;  $p < 0.001$ ;  $I^2 = 95.7\%$ ) of the parents agreeing with the technique, and the least accepted was general anesthetic, with 29.1% (95%CI: 11.8–50.0;  $p = 0.001$ ;  $I^2 = 84.8$ ) accepting it. Hand over the mouth was not assessed (Figure 4 and Table 5). The  $I^2$  statistic varied from zero SE to 98.5% (voice control (VC)).

b. The mean agreement with BGTs, as measured using the VAS, for parents of non-SHCN children is presented in Figure 5. A random effects model was used. Distraction was the

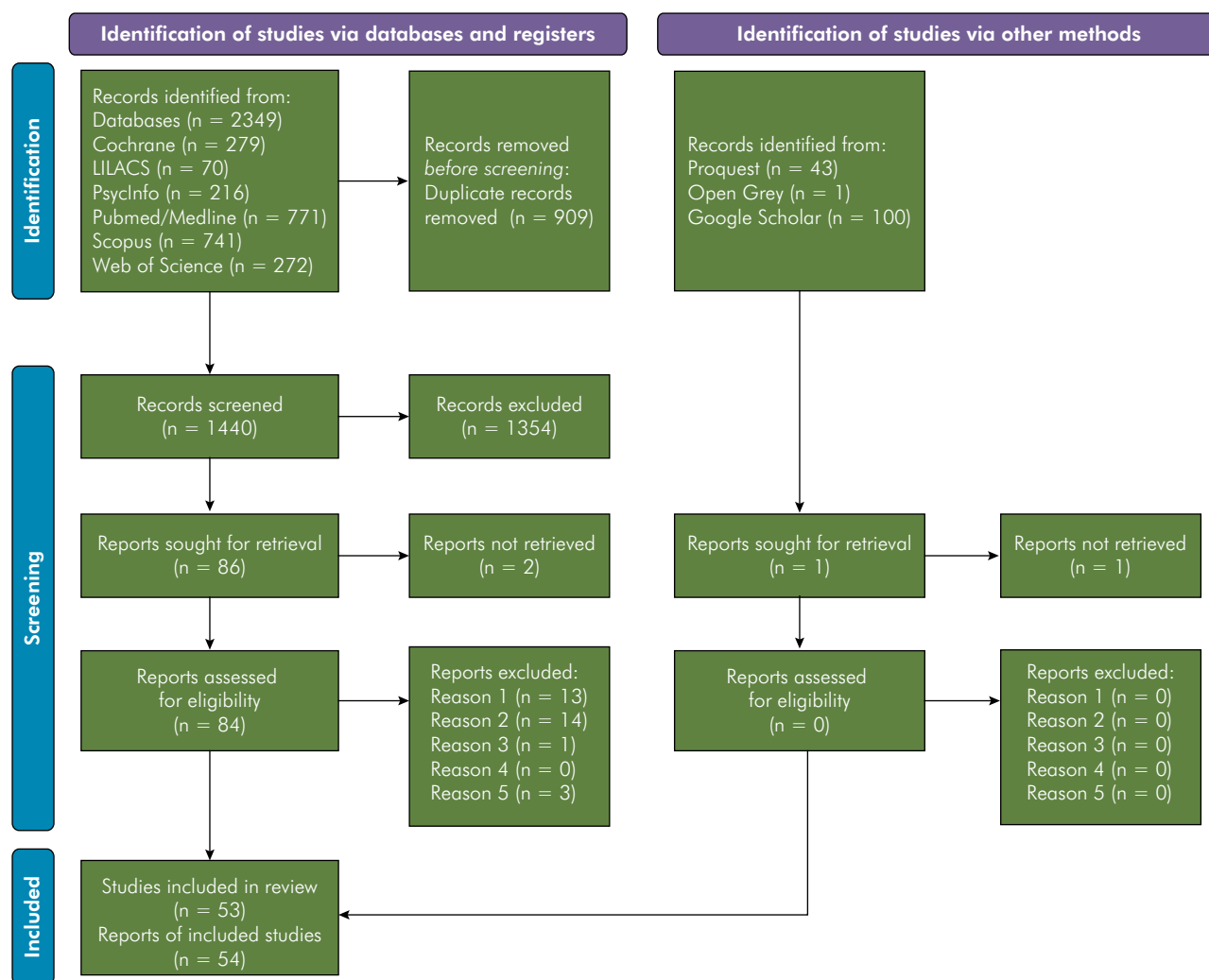


Figure 1. Flow diagram of literature search and selection criteria.



**Table 3.** Excluded articles and reasons for exclusion (n = 32).

Author, Year	Reason for exclusion
Abushal, Adenubi 2009 <sup>1</sup>	1
Almarwan et al 2018 <sup>2</sup>	2
Araujo et al 2010 <sup>3</sup>	1
Arch et al 2001 <sup>4</sup>	2
Ashley et al 2010 <sup>5</sup>	2
Bayardo et al 2012 <sup>6</sup>	1
Blain, Hill 1998 <sup>7</sup>	4
Chang et al 2018 <sup>8</sup>	5
Chiaretti 2010 <sup>9</sup>	1
Cohenour et al 1978 <sup>10</sup>	2
Desai et al <sup>11</sup>	4
Elango 2012 <sup>12</sup>	5
Gomes 2017 <sup>13</sup>	3
Guinot et al <sup>14</sup>	4
Grewal 2003 <sup>15</sup>	2
Heinrich 2004 <sup>16</sup>	2
Jain 2013 <sup>17</sup>	2
Kaygisiz, Yesil 2000 <sup>18</sup>	2
Kupietzky 2005 <sup>19</sup>	5
Lahoud 2001 <sup>20</sup>	2
Lee et al 2002 <sup>21</sup>	2
Meira 2009 <sup>22</sup>	1
Peretz 2014 <sup>23</sup>	2
Quinby 2004 <sup>24</sup>	1
Ram et al 2010 <sup>25</sup>	1
Rodrigues et al <sup>26</sup>	1
Sabbagh and Sijini 2020 <sup>27</sup>	1
Shaw et al 1996 <sup>28</sup>	1
Shroff et al 2015 <sup>29</sup>	1
Soldani et al 2010 <sup>30</sup>	2
Veerkamp et al <sup>31</sup>	2
White et al 2003 <sup>32</sup>	1
White et al 2016 <sup>33</sup>	1
Wood 2010 <sup>34</sup>	2

1) Studies that did not evaluate the parents' agreement of behavior guidance techniques but instead addressed parents' satisfaction/preferences and/or success rate and treatment costs;

2) Lacked data regarding parents' agreement with behavior guidance techniques;

3) Secondary studies (review articles, letters to the editor, books, book chapters etc.);

4) Did not find complete data in published article;

5) Articles that duplicated participants from other publications.

**Table 3 references.**

1. Abushal M, Adenubi JO. Attitudes of Saudi parents toward separation from their children during dental treatment. *The Saudi dental journal*. 2009;21(2):63-67.

2. Almarwan M. Parental Perception toward Dental Sedation in Pediatric Patients at the University of Maryland [10817539]. Ann Arbor: University of Maryland, Baltimore; 2018.

Continue

Continuation

3. Araújo SM, Silveira EG, Mello LD, Caregnato M, Dal, Asta VG. Ponto de vista dos pais em relação a sua presença durante o atendimento odontológico de seus filhos. *Salusvita*. 2010;29(2):17-27.
4. Arch L, Humphris G, Lee G. Children choosing between general anaesthesia or inhalation sedation for dental extractions: the effect on dental anxiety. *International journal of paediatric dentistry*2001. p. 41-48.
5. Ashley PF, Parry J, Parekh S, Al-Chihabi M, Ryan D. Sedation for dental treatment of children in the primary care sector (UK). *British dental journal*. 2010;208(11):E21; discussion 522-523.
6. Bayardo RA, Herrera ML, Aceves L. Midazolam conscious sedation in 2-4 years old children. *RGO*. 2012;60(3).
7. Blain K, Hill F. The use of inhalation sedation and local anaesthesia as an alternative to general anaesthesia for dental extractions in children. *British dental journal*1998.
8. Chang CT, Badger GR, Acharya B, Gaw AF, Barratt MS, Chiquet BT. Influence of Ethnicity on Parental Preference for Pediatric Dental Behavioral Management Techniques. *Pediatric dentistry*. 2018;40(4):265-272.
9. Chiaretti A, Barone G, Rigante D, Ruggiero A, Pierri F, Barbi E, et al. Intranasal lidocaine and midazolam for procedural sedation in children. *Archives of disease in childhood*. 2011;96(2):160-163.
10. Cohenour K, Gamble JW, Metzgar MT, Ward RL. A composite general anesthesia technique using ketamine for pediatric outpatients. *Journal of oral surgery (American Dental Association : 1965)*. 1978;36(8):594-598.
11. Desai SP, Shah PP, Jajoo SS, Smita PS. Assessment of parental attitude toward different behavior management techniques used in pediatric dentistry. *Journal of the Indian Society of Pedodontics and Preventive Dentistry*. 2019;37(4):350-359.
12. Elango I, Baweja D, Shivaprakash P. Parental acceptance of pediatric behavior management techniques: A comparative study. *J Indian Soc Pedodontics Prev Dent*. 2012;30(3):195-200.
13. Gomes H, Mir, a A, Viana K, Batista A, Costa P, et al. Intranasal sedation using ketamine and midazolam for pediatric dental treatment (NASO): study protocol for a randomized controlled trial. *Trials*2017.
14. Guinot F, Virolés M, Lluch C, Costa AL, Veloso A. Spanish and Portuguese Parental Acceptance of Behavior Management Techniques in Pediatric Dentistry. *J Clin Pediatr Dent*. 2021;45(4):247-252. doi:10.17796/1053-4625-45.4.5.
15. Grewal N. Implementation of behaviour management techniques--how well accepted they are today. *Journal of the Indian Society of Pedodontics and Preventive Dentistry*. 2003;21(2):70-74.
16. Heinrich M, Wetzstein V, Muensterer OJ, Till H. Conscious sedation: Off-label use of rectal S(+)-ketamine and midazolam for wound dressing changes in paediatric heat injuries. *Eur J Pediatr Surg*. 2004;14(4):235-239.
17. Jain C, Mathu-Muju K, Nash D, Bush H, Li H, Nash P. Randomized controlled trial: parental compliance with instructions to remain silent in the dental operatory. *Pediatric dentistry*2013. p. 47-51.
18. Kaygisiz YY. Parental understanding and acceptance of behavior management for child dental patients [1397833]. Ann Arbor: University of Minnesota; 2000.
19. Kupietzky A, Ram D. Effects of a positive verbal presentation on parental acceptance of passive medical stabilization for the dental treatment of young children. *Pediatric dentistry*. 2005;27(5):380-384.
20. Lahoud GY, Averley PA, Hanlon MR. Sevoflurane inhalation conscious sedation for children having dental treatment. *Anaesthesia*. 2001;56(5):476-480.
21. Lee CM, Blain SM, Duperon DF. Parents' self-reported compliance with preventive practices after witnessing their child undergo intravenous sedation for dental treatment. *ASDC journal of dentistry for children*. 2002;69(1):77-80, 13.
22. Meira Filho MMdO, Araújo DTC, Menezes VAd, Granville Garcia AF. Atendimento odontológico da criança: percepção materna. *RGO*. 2009;57(3):311-315.
23. Peretz B, Kharouba J, Somri M. A comparison of two different dosages of oral midazolam in the same pediatric dental patients. *Pediatric dentistry*. 2014;36(3):228-232.
24. Quinby DJ, Sheller B, Williams BJ, Grembowski D. Parent satisfaction with emergency dental treatment at a children's hospital. *Journal of dentistry for children (Chicago, Ill)*. 2004;71(1):17-23.
25. Ram D, Shapira J, Holan G, Magora F, Cohen S, Davidovich E. Audiovisual video eyeglass distraction during dental treatment in children. *Quintessence international (Berlin, Germany : 1985)*. 2010;41(8):673-679.
26. Rodrigues VBM, Costa LR, Corrêa de Faria P. Parents' satisfaction with paediatric dental treatment under sedation: A cross-sectional study. *International journal of paediatric dentistry*. 2020.
27. Sabbagh HJ, Sijini OT. Parental Preference for Parental Separation and Their Satisfaction Regarding Their Children Dental Treatment in Pediatric Dental Clinics in Saudi Arabia. *J Int Soc Prev Community Dent*. 2020 Feb 11;10(1):116-123. doi: 10.4103/jispcd.JISPCD\_280\_19. PMID: 32181229; PMCID: PMC7055347.
28. Shaw AJ, Meechan JG, Kilpatrick NM, Welbury RR. The use of inhalation sedation and local anaesthesia instead of general anaesthesia for extractions and minor oral surgery in children: a prospective study. *International journal of paediatric dentistry*. 1996;6(1):7-11.
29. Shroff S, Hughes C, Mobley C. Attitudes and preferences of parents about being present in the dental operatory. *Pediatric dentistry*. 2015;37(1):51-55.
30. Soldani F, Manton S, Stirrups D, Cumming C, Foley J. A comparison of inhalation sedation agents in the management of children receiving dental treatment: a randomized, controlled, cross-over pilot trial. *International journal of paediatric dentistry*2010. p. 65-75.
31. Veerkamp JS, Gruythuysen RJ, van Amerongen WE, Hoogstraten J. Dental treatment of fearful children using nitrous oxide. Part 2: The parent's point of view. *ASDC journal of dentistry for children*.59(2):115-119.
32. White H, Lee JY, Vann Jr WF. Parental evaluation of quality of life measures following pediatric dental treatment using general anesthesia. *Anesthesia progress*. 2003;50(3):105-110.
33. White J, Wells M, Arheart KL, Donaldson M, Woods MA. A Questionnaire of Parental Perceptions of Conscious Sedation in Pediatric Dentistry. *Pediatric dentistry*. 2016;38(2):116-121.
34. Wood MN, Manley MCG, Bezzina N, Hassan R. An audit of the use of intravenous ketamine for paediatric dental conscious sedation. *British dental journal*. 2015;218(10):573-577.

**Table 4.** Summary of descriptive characteristics of included articles in non-special health care needs children and special health care needs children.

Group	Author, year, country	Settings/ Total parents N; Sex (M/F)/ Children's age (years); Mean; Range	Behavior Guidance Technique (BGT)	Scale (VAS, Likert); Yes/No response; Ranking preference	Main Findings	Main conclusion
	Abushal and Adenubi 2003 <sup>45</sup> , Saudi Arabia	University 133 NI	TSD; PR; HOM; CS; APS; DIS; VC; PP/A; NC; GA.	VAS (4 categories by the authors); Ranking preference.	TSD and PR were the most acceptable. The most unacceptable was VC and HOM.	Parents accepted most of the techniques. Explanation enhanced their level of acceptance.
	Alammouri 2006 <sup>38</sup> , Jordan	University 138 66M 70F NI	TSD; PR; NC; VC; PP/A; DIS; HOM; APS; Hyp; N2O; CS; GA.	Yes/No response.	Parents had positive attitudes to TSD, PR and DIS. Did not accept the HOM, APS, N2O, CS and GA.	The general parental attitudes were positive regarding the BGT.
	Allen et al 1995 <sup>28</sup> , USA	University 120 120 F 02/ago	TSD; N2O; PPS; VC; HOM; OP; APS; GA.	Likert scale (1-9) and consenting (Yes/No).	Only the oral method produced significantly better consent for individual procedures. All the parents consented to TSD.	Oral information to parents about each technique is most likely to result in parents who feel well informed and who are likely to provide written consent.
Video-based research	Boka et al 2014 <sup>46</sup> , Greece	University 229 60 M 129 F 3-12 (7.8)	TSD; N2O; PPS; VC; HOM; CS; APS; GA; PPA.	VAS (0-10)	TSD was rated higher than any other by all parents. PPA was the second most accepted technique followed by N2O. The least accepted techniques were PPS and GA.	Parents with negative dental experience would prefer GA over any of active or passive restraint; HOM and VC techniques. PPA was a highly acceptable technique.
	Chang 2016 <sup>35</sup> , USA	Pediatric Dentistry Clinic 104 30 M 74 F NI	TSD; VC; NC; PR; DIS; PPA; N2O; GA; SE; APS.	VAS (0-100)	PR and TSD were the most acceptable techniques. Decreasing of acceptance DIS, PPA, N2O, NC, SE, VC and APS.	PR and TSD are most accepted by parents, while invasive techniques such as VC and PP/A, are the least accepted.
	Cordero et al 2012 <sup>47</sup> , Colombia	Private practice and University 129 26 M 103 F mar/15	TSD; PR; DIS; APS; PPS; N2O; GA.	Likert scale	89.1% accepted the N2O. And 35.9% accepted the GA. The communicative techniques had more acceptances with TSD (94.6%), PR (97.7%), DIS (92.2%).	There was high rejection of parents to the traditional use of restrictive techniques and greater acceptance of communication techniques.

Continue

Continuation	Eaton et al 2005 <sup>31</sup> , USA	University 46 8 M 38 F NI	TSD; N2O; PPS; VC; HOM; SE; APS; GA.	VAS (0-100)	TSD was rated as the most acceptable technique, followed (in order of decreasing acceptance) by N2O, GA, APS, OP, VC, PPS, and HOM.	All techniques had acceptable ratings except for HOM. GA was ranked as the third most acceptable technique.
	Enciso et al 2001 <sup>48</sup> , Colombia	University 81 NI	TSD; DIS; RP; APS; PPS.	Yes/no response.	TSD, PR and DIS were the most accepted techniques. Restrictive BGT had lower acceptance ratings.	Parents compared to those that did not require some type of physical restriction less accepted restrictive techniques.
	Fields et al 1984 <sup>40</sup> , USA	University 67 NI	TSD; MP; VC; PR; HOM; APS; PPS; SE; GA.	Yes/no response (acceptable and unacceptable).	TSD was the most accepted technique followed by PR, VC and MP. Also, the proportion of parents indicating approval of PPS to complete an emergency extraction was higher and significantly different from all other proportions of the procedures for this specific technique.	GA and SD were rated as acceptable by a majority of parents. VC, MP, PR, and TSD were acceptable. Use of PPS was the lowest rated technique acceptable by parents. The acceptability of BGT is related to the specific dental procedure to be accomplished.
Video-based research	Havelka et al 1992 <sup>26</sup> , USA	Private practices and University 122 17 M 105 F NI	TSD; N2O; PPS; VC; HOM; OP; APS; GA.	VAS (0-100)	Acceptable ratings reported for TSD, VC, N2O, APS, OP, GA, PPS and HOM, (in that order).	Techniques judged least acceptable, were HOM (the most unacceptable), GA, PPS and OP.
	Jafarzadeh et al 2015 <sup>32</sup> , Iran	University 54 18 M 36 F NI	TSD; VC; PPS; PR; HOM; OS; GA.	VAS (0-100) presented as yes/no.	TSD had the highest acceptance, PPS (35%) and HOM (30%) the lowest.	Parents reported negative ratings of physical techniques (PPS and HOM) as in past studies. But, advanced pharmaceutical techniques (SE and GA) were reported to have gained higher levels of acceptability.
	Jahanimoghadam et al 2018 <sup>27</sup> , Iran	University 60 20 M 40 F fev/15	TSD; VC; HOM; APS; PPA; GA.	VAS (0-100)	TSD and HOM had the highest and lowest mean scores respectively. The most accepted techniques was: TSD, PPA, APS, VC, GA and HOM.	Parents rated non-invasive methods more favorably.

Continue

Continuation

Private dental clinic	40	SE and GA.	VAS and Yes/No responses.	The majority of parents preferred SE over GA. The majority of the parents stated that their perception of GA was not reflected as much as in the video shown.	Parents better-accepted SE.
	14 M				
	26 F				
Mean age 3.7					
University	25	TSD; PR; VC; DIS; NC; PPA; perceived control; gifts.	VAS (0-10)	Perceived control and PR were rated the most effective and NC and PPA the least effective.	Perceived control and positive reinforcement were rated the most effective.
	12 M				
	13 F				
5-13 (7.56)					
University	80	TSD; N2O; PPS; VC; HOM; OP; APS; GA.	VAS (0-100)	GA was the more unacceptable, followed by OP and PPS. The techniques better accepted were TSD, N2O and VC, respectively.	Informed parents were significantly more accepting of behavior guidance techniques than the uninformed parents but both groups were positive about the techniques.
	21 M				
	59 F				
NI					
University	50	TSD; N2O; SE; PPS; VC; HOM; OP; GA; APS.	VAS (0-10)	The most acceptable technique was TSD, while the least accepted was the HOM.	The techniques were well accepted with the exception of HOM and the PPS.
	16 M				
	34 F				
mar/13					
Community centers and University	50	TSD; VC; APS; GA; N2O; OP; PPS	VAS (0-100)	Comparisons among study groups showed that acceptance was statistically different between Hispanic and non-Hispanic white participants for GA and PPS where Hispanic parents are more accepting of PPS but less accepting of GA. Statistical differences exist between non-Hispanic black and Hispanic parents for APS and GA where Hispanic parents are less accepting of both techniques. No differences existed between non-Hispanic white and non-Hispanic black parents.	Differences in acceptance of behavior management techniques exist between Hispanic, non-Hispanic white, and non-Hispanic black parents, which suggest that practitioners should take into account cultural differences when electing to use them.
	16 M				
	34 F				
mar/13					
Community centers and University	50	TSD; VC; APS; GA; N2O; OP; PPS	VAS (0-100)	Comparisons among study groups showed that acceptance was statistically different between Hispanic and non-Hispanic white participants for GA and PPS where Hispanic parents are more accepting of PPS but less accepting of GA. Statistical differences exist between non-Hispanic black and Hispanic parents for APS and GA where Hispanic parents are less accepting of both techniques. No differences existed between non-Hispanic white and non-Hispanic black parents.	Differences in acceptance of behavior management techniques exist between Hispanic, non-Hispanic white, and non-Hispanic black parents, which suggest that practitioners should take into account cultural differences when electing to use them.
	16 M				
	34 F				
mar/13					
Community centers and University	50	TSD; VC; APS; GA; N2O; OP; PPS	VAS (0-100)	Comparisons among study groups showed that acceptance was statistically different between Hispanic and non-Hispanic white participants for GA and PPS where Hispanic parents are more accepting of PPS but less accepting of GA. Statistical differences exist between non-Hispanic black and Hispanic parents for APS and GA where Hispanic parents are less accepting of both techniques. No differences existed between non-Hispanic white and non-Hispanic black parents.	Differences in acceptance of behavior management techniques exist between Hispanic, non-Hispanic white, and non-Hispanic black parents, which suggest that practitioners should take into account cultural differences when electing to use them.
	16 M				
	34 F				
mar/13					
Community centers and University	50	TSD; VC; APS; GA; N2O; OP; PPS	VAS (0-100)	Comparisons among study groups showed that acceptance was statistically different between Hispanic and non-Hispanic white participants for GA and PPS where Hispanic parents are more accepting of PPS but less accepting of GA. Statistical differences exist between non-Hispanic black and Hispanic parents for APS and GA where Hispanic parents are less accepting of both techniques. No differences existed between non-Hispanic white and non-Hispanic black parents.	Differences in acceptance of behavior management techniques exist between Hispanic, non-Hispanic white, and non-Hispanic black parents, which suggest that practitioners should take into account cultural differences when electing to use them.
	16 M				
	34 F				
mar/13					
Community centers and University	50	TSD; VC; APS; GA; N2O; OP; PPS	VAS (0-100)	Comparisons among study groups showed that acceptance was statistically different between Hispanic and non-Hispanic white participants for GA and PPS where Hispanic parents are more accepting of PPS but less accepting of GA. Statistical differences exist between non-Hispanic black and Hispanic parents for APS and GA where Hispanic parents are less accepting of both techniques. No differences existed between non-Hispanic white and non-Hispanic black parents.	Differences in acceptance of behavior management techniques exist between Hispanic, non-Hispanic white, and non-Hispanic black parents, which suggest that practitioners should take into account cultural differences when electing to use them.
	16 M				
	34 F				
mar/13					

Continue



Continuation			Significant differences were not found for N2O, TSD, and VC.	Differences in acceptance of behavior management techniques exist between Hispanic, non-Hispanic white, and non-Hispanic black parents, which suggest that practitioners should take into account cultural differences when electing to use them.
	136			
Martinez Mier et al 2019 <sup>46</sup> , USA	28 M 108 F Under 18	TSD; VC; APS; GA; N2O; OP; PPS	VAS (0-100)	Most parents preferred the nonpharmacological techniques (PR, TSD, NC, DIS, Mo) to pharmacological techniques. Techniques employing drugs and restraint were considered least acceptable.
Muhammad et al 2011 <sup>2</sup> , Kuwait	University 118 54 M 64 F 6-13 (8.8)	TSD; PR; NC; effective communication; Mo; VC; PP/A; DIS; HOM; APS; Hyp; N2O; CS; GA	Yes/no questions.	PR (100%), effective communication, TSD, DIS, M and NC were considered as the most approved techniques. Hyp and PP/A were moderately approved. VC, N2O, SE, APS, GA (5.9%), HOM (5.1%) technique and CS (4.2%) were the least approved techniques.
Murphy et al 1984 <sup>33</sup> , USA	University 67 NI	TSD; VC; MP; PR; HOM; APS by dentist; APS by assistant; PPS; SE; GA.	VAS (divided in quartile).	Techniques not requiring restriction were rated as more acceptable. Techniques employing drugs and restraint were less acceptable.
Paryab et al 2014 <sup>42</sup> , Iran	NI 90 90 F 03/jun	APS; PPS; HOM; OP; GA.	Likert scale.	None of the presentation methods had a significant preference over the others in selecting the BGT.
Patel et al 2016 <sup>30</sup> , USA	University and private practice 105 20 M 85 F NI	PPS; APS; SE; GA in 3 different situations: (1) acceptance of the technique; (2) acceptance of the technique if the child was in pain, had a swollen face, and treatment was urgent; and (3) acceptance of using the technique at multiple appointments, if the child had several cavities.	VAS (0-100)	Advanced pharmacologic techniques (SE and GA) were rated as the most acceptable. Passive immobilization was rated as the least acceptable technique. The acceptance of different behavior management techniques was related to pain/urgency of treatment and amount of treatment necessary.

Continue

Continuation

Two University Hospitals	72 (22 Chinese, 22 Indian and 22 Malay)			BGT were accepted in this order: TSD; DIS, PP/A; Mo; VC; N2O; SE; PPA; HOM; and GA. There was a significant difference ( $p < 0.05$ ) in the amount of approval given to modelling when comparing Chinese and Indian ethnicities.	Most BGT have been shown to produce similarly acceptable results amongst Asian parents with statistically insignificant differences in the amount of approval given for the techniques besides modeling.	
	Rahman et al, 2020 <sup>71</sup> , Malaysia	43 M 29 F 7.96 (3.1)	TSD; VC; Mo; PPS; DIS; PP/A; HOM; N2O; SE; GA.	VAS (0-100)		
		NI				
		University				
	Razavi and Purtaji 2007 <sup>34</sup> , Iran	50 50F	GA; PP/A; HOM; VC.	Yes/No acceptance.	Acceptance ratios were as follows: PP/A 100%; VC 92%; HOM 50% AND GA 30%.	PP/A was the most acceptable and GA the least.
		U				
		University				
	Scott and Garcia-Godoy 1998 <sup>23</sup> , USA	32 6 M 26 F NI	TSD; VC; N2O; OP; GA; APS; HOM; PPS.	VAS (0-99)	HOM was rated unacceptable by 63% of the parents with previous explanation and 81% without. TSD was the technique better accepted in both groups.	An informed parent is more likely to show greater acceptance of a techniques. HOM and PPS showed a statistically greater degree of nonacceptance. Parents would rather have the child subjected to GA than HOM.
	Video-based research	Pediatric dental clinic				
		Simões et al 2016 <sup>51</sup> , Brazil	38 7 M 32 F 0-12	TSD; VC; PR; PPA; HOM; APS; PPS; SE.	Always, sometimes, never.	TSD and PR were the most acceptable techniques before and after explanation. Acceptance of the HOM technique rose from 34.2% to 68.5% after explanation.
		University				
Taran et al 2018 <sup>36</sup> , Turkey		146 17 M 125 F 03/dez	TSD; VC; PR; PPA; PPS; SE; GA.	Applicable, applicable if really needed, or not applicable.	Acceptance ratios were as follows: PR 91.5%; TSD 80.3%; PPA 45.1%; VC 36.6%; SE 33.8%; GA 25.4% and PPS 16.9%	Parental preferences for BGT may be related to parenting styles and parental dental anxiety.
		University				
Wilson et al 1991 <sup>52</sup> , USA		60 17 M 43 F NI	TSD; VC; HOM; APS; PPS; N2O; OP; GA.	VAS (0-100)	TSD was most acceptable technique, follow by VC; N2O; APS; GA; OP; PPS and HOM (in group) and TSD; APS; VC; N2O; GA; PPS; OP and HOM (individually).	Small groups of parents viewing techniques tend to rate them as less acceptable than parents viewing the same techniques individually.

Continue

Continuation								
Alkandari et al 2016 <sup>53</sup> , Kuwait	Kuwait and private clinics	381	N2O and GA.	Yes/No acceptance.	66% of parents accept the N2O. Similar percentage of them would prefer N2O (64%) over GA (36%).	Parents are accepting nitrous oxide sedation as a BGT for their children.		
		179 M 197 F 1-15 (5.9)						
Acharya 2017 <sup>54</sup> , India	University	50	VC; TSD; PR; APS; HOM; N2O; GA; OP; Mo; MP.	VAS (0-100) presented in ranking.	The most acceptable technique was TSD (86%), followed by PP/A (76%). The least acceptable were HOM, voice control and APS.	TSD was the most accepted behavior technique and HOM the least.		
		32 M 18 F 03/jun						
Non-video-based research (Questionnaire, photographs, power point, verbal explanation)	University (Germany) and University Hospital (Jordan)				In normal treatment, N2O (52.6%) followed by APS (39.3%), GA (28%) and PPS (19.9%). In emergency situations, N2O (68.2%) followed by GA (62.8%), APS (54%) and PPR (37.8%)( $p < 0.001$ ). In the Jordan University group, the most accepted technique was N2O (mean $3.22 \pm 1.50$ ) followed by APS, PPS, and GA (mean $2.11 \pm 1.30$ ). In emergency situation, parents were also significantly more accepting of all advanced BGT.	Parents in Germany are more willing to accept advanced BGT in emergency situations, in comparison to normal treatment. Cultural background and the urgency of the treatment influence the acceptance of advanced BGT in pediatric dentistry.		
	Al Zoubi et al 2019 <sup>59</sup> , and Al Zoubi et al 2021 <sup>67</sup> , Germany	136 (Germany)	PPS; APS; N2O; GA.	Likert scale (5-point ranging from one (highly unacceptable) to five (highly acceptable))	PPS was significantly more accepted in the Jordan University group than in the University of Greifswald group ( $p = 0.001$ ). The parents in the University of Greifswald group were significantly more accepting of N2O sedation than were the parents in the Jordan University group ( $p = 0.010$ ).			
		41 M 95 F 99 (Jordan)						
		15 M 84 F NI						

Continue

Continuation

	Private practices		12 questions (4 options – extremely positive; positive; negative; extremely negative).		66% considerate the technique appropriate, 84% accepted, just 2% considerate not acceptable.	There was a high perception and acceptance of the technique by both parents and children.
Betancur et al 2006 <sup>55</sup> , Colombia	50 NI 4-12 (8) University	N2O.				
Bhandari et al 2018 <sup>56</sup> , India	320 NI 02/mai	SE.	Conscious sedation safety (yes/no).	Parents acceptance: with high school 15%; graduate 90%; postgraduate 93%; not completed high school 61%. Most of parents (40%) were graduates.		Parents feel sedation is safe in the dental office.
Brill 2002 <sup>57</sup> , USA	42 01/jun University	APS.	Happy/neutral or Unhappy.	95% of parents were happy/neutral to the APS. And 92% of parents answered that the use of APS was very/moderately successful.		Parents accept the use of passive restraint even when they feel high levels of stress while watching their child held in such devices.
Non-video-based research (Questionnaire, photographs, power point, verbal explanation)	53 NI 05/dez U 299	TSD; NC; VC; PR; DIS; Mo; PPS; HOM.	Yes/No acceptance.	The most acceptable technique was TSD (100%), followed by DIS (98%), PR (94%), and VC (90%). The least acceptable were PPS (81%) and HOM (52%).		The most acceptable technique was TSD. The techniques that had the greatest rejection were HOM, followed by physical restraint, showing greater difficulty in the parents' acceptance of techniques that restrict the child's movements.
Chen 2010 <sup>57</sup> , China	U 299	GA.	VAS (0-100)	Acceptance rate of GA was positively related to the monthly income and negatively related to the evaluated score of child cooperation degree.		There was no correlation in GA acceptance rate and the age of the child, age of the parents, educational level and the frequency of dental visit for the child. The major factors for mother to accept GA were income level and the level of children's cooperation.
Chen 2008 <sup>58</sup> , China	U 285 U	TSD; VC; GA; SE; APS.	VAS (0-100)	Decreasing the acceptance rates for the following in order was: TSD, VC, SE, GA and PPS. Females accepted more TSD and males accepted more APS, and this difference was significant.		No techniques were found to be totally acceptable by all parents.
Frankel 1991 <sup>59</sup> , USA	59 59 F	PPS.	Questions yes/no and Likert scale.	62% reported that the use of PPS was very helpful and necessary. 86% did not think that just seating the child in the dental chair and holding him/her would have been successful.		The mothers had positive attitudes toward the use of PPS after experiencing its use with their children.
	0-5 or more (3.1)					

Continue

Continuation

<p>Fuccio et al 2003<sup>60</sup>, Brazil</p>	<p>University 49 11 M 38 F 03/dez</p>	<p>TSD; VC; PR; HOM; SE; GA; APS; PPS.</p>	<p>Three options determined by author (always; usually; never).</p>	<p>Non-restrictive techniques were accepted always by 81%, TSD was the most accepted by 98%, followed by PR 91.8%. Restrictive techniques were accepted always by 29% of parents.</p>
<p>Hashemi et al<sup>72</sup> 2021, Iran</p>	<p>Dental School 70 18M 52F 0-12</p>	<p>TSD; VC; HOM; Mo; PPS; SE; GA.</p>	<p>VAS (0-10)</p>	<p>Non-restrictive techniques were the most accepted by parents (TSD; VC; PR) and the restrictive and SE/GA was rated as most unacceptable.</p>
<p>Kamolmatayakul and Nakaw 2002<sup>61</sup>, Thailand</p>	<p>University 185 few/15</p>	<p>TSD; PR; DIS; PP/A; VC; HOM; PPS; SE; GA.</p>	<p>Likert scale (total acceptance, acceptance, neutral, not accepted, and totally unacceptable).</p>	<p>Parents mainly prefer the TSD above all for management of their child's behavior in dentistry; whereas, physical restrain and HOM methods were the least accepted. Parents consider their child's age when deciding on a behavior guidance technique, regardless of the child's sex and birth rank, and the total number of children in the family, and parents' education.</p>
<p>Peretz and Zadik 1999<sup>24</sup>, Israel</p>	<p>University</p>	<p>VC; APS; PPS; SE. Parents were asked to note their preferred technique based on the explanation given in advance and in the case their children did not cooperate with the dentist.</p>	<p>Total unacceptance, partial acceptance, acceptance.</p>	<p>Parents better accepted non-restrictive techniques compared to restrictive methods.</p>
<p>Peretz and Zadik 1999<sup>24</sup>, Israel</p>	<p>University</p>	<p>VC was totally accepted by most parents (53%), APS was accepted partially by 64% of parents, PPS was total unacceptable by 44% and SE was partial accepted by 53% of parents. A significant difference was found according to the child's behavior during the treatment. Among the parents who were in favor of restraint, 61% of the children did not cooperate. The same pattern was found with respect to sedation, where most parents of children who cooperated (<math>p=0.00061</math>).</p>	<p>Detailed explanations and witnessing children during dental treatment may raise parents' tolerance level toward aggressive guidance techniques.</p>	<p>Continue</p>



	University and private clinics	TSD, Mo, PR, VC, APS, Hyp. SE (nitrous oxide and oxygen alone or combined with pharmacological sedation).	Total unacceptance, dislike, apply only if really needed, acceptance.	The most accepted technique was PR (81.1%) followed by TSD (76.7%). The least accepted techniques were restraint (1.1%) and VC (7.8%). SE was unacceptable to 15.6%.	Parents preferred more positive approaches and guidance techniques that involve demonstrations geared for the child's level of understanding. Restraint and voice control were more strongly rejected than sedation.
Peretz et al 2013 <sup>63</sup> , Israel	90				
	23 M				
	66 F				
	2-15 (8.8)				
Subramaniam et al 2017 <sup>63</sup> , India	University			Good parental acceptance was observed for both routes of administration.	
	60	N2O and SE.	Good, poor.	The parent acceptance was good in 96.67% in Group N2O and 100% for Group SE.	Parental acceptance for both routes was good.
	05/out				
Tsuchihashi et al 2012 <sup>64</sup> , Japan	University			94% of mothers thought that decisions to use restriction were appropriate.	
	50	Restraint technique.	Yes/no/ ambivalent.	26% mothers feel bad for the child (before) and 13% (after).	Parents accepted the necessity of passive restraint for dental treatment.
	50 F				
Thirunavakarasu et al 2021 <sup>70</sup> , India	3-5 (4.3)				
	Dental College and Hospital			The most acceptable technique was TSD (mean 9.1), followed by PR (8.9), VC (7.6) and HOM (6.0). The least acceptable were APS (2.7), GA (1.6) and PPS (1.4).	Parents prefer a management technique which required the dentist to communicate and interact with their child.
	06/dez	TSD; VC; PR; HOM; APS; PPS; SE; GA.	VAS (0-10).		
Venkataraghavan et al 2016 <sup>65</sup> , India	University			The most preferred technique was TSD followed by PR and least preferred was GA followed by physical restraint.	Parents preferred positive approaches even in the emergency dental condition. There was a generalized low tolerance level for firm guidance techniques.
	51	TSD; PR; PPA; VC; HOM; APS; N2O; GA.	Most acceptable/ least acceptable.		
	02/abr				

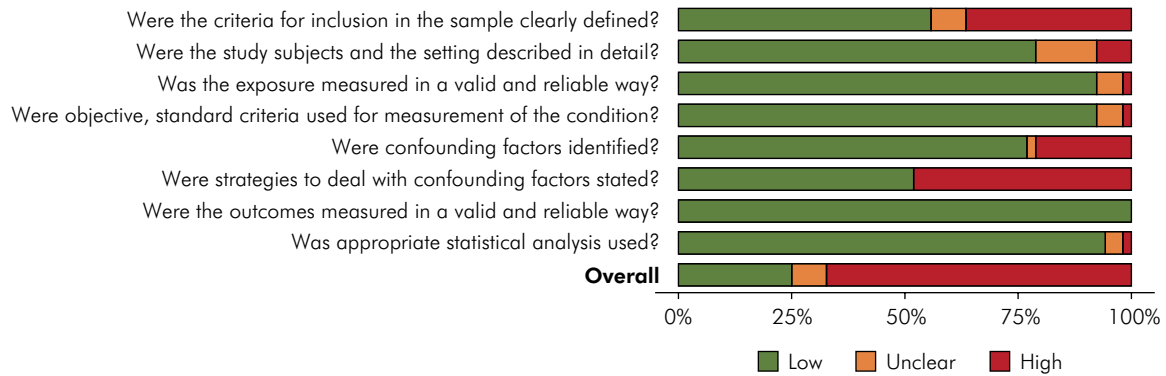
Continue

Special health care needs children	
Continuation	<p>Dental College and Hospital</p> <p>204</p> <p>Group A (non-special) 53 M</p> <p>49 F</p> <p>Group B (special) 42 M</p> <p>60 F</p> <p>fev/15</p> <p>Elango 2009<sup>15</sup>, India</p> <p>TSD; PR; Mo; VC; HOM; APS; SE; GA; MP, CE.</p> <p>VAS (0-100)</p> <p>Group B parents were less accepting than Group A for APS, HOM and GA.</p> <p>Contingent escape and live modeling were the first ranked technique by both parents. Least accepted technique by both the parental groups was VC and HOM.</p>
Video-based research	<p>Institutionalized children with intellectual disabilities</p> <p>209</p> <p>0-15</p> <p>University</p> <p>80 (40 with disabled child and 40 without disable child)</p> <p>74 M</p> <p>6 F</p> <p>NI</p> <p>University</p> <p>83 (data of only 14 were used)</p> <p>15 M</p> <p>68 F</p> <p>1-10 (other age ranges were not used)</p> <p>Oliveira et al 2007<sup>16</sup>, Brazil</p> <p>Brandes et al 1995<sup>17</sup>, USA</p> <p>Castro et al 2016<sup>18</sup>, Brazil</p> <p>APS; PPS; SE; GA</p> <p>Accept/Do Not Accept</p> <p>VAS (0-100)</p> <p>HOM; GA; PPS; SE.</p> <p>TSD; DIS; PR; NC; N2O; APS; SE; GA.</p> <p>Accept; accept with restrictions; do not accept.</p> <p>SE was the most accepted technique with 58.9%, followed by PPS (55.9%), APS (50.7%) and GA with 22.9%.</p> <p>The restraint methods most accepted by parents who had children with intellectual disabilities were APS; PPS; SE. The most rejected was GA.</p> <p>Having a disabled child or receiving a prior rationale for pediatric BGT was not significantly related to differences in acceptance of the techniques for the procedures described. Parents of disabled children tended to be slightly more accepting of techniques overall.</p> <p>The SE was the most accepted followed by HOM. GA was better accepted than PPS on invasive procedures, but for checking/ cleaning the PPS was better accepted than GA.</p> <p>TSD; DIS; NC; PR were considerate totally accepted. 92.8%, 57.1%, 64.2% and 64.2% of parents accepted APS, SE, GA and N2O respectively.</p> <p>Communicative guidance and protective stabilization were the methods most readily accepted by parents.</p>

Continue

Continuation	University	TSD; VC; PR; DIS; N2O; GA; AFS by parents; PPS.	Totally unacceptable, somewhat acceptable, totally acceptable.	Parents of children with disabilities showed a statistically significant difference related to acceptance for a protective stabilization with a restrictive device. For both groups, the GA was the least accepted.	Children's parents with and without disabilities accepted behavioral guidance techniques, but basic techniques showed higher rates of acceptance than advanced techniques.
Non-video-based research (Questionnaire, photographs, power point, verbal explanation)	De Castro et al 2013 <sup>19</sup> , Brazil	80 80 F 4-8 (no special needs) 3-10 (special needs)			
	Marshall et al 2008 <sup>20</sup> , USA	85 66 M 19 F 0-19 (9.6)	Yes/No/ Uncertain.	All the techniques were rated as acceptable by ≥54% of parents. The most acceptable in declining order were PR; TSD; DIS.	Parents reported highly acceptable ratings except for staff restraint. Stabilization device acceptability was higher among parents of children treated using this technique.
	Ramos et al 2005 <sup>21</sup> , Brazil	400 58 M 342 F 04/out	Accepts; accepts with modification; does not accept.	The levels of acceptance of the techniques were 98% (TSD), 96% (VC), 81% (APS), and 85% (HOM).	There was wide acceptance of the four BGT among caretakers of children with cleft.

APS: Active protective stabilization; BGT: behavior guidance technique; CE: contingent escape; DIS: distraction; F: female; GA: general anesthesia; HOM: hand over mouth; Hyp: hypnosis; M: male; Mo: modelling; MP: mouth props; N<sub>2</sub>O: nitrous oxide/oxygen inhalation; NC: nonverbal communication; NI: not informed; OP: Oral premedication; PP/A: parental present/absence; PPS: passive protective stabilization; PR: positive reinforcement; SE: sedation; TSD: tell-show-do; U: unknown; VC: voice control.



**Figure 2.** Methodological quality assessed by the Joanna Briggs Institute Critical Appraisal tools - Checklist for Analytical Cross-Sectional Studies. The studies that presented “yes” for all questions were rated as having a low risk of bias, those that presented at least one answer “unclear” was rated as unclear risk of bias, and at least one answer “no” was rated as high risk of bias. Plot generated with the web app robvis.

most accepted BGT, with a mean of 94.2 mm (95%CI: 93.6–94.8;  $p = 0.423$ ;  $I^2 = 0\%$ ); meanwhile, PPS was the least accepted technique among the parents, with a mean of 42.2 mm (95%CI: 29.4–55.0;  $p < 0.001$ ;  $I^2 = 9.8\%$ ). The  $I^2$  varied from zero (TSD, positive reinforcement - PR, distraction, nitrous oxide/oxygen inhalation -  $N_2O$ , SE, and GA) to 67.6% (PP/A).

It was not possible to analyze the mean of the agreement measured using the VAS for the parents of children with SHCN due to differences in the way the data were presented among the studies.

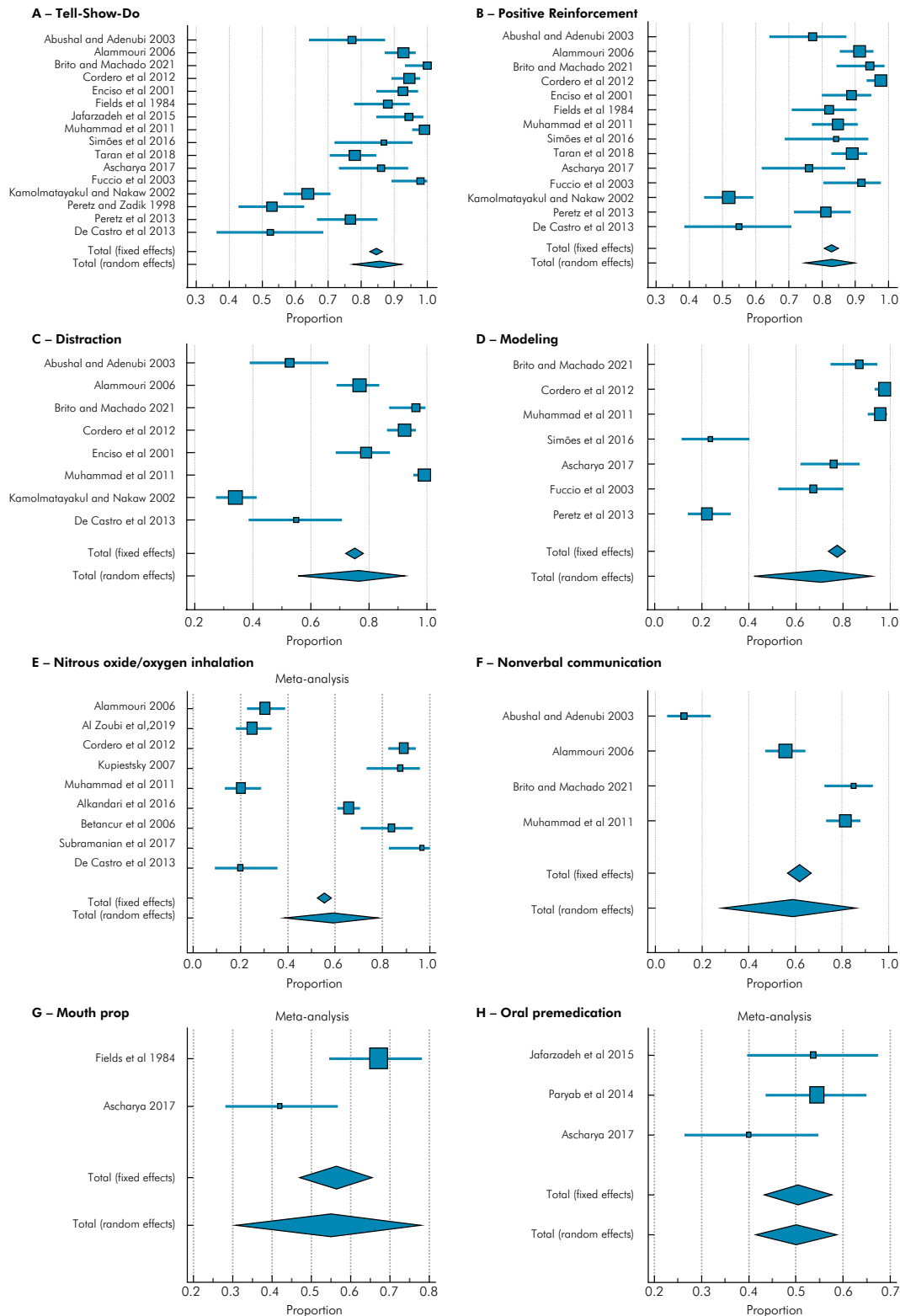
The following meta-analyses show the results of the subgroups analyses:

a. Direct comparison of the acceptance of BGTs among the parents of non-SHCN and SHCN children: The analyses were performed in two studies<sup>15,17</sup> ( $n = 245$ ). The main outcome was the mean parental VAS rated acceptance in mm, and the effect size was the standardized difference in the mean. A random effects model was employed again. The results showed that for active protective stabilization, the parents of SHCN children rated their acceptance at an average of 0.47 mm more than the parents of non-SHCN children (standard mean difference (SMD) 0.47; 95%CI: 0.21–0.72;  $p < 0.001$ ;  $I^2 = 0\%$ ). There was no significant difference found in the acceptance of HOM (SMD 0.22; 95% CI: -0.03–0.47;  $p = 0.08$ ;  $I^2 = 0\%$ ), SE (SMD 0.21; 95%CI: -0.04–0.46;  $p = 0.10$ ;

$I^2 = 0\%$ ), and GA (SMD 0.07; 95%CI: -0.18–0.32;  $p = 0.57$ ;  $I^2 = 0\%$ ) (Figure 6).

b. The difference in the means of agreement with the BGTs. as measured using the VAS, were examined among the parents of non-SHCN children who received an explanation before the presentation of the technique and those who did not. In the meta-analysis, the ratings from 112 parents from two studies<sup>22,23</sup> were made available. There was a significant difference in the mean mms marked in the VAS for those who received an explanation prior to judging the BGTs: HOM (mean difference (MD) -18.2; 95%CI: -30.2– -6.2;  $p = 0.003$ ;  $I^2 = 94\%$ ), APS (MD -13.7; 95%CI: -22.1– -5.2;  $p = 0.002$ ;  $I^2 = 89\%$ ), and TSD (MD -9.8; 95%CI: -12.7– -7.0;  $p < 0.001$ ;  $I^2 = 75\%$ ), with zero mm representing the most acceptable. The variable ‘had received an explanation’ did not significantly increase the parents’ agreement with the  $N_2O$ , GA, PPS, oral premedication, and VC techniques. A detailed analysis is presented in Figure 7. There were not enough data to analyze the parents of children with SHCN.

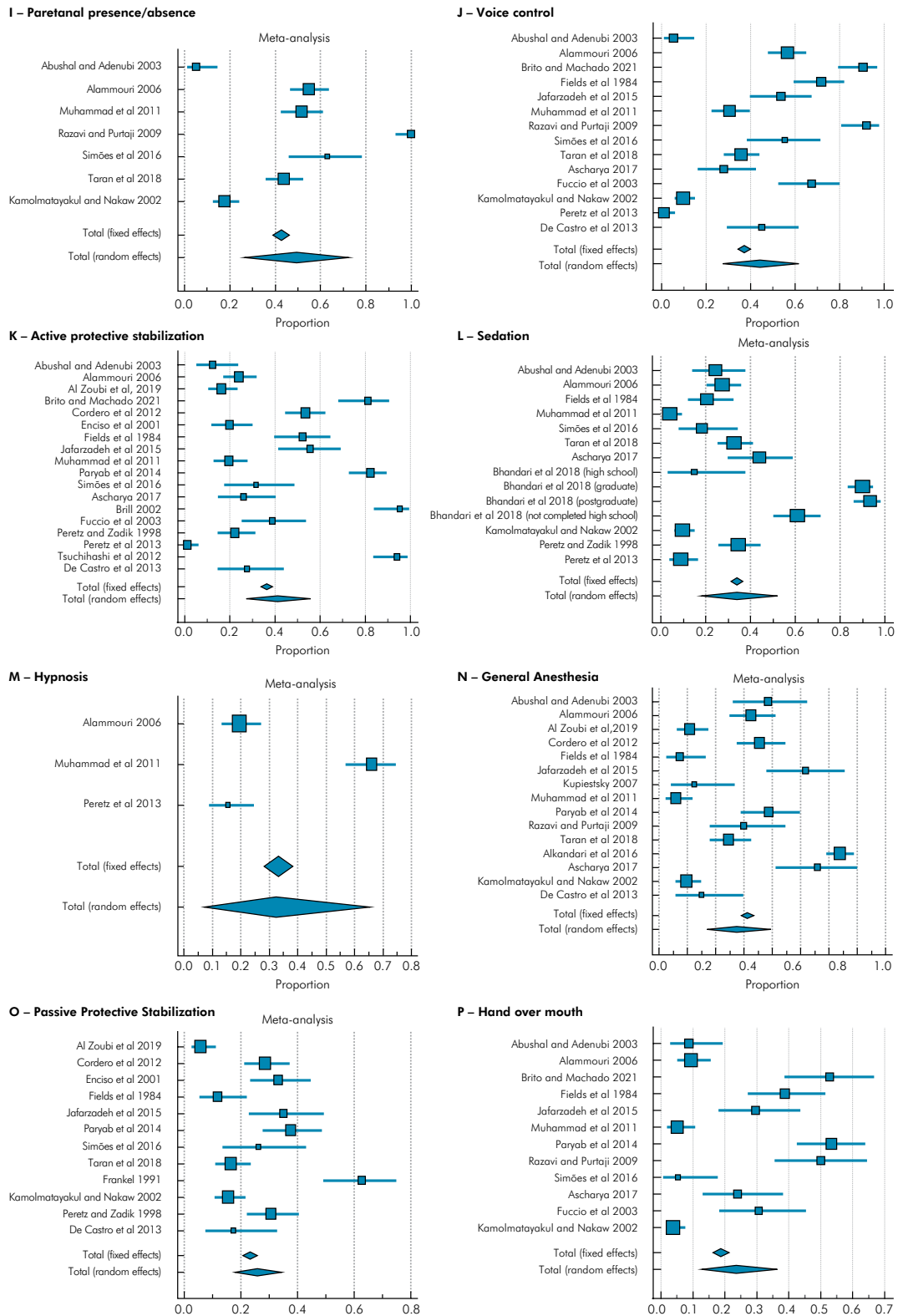
The analysis of the proportion of agreement with the BGTs by the children’s parents included five studies ( $n = 748$ ), with nine BGTs analyzed. The most accepted BGT in this analysis was tell-show-do, with 89.1% (95%CI: 56.1–99.7;  $p < 0.001$ ;  $I^2 = 95.7\%$ ) of the parents agreeing with the technique, and the



A: tell-show-do; B: positive reinforcement; C: distraction; D: modeling; E: nitrous oxide/oxygen inhalation; F: nonverbal communication; G: mouth prop; H: oral premedication; I: paretanal presence/absence; J: voice control; K: active protective stabilization; L: sedation; M: hypnosis; N: general anesthesia; O: passive protective stabilization; P: hand over mouth.

**Figure 3.** Meta-analysis of proportion (non-special health care needs children).





A: tell-show-do; B: positive reinforcement; C: distraction; D: modeling; E: nitrous oxide/oxygen inhalation; F: nonverbal communication; G: mouth prop; H: oral premedication; I: parental presence/absence; J: voice control; K: active protective stabilization; L: sedation; M: hypnosis; N: general anesthesia; O: passive protective stabilization; P: hand over mouth.

**Figure 3.** Meta-analysis of proportion (non-special health care needs children). Continuação.

**Table 5.** Proportion meta-analysis of agreement with BGT by the parents of non-SHCN children.

Behavior guidance technique	Total of studies	Total of sample	Proportion	CI 95%	p-value	I <sup>2</sup>
Tell-show-do	16	1399	85.6%	77.5–92.1	< 0.001	93.6
Positive Reinforcement	14	1241	83.0%	74.8–89.8	< 0.001	92.1
Distraction	8	801	76.6%	55.6–92.3	< 0.001	97.5
Modeling	7	527	70.6%	42.2–92.2	< 0.001	97.7
Nitrous oxide/oxygen inhalation	9	1062	59.1%	38.5–78.2	< 0.001	97.6
Nonverbal communication	4	366	58.8%	28.5–85.9	< 0.001	97.1
Mouth prop	2	117	54.9%	30.8–77.8	0.006	86.4
Oral premedication	4	194	50.1%	41.5–58.6	0.227	32.5
Parental presence/absence	7	732	49.2%	26.3–72.3	< 0.001	97.6
Voice control	14	1135	44.2%	27.4–61.6	< 0.001	97.2
Active protective stabilization	18	1386	36.3%	27.2–55.7	< 0.001	96.7
Sedation	11	1313	33.7%	18.1–51.9	< 0.001	97.7
Hypnosis	3	346	32.5%	7.12–65.5	< 0.001	97.5
General Anesthesia	15	1681	27.4%	16.8–39.4	< 0.001	96.3
Passive protective stabilization	12	1129	25.7%	17.8–34.4	< 0.001	90.4
Hand over mouth	12	949	23.5%	12.7–36.4	< 0.001	92.5

least accepted was general anesthetic, with 29.1% (95%CI: 11.8–50.0;  $p = 0.001$ ;  $I^2 = 84.8$ ) accepting it. Hand over the mouth was not assessed (Figure 4 and Table 6). The  $I^2$  statistic varied from zero SE to 98.5% (voice control (VC)).

b. The mean agreement with BGTs, as measured using the VAS, for parents of non-SHCN children is presented in Figure 5. A random effects model was used. Distraction was the most accepted BGT, with a mean of 94.2 mm (95%CI: 93.6–94.8;  $p = 0.423$ ;  $I^2 = 0\%$ ); meanwhile, PPS was the least accepted technique among the parents, with a mean of 42.2 mm (95%CI: 29.4–55.0;  $p < 0.001$ ;  $I^2 = 99.8\%$ ). The  $I^2$  varied from zero (TSD, positive reinforcement - PR, distraction, nitrous oxide/oxygen inhalation - N<sub>2</sub>O, SE, and GA) to 67.6% (PP/A).

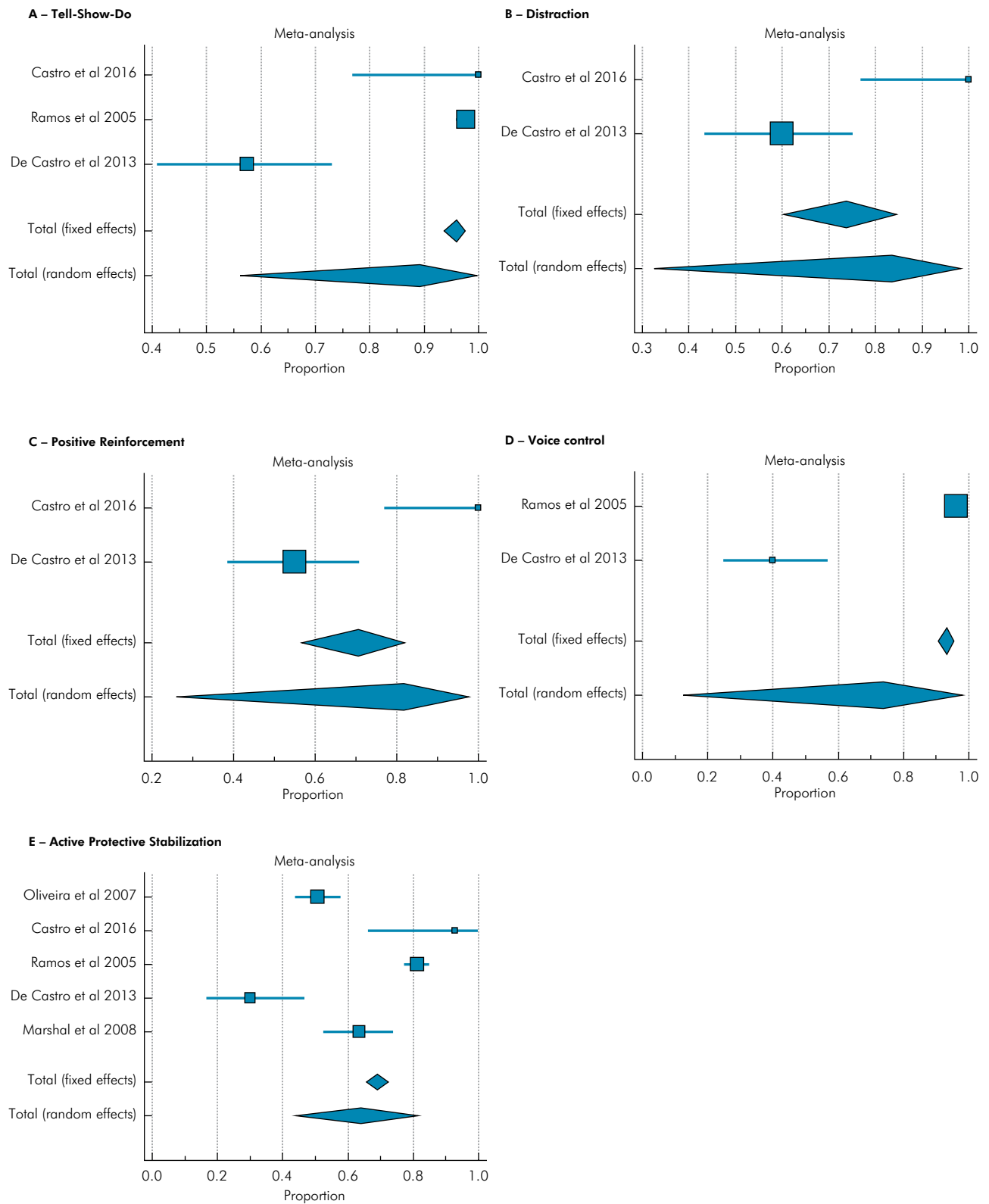
It was not possible to analyze the mean of the agreement measured using the VAS for the parents of children with SHCN due to differences in the way the data were presented among the studies.

The following meta-analyses show the results of the subgroups analyses:

a. Direct comparison of the acceptance of BGTs among the parents of non-SHCN and SHCN

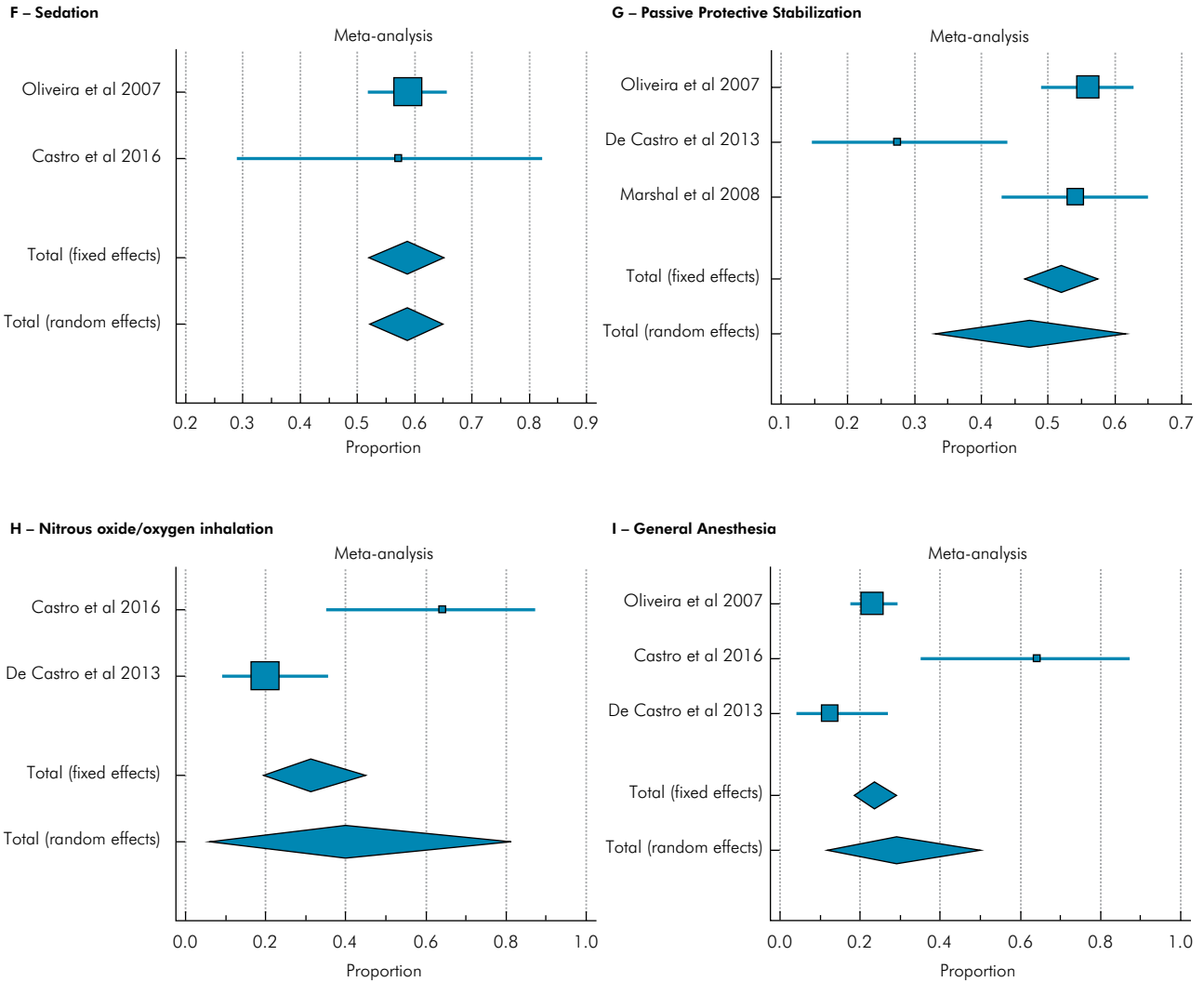
children: The analyses were performed in two studies<sup>15,17</sup> ( $n = 245$ ). The main outcome was the mean parental VAS rated acceptance in mm, and the effect size was the standardized difference in the mean. A random effects model was employed again. The results showed that for active protective stabilization, the parents of SHCN children rated their acceptance at an average of 0.47 mm more than the parents of non-SHCN children (standard mean difference (SMD) 0.47; 95%CI: 0.21–0.72;  $p < 0.001$ ;  $I^2 = 0\%$ ). There was no significant difference found in the acceptance of HOM (SMD 0.22; 95%CI: -0.03–0.47;  $p = 0.08$ ;  $I^2 = 0\%$ ), SE (SMD 0.21; 95%CI: -0.04–0.46;  $p = 0.10$ ;  $I^2 = 0\%$ ), and GA (SMD 0.07; 95%CI: -0.18–0.32;  $p = 0.57$ ;  $I^2 = 0\%$ ) (Figure 6).

b. The difference in the means of agreement with the BGTs, as measured using the VAS, were examined among the parents of non-SHCN children who received an explanation before the presentation of the technique and those who did not. In the meta-analysis, the ratings from 112 parents from two studies<sup>22,23</sup> were made available. There was a significant difference in the mean mms marked in the VAS



A: tell-show-do; B: distraction; C: positive reinforcement; D: voice control; E: active protective stabilization; F: sedation; G: passive protective stabilization; H: nitrous oxide/oxygen inhalation; I: general anesthesia.

**Figure 4.** Meta-analysis of proportion of special health care needs children.



A: tell-show-do; B: distraction; C: positive reinforcement; D: voice control; E: active protective stabilization; F: sedation; G: passive protective stabilization; H: nitrous oxide/oxygen inhalation; I: general anesthesia.

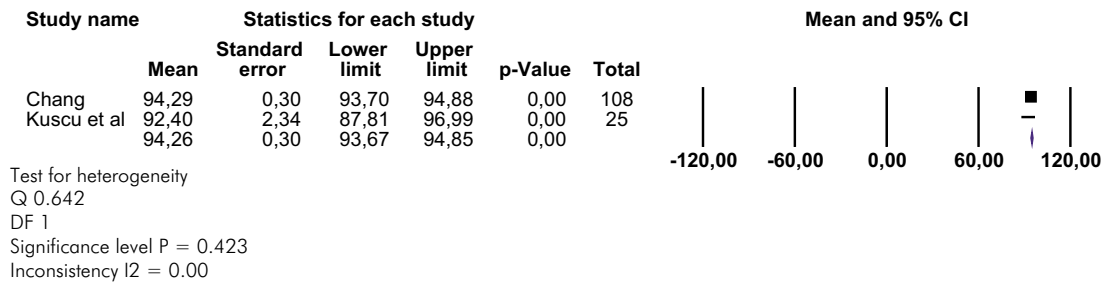
**Figure 4.** Meta-analysis of proportion of special health care needs children. Continuação.

for those who received an explanation prior to judging the BGTs: HOM (mean difference (MD) -18.2; 95%CI: -30.2- -6.2;  $p = 0.003$ ;  $I^2 = 94\%$ ), APS (MD: 13.7; 95%CI: -22.1- -5.2;  $p = 0.002$ ;  $I^2 = 89\%$ ), and TSD (MD: -9.8; 95%CI: -12.7- -7.0;  $p < 0.001$ ;  $I^2 = 75\%$ ), with zero mm representing the most acceptable. The variable 'had received an explanation' did not significantly increase the parents' agreement with the N<sub>2</sub>O, GA, PPS, oral premedication, and VC techniques. A detailed analysis is presented in Figure 7. There were not enough data to analyze the parents of children with SHCN.

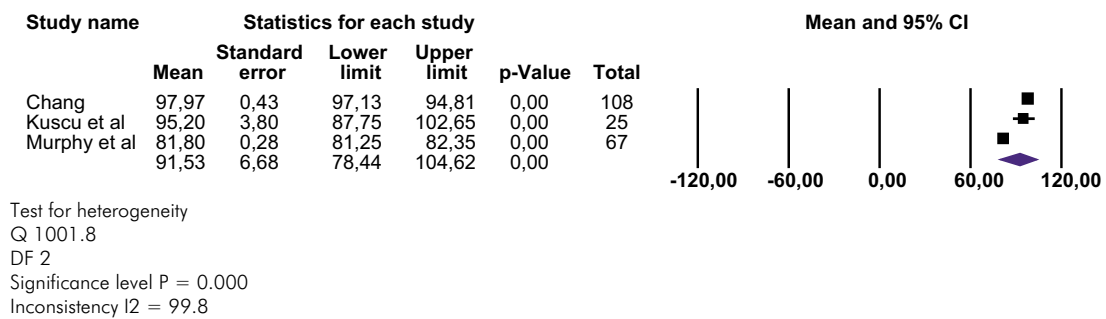
### Results of the individual studies

The synthesis of parental acceptance and the scales used to measure it in the included studies are presented in Table 1. Overall, parents of both non-SHCN and SHCN children accepted communicative techniques and reported negative ratings for restrictive ones. In addition, parents who were informed enhanced their level of acceptance for all techniques. Children's age, parents' previous experience with dentists, sex, number of children, ethnicity, parenting style, and income showed mixed results regarding parents' preferences. Parental age, education level, reason for children's visit to

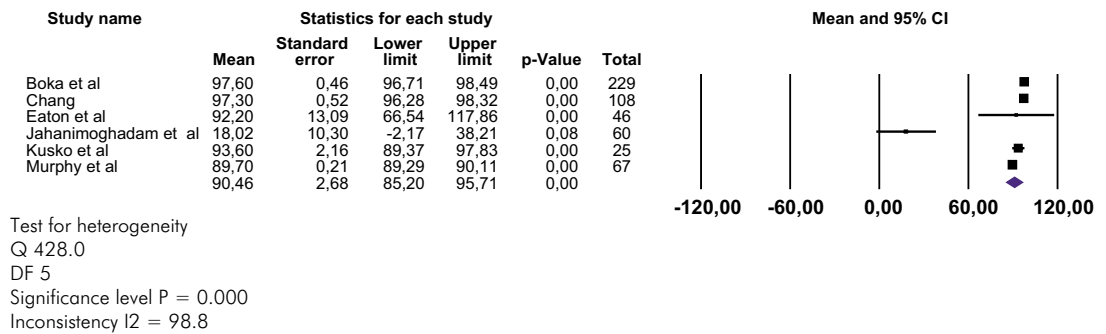
**A – Distraction**



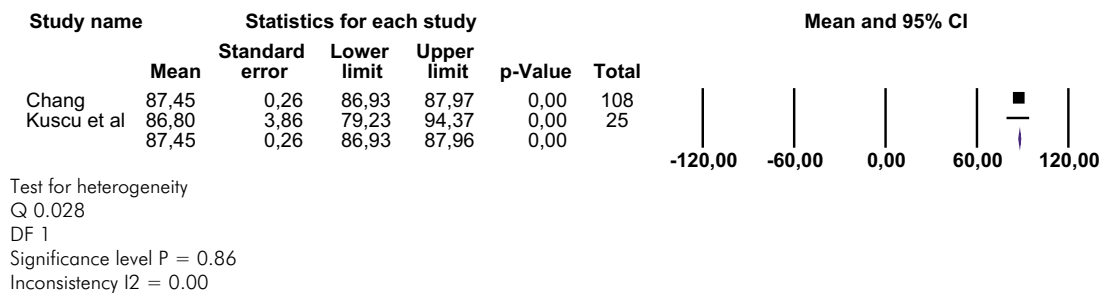
**B – Positive Reinforcement**



**C – Tell-show-do**



**D – Nonverbal Communication**

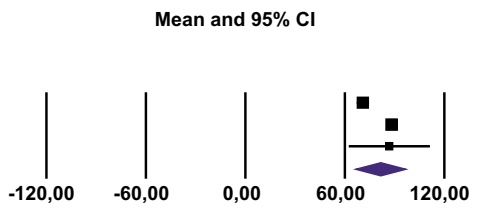


A: distraction; B: positive reinforcement; C: tell-show-do; D: nonverbal communication; D: nonverbal communication; E: nitrous oxide inhalation; F: parental presence/absence; G: voice control; H: sedation; I: active protective stabilization; J: general anesthesia; K: hand-over-mouth; L: passive protective stabilization.

**Figure 5.** Meta-analysis of parents' acceptance of each behavior guidance technique in non-special health care needs children evaluated with Visual Analogic Scale where 100 millimeters is well accepted and zero means not accepted (Comprehensive Meta-Analysis Software - Biostat, Englewood, USA). All meta-analyses used Random effect models.

**E – Nitrous Oxide Inhalation**

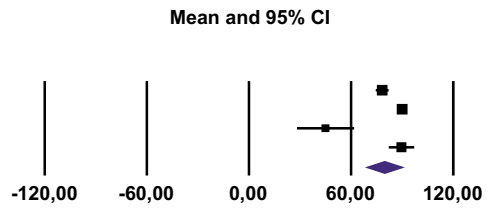
Study name	Statistics for each study					p-Value	Total
	Mean	Standard error	Lower limit	Upper limit			
Boka et al	70,90	2,00	66,99	74,81	0,00	229	
Chang	88,20	0,08	88,03	88,37	0,00	108	
Eaton et al	86,80	12,58	62,15	111,45	0,00	46	
	81,05	7,62	66,11	95,99	0,00		



Test for heterogeneity  
 Q 75.0  
 DF 2  
 Significance level P = 0.00  
 Inconsistency I2 = 97.3

**F – Parental Presence/Absence**

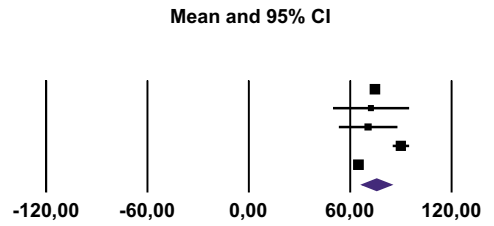
Study name	Statistics for each study					p-Value	Total
	Mean	Standard error	Lower limit	Upper limit			
Boka et al	78,30	2,02	74,34	82,26	0,00	229	
Chang	90,09	0,77	88,58	91,60	0,00	108	
Jahanimoghadam et al	44,99	8,66	28,02	61,96	0,00	60	
Kuscu et al	89,60	3,90	81,96	97,24	0,00	25	
	79,20	5,24	68,93	89,47	0,00		



Test for heterogeneity  
 Q 54.9  
 DF 3  
 Significance level P = 0.00  
 Inconsistency I2 = 94.5

**G – Voice Control**

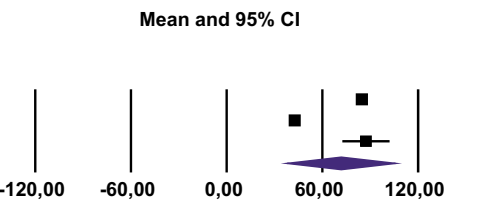
Study name	Statistics for each study					p-Value	Total
	Mean	Standard error	Lower limit	Upper limit			
Chang	74,67	0,83	73,04	76,30	0,00	108	
Eaton et al	72,30	11,59	49,59	95,01	0,00	46	
Jahanimoghadam et al	70,60	8,92	53,12	88,08	0,00	60	
Kusko et al	90,00	2,58	84,94	95,06	0,00	25	
Murphy et al	64,90	0,31	64,30	65,50	0,00	67	
	75,08	4,38	66,50	83,66	0,00		



Test for heterogeneity  
 Q 206.9  
 DF 4  
 Significance level P = 0.00  
 Inconsistency I2 = 98.0

**H – Sedation**

Study name	Statistics for each study					p-Value	Total
	Mean	Standard error	Lower limit	Upper limit			
Chang	84,77	0,61	83,58	85,96	0,00	108	
Murphy et al	42,70	0,37	41,98	43,42	0,00	67	
Patel et al	87,30	7,65	72,30	102,30	0,00	105	
	71,26	17,34	37,27	105,24	0,00		



Test for heterogeneity  
 Q 3529.5  
 DF 2  
 Significance level P = 0.00  
 Inconsistency I2 = 99.9

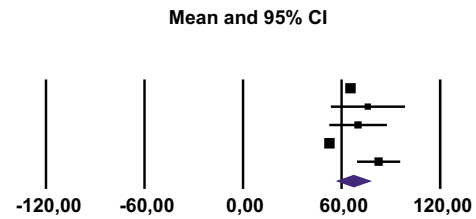
A: distraction; B: positive reinforcement; C: tell-show-do; D: nonverbal communication; E: nitrous oxide inhalation; F: parental presence/absence; G: voice control; H: sedation; I: active protective stabilization; J: general anesthesia; K: hand-over-mouth; L: passive protective stabilization.

**Figure 5.** Meta-analysis of parents' acceptance of each behavior guidance technique in non-special health care needs children evaluated with Visual Analogic Scale where 100 millimeters is well accepted and zero means not accepted (Comprehensive Meta-Analysis Software - Biostat, Englewood, USA). All meta-analyses used Random effect models. Continuation.

**I – Active Protective Stabilization**

Study name	Statistics for each study					p-Value	Total
	Mean	Standard error	Lower limit	Upper limit			
Chang	65,50	0,70	64,12	66,88	0,00	108	
Eaton et al	76,00	11,62	53,23	98,77	0,00	46	
Jahanimoghdam et al	70,03	9,04	52,32	87,74	0,00	60	
Murphy et al	52,70	0,34	52,03	53,37	0,00	67	
Patel et al	82,60	6,79	69,29	95,91	0,00	105	
	66,83	4,92	57,20	76,47	0,00		

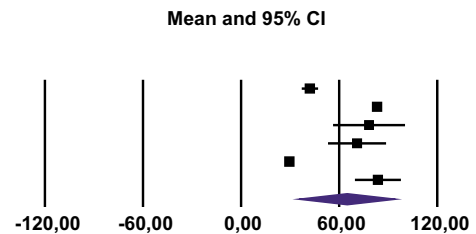
Test for heterogeneity  
 Q 289.9  
 DF 4  
 Significance level P = 0.00  
 Inconsistency I2 = 98.6



**J – General Anesthesia**

Study name	Statistics for each study					p-Value	Total
	Mean	Standard error	Lower limit	Upper limit			
Bokja et al	42,10	2,66	36,89	47,31	0,00	229	
Chang	83,27	0,80	81,70	84,84	0,00	108	
Eaton et al	78,30	11,32	56,11	100,49	0,00	46	
Jahanimoghdam et al	70,94	9,14	53,02	88,86	0,00	60	
Murphy et al	29,60	0,35	28,91	30,29	0,00	67	
Patel et al	83,70	7,28	69,43	97,97	0,00	105	
	64,27	15,02	34,83	93,70	0,00		

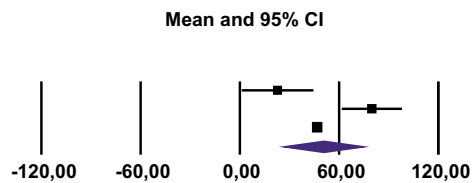
Test for heterogeneity  
 Q 3823.4  
 DF 5  
 Significance level P = 0.00  
 Inconsistency I2 = 99.8



**K – Hand-Over-Mouth**

Study name	Statistics for each study					p-Value	Total
	Mean	Standard error	Lower limit	Upper limit			
Eaton et al	22,80	11,16	0,92	44,68	0,04	46	
Jahanimoghdam et al	79,79	9,36	61,44	98,14	0,00	60	
Murphy et al	46,80	0,28	46,25	47,35	0,00	67	
	50,20	12,27	26,15	74,25	0,00		

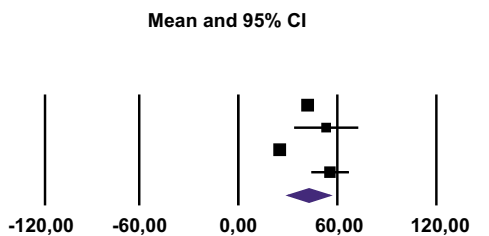
Test for heterogeneity  
 Q 17.0  
 DF 2  
 Significance level P = 0.00  
 Inconsistency I2 = 88.2



**L - Passive Protective Stabilization**

Study name	Statistics for each study					p-Value
	Mean	Standard error	Lower limit	Upper limit		
Boka et al	42,10	0,26	41,60	42,60	0,00	
Eaton et al	53,30	10,01	33,68	72,92	0,00	
Murphy et al	25,10	0,22	24,67	25,53	0,00	
Patel et al	55,60	5,91	44,01	67,19	0,00	
	42,25	6,53	29,44	55,05	0,00	

Test for heterogeneity  
 Q 2560.3  
 DF 3  
 Significance level P = 0.00  
 Inconsistency I2 = 99.8



A: distraction; B: positive reinforcement; C: tell-show-do; D: nonverbal communication; D: nonverbal communication; E: nitrous oxide inhalation; F: parental presence/absence; G: voice control; H: sedation; I: active protective stabilization; J: general anesthesia; K: hand-over-mouth; L: passive protective stabilization.

**Figure 5.** Meta-analysis of parents' acceptance of each behavior guidance technique in non-special health care needs children evaluated with Visual Analogic Scale where 100 millimeters is well accepted and zero means not accepted (Comprehensive Meta-Analysis Software - Biostat, Englewood, USA). All meta-analyses used Random effect models. Continuation.



the dentist, and children’s previous experience did not significantly affect their level of acceptance.

reports. Furthermore, the search strategy was wide to avoid missing studies that met the inclusion criteria.

### Reporting biases

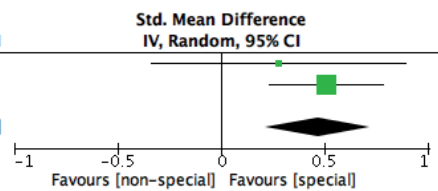
Reporting biases were undetected based on the assessments of the methods and results of the included

### Certainty of evidence

The certainty of the evidence for each outcome, namely the proportion of non-SHCN children’s parents’ agreement with the BGTs, the proportion of

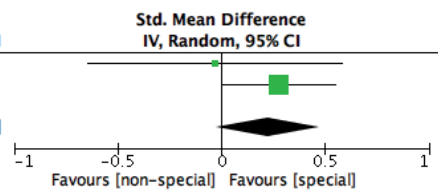
#### A – Active protective stabilization

Study or Subgroup	special			non-special			Weight	Std. Mean Difference IV, Random, 95% CI
	Mean	SD	Total	Mean	SD	Total		
Brandes et al 1995	67.8	71.1	20	48.7	64.9	21	17.0%	0.28 [-0.34, 0.89]
Elango 2009	25.4	24.4	102	14.7	17	102	83.0%	0.51 [0.23, 0.79]
<b>Total (95% CI)</b>	<b>122</b>			<b>123</b>			<b>100.0%</b>	<b>0.47 [0.21, 0.72]</b>
Heterogeneity: Tau <sup>2</sup> = 0.00; Chi <sup>2</sup> = 0.45, df = 1 (P = 0.50); I <sup>2</sup> = 0%								
Test for overall effect: Z = 3.61 (P = 0.0003)								



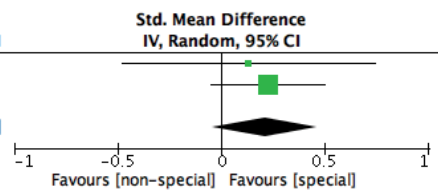
#### B – Hand over the mouth

Study or Subgroup	special			non-special			Weight	Std. Mean Difference IV, Random, 95% CI
	Mean	SD	Total	Mean	SD	Total		
Brandes et al 1995	67.5	66.4	20	69.7	68.6	21	16.9%	-0.03 [-0.64, 0.58]
Elango 2009	34.4	27.8	102	27.8	19.2	102	83.1%	0.28 [-0.00, 0.55]
<b>Total (95% CI)</b>	<b>122</b>			<b>123</b>			<b>100.0%</b>	<b>0.22 [-0.03, 0.47]</b>
Heterogeneity: Tau <sup>2</sup> = 0.00; Chi <sup>2</sup> = 0.80, df = 1 (P = 0.37); I <sup>2</sup> = 0%								
Test for overall effect: Z = 1.74 (P = 0.08)								



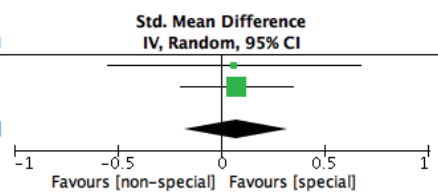
#### C – Sedation

Study or Subgroup	special			non-special			Weight	Std. Mean Difference IV, Random, 95% CI
	Mean	SD	Total	Mean	SD	Total		
Brandes et al 1995	57.7	65.2	20	48.7	69.4	21	16.8%	0.13 [-0.48, 0.74]
Elango 2009	19.6	21.8	102	15.3	15.9	102	83.2%	0.22 [-0.05, 0.50]
<b>Total (95% CI)</b>	<b>122</b>			<b>123</b>			<b>100.0%</b>	<b>0.21 [-0.04, 0.46]</b>
Heterogeneity: Tau <sup>2</sup> = 0.00; Chi <sup>2</sup> = 0.07, df = 1 (P = 0.78); I <sup>2</sup> = 0%								
Test for overall effect: Z = 1.63 (P = 0.10)								



#### D – General anesthesia

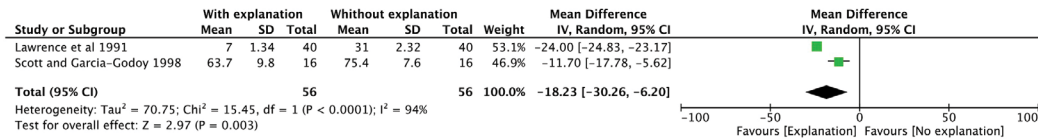
Study or Subgroup	special			non-special			Weight	Std. Mean Difference IV, Random, 95% CI
	Mean	SD	Total	Mean	SD	Total		
Brandes et al 1995	41.4	64.2	20	37.4	65.6	21	16.7%	0.06 [-0.55, 0.67]
Elango 2009	21.4	26.7	102	19.6	21.4	102	83.3%	0.07 [-0.20, 0.35]
<b>Total (95% CI)</b>	<b>122</b>			<b>123</b>			<b>100.0%</b>	<b>0.07 [-0.18, 0.32]</b>
Heterogeneity: Tau <sup>2</sup> = 0.00; Chi <sup>2</sup> = 0.00, df = 1 (P = 0.97); I <sup>2</sup> = 0%								
Test for overall effect: Z = 0.56 (P = 0.57)								



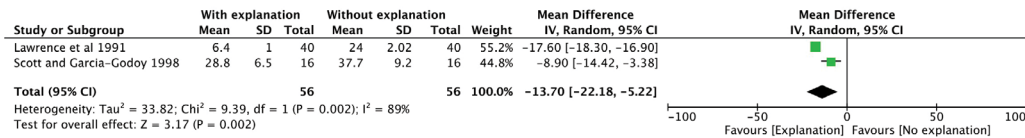
A: active protective stabilization; B: hand over the mouth; C: sedation; D: general anesthesia.

**Figure 6.** Forests plots for the direct comparison of the difference in means of acceptance of behavior guidance techniques among parents of non-special health care needs children versus acceptance of parents of special health care needs children measured in millimeters in Visual Analogic Scale. On this scale, zero represents the least acceptable and 100 mm the most acceptable (n = 245).

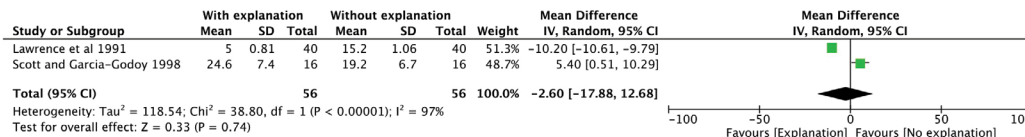
**A – Hand over the mouth**



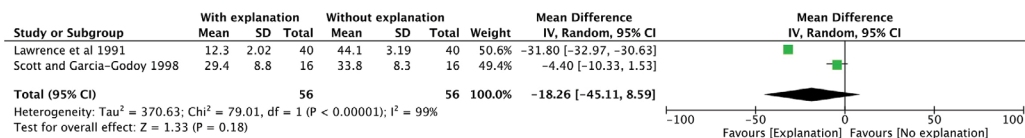
**B – Active protective stabilization**



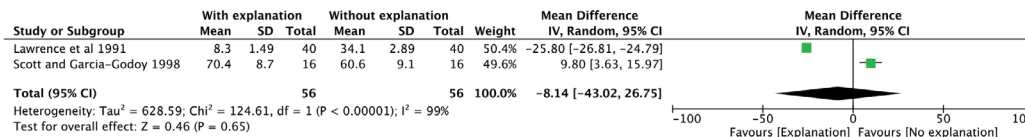
**C – Nitrous oxide/oxygen inhalation**



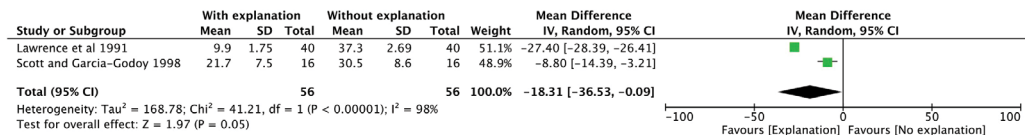
**D – General anesthesia**



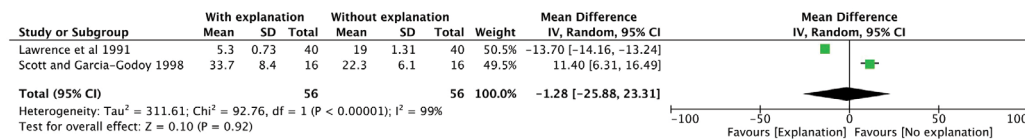
**E – Passive protective stabilization**



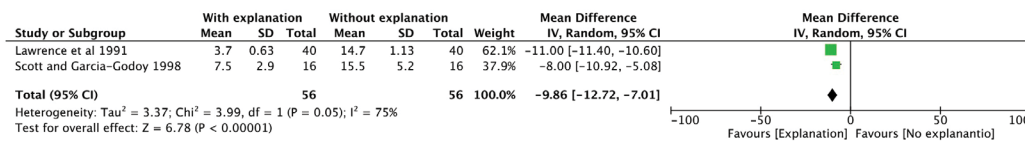
**F – Oral premedication**



**G – Voice control**



**H – Tell-show-do**



A: hand over the mouth exercise; B: active protective stabilization; C: nitrous oxide/oxygen inhalation; D: general anesthesia; E: passive protective stabilization; F: oral premedication; G: voice control; H: tell-show-do. Forest plot of the difference in means data.

**Figure 7.** Forests plots for the comparison of acceptance of behavior guidance techniques among parents of non-special health care needs children who received an explanation on the techniques versus those who did not receive an explanation prior to judging the behavior guidance technique (BGT). Ratings were measured in millimeters on a Visual Analogic Scale where zero represented the most acceptable and 100 mm the least acceptable BGT (n = 112).

agreement with the BGTs among parents of SHCN children, the comparison of acceptance of BGTs among parents of non-SHCN and SHCN children, and the difference in the means of agreement with the BGTs, as measured using the VAS, among parents of non-SHCN children who received an explanation before the presentation of the technique and those who did not, according to the GRADE<sup>15</sup> criteria, was judged to be very low. The overall certainty of evidence is presented in a summary of findings (SoF) table created using the GRADEpro software (McMaster University, Hamilton, Canada) (Table 6). Major concerns were related to the risk of bias (very serious) related to the lack of well-defined eligibility criteria and confounding factors; inconsistency, (very serious) with heterogeneity above 50% and wide confidence intervals, suggesting very low confidence in the estimated effect; and imprecision (serious), with less than 400 observations of continuous measures. Indirectness was not a concern. Publication bias was considered undetected, as potential conflicts of interest were not observed in the included studies. Furthermore, there was an effort to conduct a wide search, including in the gray literature.<sup>68</sup>

## Discussion

Understanding parental acceptance toward BGTs may have implications for planning oral health treatments in children. In the present systematic review, we found that parents of non-SHCN and

SHCN children demonstrated high acceptance of basic BGTs. Regarding advanced BGTs, the proportion of acceptance was good among parents of SHCN children and low among parents of non-SHCN children. Active protective stabilization was accepted more among parents of SHCN children than among parents of non-SHCN children. Overall, explanations of the technique increased parental acceptance, but not for all techniques. Nevertheless, the high risk of bias of the included studies and the high clinical, methodological, and statistical heterogeneity and very low certainty of the evidence represent a challenge in interpreting the results.

Perhaps the parents of children with SHCN are more often used for physical restraint, especially when their children present with aggressive behaviors.<sup>16</sup> This could be why the parents in the results were more likely to accept protective stabilization and sedation while leaving N<sub>2</sub>O and GA as the last resorts. Additionally, parents of uncooperative children were more open to accepting advanced BGTs.<sup>20,24</sup>

Dental care providers are obligated to offer accurate information to parents about their children's treatment. In the case of the need for advanced behavioral guidance, dentists should support their decisions based on evidence-based guidelines and systematic reviews. Nevertheless, the potential harm of more invasive guidance techniques, such as protective stabilization or GA, should be considered along with parents' opinions.<sup>5</sup> A two-way conversation about the risks and benefits of potential BGTs allows parents to express their values and preferences while sharing

**Table 6.** Proportion meta-analysis of agreement with BGT by the parents of SHCN children.

Behavior guidance technique	Total of studies	Total of sample	Proportion	CI 95%	p-value	I <sup>2</sup>
Tell-show-do	3	454	89.1%	56.1–99.7	< 0.001	95.7
Distraction	2	54	83.4%	32.5–98.4	< 0.001	92.6
Positive reinforcement	2	54	81.6%	25.9–97.7	< 0.001	93.8
Voice control	2	440	73.8%	12.5–98.1	< 0.001	98.5
Active protective stabilization	5	748	63.8%	43.9–81.5	< 0.001	95.7
Sedation	2	223	58.6%	52.1–65.0	0.871	0
Passive protective stabilization	3	334	47.2%	33.0–61.6	0.003	82.6
Nitrous oxide/oxygen inhalation	2	54	40.0%	5.9–81.2	0.003	88.6
General Anesthesia	3	263	29.0%	11.8–50.0	0.001	84.8

**Table 7.** Summary of findings table of Comparison of parental acceptance between children with special health care needs (SHCN) and children without SHCN toward behavior guidance techniques for pediatric dental visits based on GRADE.

Outcome	Behavior guidance technique	Certainty
N of studies	N of participants	
Proportion of non-SHCN children parent's agreement with BGT for pediatric dental visits. N of studies: 29 observational	Sixteen different behavior guidance technique evaluated in 2594 participants (dichotomous outcome -yes/no)	⊕○○○ VERY LOW <sup>A,B,C</sup>
Proportion of SHCN children parent's agreement with BGT for pediatric dental visits. N of studies: 5 observational	Nine different behavior guidance technique evaluated in 748 participants (dichotomous outcome -yes/no)	⊕○○○ VERY LOW <sup>A,B,C</sup>
Comparison of acceptance of BGT among parents of non-SHCN and those of SHCN children N° of participants: (2 observational studies)	Four different behavior guidance technique evaluated in 245 participants (continuous outcome - means of agreement with BGT)	⊕○○○ VERY LOW <sup>A,D</sup>
Difference in means of agreement with the BGT measured with VAS among parents of non-SHCN who received explanation before the presentation of the technique and those who did not N° of participants: (2 observational studies)	Eight different behavior guidance technique evaluated in 112 participants (continuous outcome - means of agreement with BGT)	⊕○○○ VERY LOW <sup>A,D,E</sup>

A. Definition of eligibility criteria and confounding factor were missing; B. I2 varied from 32.5 to 98.1%; C. Wide confidence intervals; D. Less than 400 observations for continuous measures; E. I2 above 75%.

their choice with the oral care team regarding the best way their children could be treated.<sup>25</sup> Moreover, well-informed parents accept BGTs to a greater extent<sup>26,27</sup> and are more likely to provide consent for BGT use.<sup>28</sup>

Children exhibit multifaceted behaviors according to their age range. The present study did not approach parents' BGT acceptance by considering children's age because there were insufficient homogeneous data among the included studies with which to perform a subgroup analysis. However, the studies showed mixed results, suggesting that age did not significantly affect parents' level of acceptance.<sup>7</sup> In other cases, younger children presented greater parental acceptance of N<sub>2</sub>O.<sup>28</sup> Similarly, parents' previous experience with dentists,<sup>29,30</sup> sex,<sup>2,29,31,32</sup> number of children,<sup>33,34</sup> ethnicity,<sup>2,35</sup> parenting style,<sup>24,36</sup> and income<sup>2,29,31-33,37</sup> showed controversial results, while parental age,<sup>31,32</sup> education level,<sup>2,31,32</sup> reason for children's visit to the dentist,<sup>7</sup> and children's previous experience<sup>29,38</sup> did not significantly affect parents' level of acceptance.

However, in cases of pain and/or emergency and uncooperative children, parents were more willing to accept advanced techniques.<sup>24,30,39,40</sup> Furthermore,

parents of cooperative children did not approve of sedation,<sup>24</sup> and stressed parents accepted fewer BGTs<sup>22</sup>. Therefore, recommendations should rely on techniques that can provide behavior management, which is particularly needed to effectively treat children. Usually, dentists pay attention to the parent-child relationship; therefore, the results of the present review may help dentists seek parental acceptance of the most suitable BGT for that particular family.

Different relationships can be observed among different countries. Culture and social mores can influence parents' perspectives during dental visits. Each country has state laws and regulations concerning dental practices, and BGTs are included in these regulations. For instance, in Nordic European countries, devices for protective stabilization are forbidden.<sup>41</sup> Advanced BGTs require that informed consent be signed by parents and kept in the patient's records.<sup>5</sup> Even when basic BGTs are planned, informed consent is required for alternative methods in case the BGT needs to be changed.<sup>41</sup>

Although the HOM technique is no longer accepted, it was included in the present systematic review because of the number of studies that have

assessed it. Indeed, parents disagreed regarding the use of HOM. There are growing concerns regarding the ethical boundaries of more restrictive techniques,<sup>42,43</sup> especially if the dentist does not have the scientific knowledge and training to perform it.<sup>6</sup> Even for children that present limited cooperation, physical restraint is seen as a final option for managing behavior.<sup>44</sup>

This systematic review also investigated hypnosis. Agreement with hypnosis varied from low<sup>24</sup> to moderate.<sup>2</sup> The parents who agreed were more likely to be women,<sup>38</sup> older, and have younger children.<sup>24</sup> Perhaps parents' perceptions of the benefits in terms of their child's anxiety led to their acceptance of the technique.

Common issues among the included studies compromise the present results. First, most studies did not present inclusion criteria, sample size calculations, describe the settings, or address confounding factors such as participants' age, socioeconomic characteristics, previous experience with the dentist, BGT employed, number of siblings, anxiety, pain, and treatment. Second, methodological problems certainly affect the conclusions. Another limitation is the outcome measurement considered here. The included studies used a range of scales to assess parents' acceptance, with a range of methods used to present the BGTs to the parents.

Children with SHCN were assessed without any differences in their health conditions and the limitations associated with those conditions. It is possible that the parental acceptance would be different among those with children with conditions such as cerebral palsy, especially because the parents are used for stabilization (depending on the level of disability) more often than parents of children with systemic chronic diseases. Furthermore, some health disabilities such as deafness and blindness were not assessed. In addition, there were some conflicting findings: GA was better accepted than PPS for invasive procedures; however, for check-ups/cleanings, PPS was better accepted than GA by parents of children with physical or mental disabilities.<sup>17</sup> Meanwhile, among parents of children with neuropathological disorders,<sup>15</sup> the acceptance of APS, HOM, and GA was lower than that for parents of non-SHCN children.

The present systematic review included a comprehensive search strategy that employed the help of a health science librarian and presented a high number of included studies; however, it is not possible to ensure that all potentially eligible studies were included. In addition, the effect estimates varied greatly, as substantial heterogeneity across studies was observed, thereby limiting the confidence in the results. All of the mentioned limitations influenced the GRADE assessment, which showed that the overall evidence had very low certainty.

Based on the issues discussed herein, it is clear that all mentioned limitations affected the conclusions and the applicability of the present systematic review. However, dentists should discuss BGT options with parents while bearing in mind that basic guidance techniques are generally well accepted among parents of non-SHCN children as well as among parents of SHCN children, while for advanced behavior guidance, there will be more resistance among all parents. Moreover, the fact that explanations can increase parental acceptance should also be considered.

Future research should address the BGTs presented in the current AAPD guidelines<sup>5</sup>, such as positive pre-visit imagery, ask-tell-ask, memory recruiting, and communication techniques for parents, which involve ask-tell-ask, teach-back, and motivational interviewing techniques.

## Conclusions

This systematic review and meta-analysis suggests with very low certainty that parents are more likely to have a high level of acceptance toward basic BGTs and are less likely to accept advanced behavioral guidance. This was the case for parents of both non-SHCN and SHCN children. Parents are less likely to accept more restrictive measures. Further, there is some evidence that parents benefit from education and experience with respect to BGTs, suggesting that dentists should discuss BGT options with parents of both non-SHCN and SHCN children. These findings provide a potentially helpful direction for dental care providers that aim to improve child health and child- and family-centered dental care.



## Acknowledgments

Thanks to Mrs. Maria Gorete Savi for her contribution in the search strategy. We would like to thank Editage ([www.editage.com](http://www.editage.com)) for English language editing. Funding Source: Coordenação de Aperfeiçoamento de Pessoal de Nível Superior –

Brasil (Capes) and Fundação de Amparo à Pesquisa e Inovação do Estado de Santa Catarina (Fapesc).

Financial Disclosure: “This work was supported by the Coordenação de Aperfeiçoamento de Pessoal de Nível Superior – Brasil (Capes)” (J.P.S. grant number 001).

## References

1. Cardoso CL, Loureiro SR. Stress and collaboration behavior in facing pediatric dental treatment. *Psicol Estud.* 2008;13(1):133-41. <https://doi.org/10.1590/S1413-73722008000100016>
2. Muhammad S, Shyama M, Al-Mutawa SA. Parental attitude toward behavioral management techniques in dental practice with schoolchildren in Kuwait. *Med Princ Pract.* 2011;20(4):350-5. <https://doi.org/10.1159/000323758>
3. Koplik EK, Lamping DL, Reznikoff M. The relationship of mother-child coping styles and mothers' presence on children's response to dental stress. *J Psychol.* 1992;126(1):79-92. <https://doi.org/10.1080/00223980.1992.10543343>
4. Oliver K, Manton DJ. Contemporary behavior management techniques in clinical pediatric dentistry: out with the old and in with the new? *J Dent Child (Chic).* 2015 Jan-Apr;82(1):22-8.
5. Ashley PF, Chaudhary M, Lourenço-Matharu L. Sedation of children undergoing dental treatment. *Cochrane Database Syst Rev.* 2018 Dec;12(12):CD003877. 10.1002/14651858.CD003877.pub5
6. American Academy of Pediatric Dentistry. Behavior guidance for the pediatric dental patient. reference manual of pediatric dentistry. Chicago: American Academy of Pediatric Dentistry; 2019: 40(6):266-279.
7. Goettens ML, Zborowski EJ, Costa FD, Costa VP, Torriani DD. Nonpharmacologic intervention on the prevention of pain and anxiety during pediatric dental care: a systematic review. *Acad Pediatr.* 2017 Mar;17(2):110-9. <https://doi.org/10.1016/j.acap.2016.08.012>
8. Moher D, Shamseer L, Clarke M, Ghersi D, Liberati A, Petticrew M, et al. Preferred reporting items for systematic review and meta-analysis protocols (PRISMA-P) 2015 statement. *Syst Rev.* 2015 Jan;4(1):1. <https://doi.org/10.1186/2046-4053-4-1>
9. Page MJ, McKenzie JE, Bossuyt PM, Boutron I, Hoffmann TC, Mulrow CD, et al. The PRISMA 2020 statement: an updated guideline for reporting systematic reviews. *BMJ.* 2021 Mar;372(71):n71. <https://doi.org/10.1136/bmj.n71>
10. Ouzzani M, Hammady H, Fedorowicz Z, Elmagarmid A. Rayyan-a web and mobile app for systematic reviews. *Syst Rev.* 2016 Dec;5(1):210. <https://doi.org/10.1186/s13643-016-0384-4>
11. Moola S, Munn Z, Tufanaru C, Aromataris E, Sears K, Sfetcu R, et al. Chapter 7: Systematic reviews of etiology and risk. In: Aromataris E, Munn Z, editors. *Joanna Briggs Institute reviewer's manual.* Adelaide: The Joanna Briggs Institute; 2017. p. 219-71.
12. McGuinness LA, Higgins JP. Risk-of-bias VISualization (robvis): An R package and Shiny web app for visualizing risk-of-bias assessments. *Res Syn Meth;* 2020. p. 1-7. <https://doi.org/10.1002/jrsm.1411>.
13. Version 5.1.0 [updated March 2011]. <http://www.handbook.cochrane.org>. Published 2011.
14. Guyatt GH, Oxman AD, Vist GE, Kunz R, Falck-Ytter Y, Alonso-Coello P, et al.; GRADE Working Group. GRADE: an emerging consensus on rating quality of evidence and strength of recommendations. *BMJ.* 2008 Apr;336(7650):924-6. <https://doi.org/10.1136/bmj.39489.470347.AD>
15. Elango I. A comparative evaluation of attitude and acceptability of various behavior management techniques in parents of normal and special children. Dissertation [Master of Dental Surgery in Pediatric and Preventive Dentistry] – PM Nadagouda Memorial Dental College & Hospital; Bangalkot; 2009.
16. Oliveira AC, Paiva SM, Pordeus IA. Parental acceptance of restraint methods used for children with intellectual disabilities during dental care. *Spec Care Dentist.* 2007 Nov-Dec;27(6):222-6. <https://doi.org/10.1111/j.1754-4505.2007.tb01753.x>
17. Brandes DA, Wilson S, Preisch JW, Casamassimo PS. A comparison of opinions from parents of disabled and non-disabled children on behavior management techniques used in dentistry. *Spec Care Dentist.* 1995 May-Jun;15(3):119-23. <https://doi.org/10.1111/j.1754-4505.1995.tb00493.x>
18. Castro AM, Espinosa RC, Pereira CA, Castro TC, Santos M, Santos D, et al. Behavior guidance techniques used in dental care for patients with special needs: acceptance of parents. *Pesqui Bras Odontopediatria Clin Integr.* 2016;16(1):113-21. <https://doi.org/10.4034/PBOCI.2016.161.12>
19. Castro AM, Oliveira FS, Novaes MSP, Ferreira DCA. Behavior guidance techniques in Pediatric Dentistry: attitudes of parents of children with disabilities and without disabilities. *Spec Care Dentist.* 2013 Sep-Oct;33(5):213-7. <https://doi.org/10.1111/scd.12022>

20. Marshall J, Sheller B, Mancl L, Williams BJ. Parental attitudes regarding behavior guidance of dental patients with autism. *Pediatr Dent*. 2008 Sep-Oct;30(5):400-7.
21. Ramos MM, Carrara CF, Gomide MR. Parental acceptance of behavior management techniques for children with clefts. *J Dent Child (Chic)*. 2005 May-Aug;72(2):74-7.
22. Lawrence SM, McTigue DJ, Wilson S, Odom JG, Waggoner WF, Fields HW Jr. Parental attitudes toward behavior management techniques used in pediatric dentistry. *Pediatr Dent*. 1991 May-Jun;13(3):151-5.
23. Scott S, García-Godoy F. Attitudes of Hispanic parents toward behavior management techniques. *ASDC J Dent Child*. 1998 Mar-Apr;65(2):128-31. PMID:9617454
24. Peretz B, Zadik D. Parents' attitudes toward behavior management techniques during dental treatment. *Pediatr Dent*. 1999 May-Jun;21(3):201-4.
25. Barry MJ, Edgman-Levitan S. Shared decision making—pinnacle of patient-centered care. *N Engl J Med*. 2012 Mar;366(9):780-1. <https://doi.org/10.1056/NEJMp1109283>
26. Havelka C, McTigue D, Wilson S, Odom J. The influence of social status and prior explanation on parental attitudes toward behavior management techniques. *Pediatr Dent*. 1992 Nov-Dec;14(6):376-81.
27. Jahanimoghadam F, Hasheminejad N, Horri A, Rostamizadeh MR, Baneshi MR. Does verbal explanation change parental acceptance level of different Behavior Management techniques in dental office? *J Oral Health Oral Epidemiol*. 2018;7(2):80-6.
28. Allen KD, Hodges ED, Knudsen SK. Comparing four methods to inform parents about child behavior management: how to inform for consent. *Pediatr Dent*. 1995 May-Jun;17(3):180-6.
29. León JL, Jimeno FG, Dalmau LJB. Acceptance by Spanish parents of behaviour-management techniques used in paediatric dentistry. *Eur Arch Paediatr Dent*. 2010 Aug;11(4):175-8. <https://doi.org/10.1007/BF03262739>
30. Patel M, McTigue DJ, Thikkurissy S, Fields HW. Parental attitudes toward advanced behavior guidance techniques used in pediatric dentistry. *Pediatr Dent*. 2016 Jan-Feb;38(1):30-6.
31. Eaton JJ, McTigue DJ, Fields HW Jr, Beck M. Attitudes of contemporary parents toward behavior management techniques used in pediatric dentistry. *Pediatr Dent*. 2005 Mar-Apr;27(2):107-13.
32. Jafarzadeh M, Kooshki F, Malekafzali B, Ahmadi S. Attitude of parents referred to the Department of Pediatric Dentistry towards different behavioral management techniques used in pediatric dentistry. *J Dental Sch Shahid Beheshti Unive Medical Sciences*. 2015;33(1):44-50. <https://doi.org/10.22037/jds.v33i1.24748>
33. Murphy MG, Fields HW Jr, Machen JB. Parental acceptance of pediatric dentistry behavior management techniques. *Pediatr Dent*. 1984 Dec;6(4):193-8.
34. Razavi S, Purtaji B. Determining the behavior management technique's acceptance of mothers referred to the department of pediatric dentistry in Qazvin (2007). *J Inflamm Dis*. 2009;13(3):81-6.
35. Chang CT. Ethnic influence on parental preferences towards behavioral management techniques used in pediatric dentistry. *Ann Arbor: The University of Texas School of Dentistry at Houston*; 2016.
36. Taran PK, Kaya MS, Bakkal M, Özalp Ş. The effect of parenting styles on behavior management technique preferences in a Turkish population. *Pediatr Dent*. 2018 Sep;40(5):360-4.
37. Chen X, Jin SF, Liu HB. [Analysis of possible factors that impact parents to accept dental general anesthesia]. *Shanghai Kou Qiang Yi Xue*. 2010 Apr;19(2):151-4. Chinese.
38. Alammouri M. The attitude of parents toward behavior management techniques in pediatric dentistry. *J Clin Pediatr Dent*. 2006;30(4):310-3. <https://doi.org/10.17796/jcpd.30.4.m73568r0t74962m3>
39. Al Zoubi L, Schmoedel J, Mustafa Ali M, Alkilzy M, Splieth CH. Parental acceptance of advanced behaviour management techniques in normal treatment and in emergency situations used in paediatric dentistry. *Eur Arch Paediatr Dent*. 2019 Aug;20(4):319-23. <https://doi.org/10.1007/s40368-018-0408-y>
40. Fields HW Jr, Machen JB, Murphy MG. Acceptability of various behavior management techniques relative to types of dental treatment. *Pediatr Dent*. 1984 Dec;6(4):199-203.
41. Hallonsten A, Jensen B, Raadal M, Veerkamp J, Hosey M, Poulsen S. EAPD guidelines on sedation in paediatric dentistry. 2007 [cited 2021 Oct 15]. Available from: [https://www.eapd.eu/uploads/5CF03741\\_file.pdf](https://www.eapd.eu/uploads/5CF03741_file.pdf)
42. Paryab M, Afshar H, Mohammadi R. Informing Parents about the Pharmacological and Invasive Behavior Management Techniques Used in Pediatric Dentistry. *J Dent Res Dent Clin Dent Prospect*. 2014;8(2):95-100.
43. Machado G, Mundim A, Prado M, Campos C, Costa L. Does protective stabilization of children during dental treatment break ethical boundaries? A narrative literature review. *OHDM*. 2015;14(4):1-6. <https://doi.org/10.4172/2247-2452.1000806>
44. Perkins E, Prosser H, Riley D, Whittington R. Physical restraint in a therapeutic setting; a necessary evil? *Int J Law Psychiatry*. 2012 Jan-Feb;35(1):43-9. <https://doi.org/10.1016/j.ijlp.2011.11.008>
45. Abushal MS, Adenubi JO. Attitudes of Saudi parents toward behavior management techniques in pediatric dentistry. *J Dent Child (Chic)*. 2003 May-Aug;70(2):104-10.



46. Boka V, Arapostathis K, Vretos N, Kotsanos N. Parental acceptance of behaviour-management techniques used in paediatric dentistry and its relation to parental dental anxiety and experience. *Eur Arch Paediatr Dent*. 2014 Oct;15(5):333-9. <https://doi.org/10.1007/s40368-014-0119-y>
47. Cordero N, Cárdenas JM, Álvarez LG. Parental acceptance of pharmacologic and non-pharmacologic behavior management techniques in pediatric dentistry. *CES Odontol*. 2012;25(2):24-32.
48. Enciso PA, Posada MC, Quintero AM, Valencia C, Vásquez J, Ríos S, et al. Aceptabilidad, percepción y permisividad de los padres a las diferentes técnicas de manejo del comportamiento utilizadas en los pacientes pediátricos de la Clínica CES. *CES Odontol*. 2001;14(1):28-35.
49. Kupietzky A. Effects of video information on parental preoperative anxiety level and their perception of conscious sedation vs. general anesthesia for the dental treatment of their young child. *J Clin Pediatr Dent*. 2006;31(2):90-2. <https://doi.org/10.17796/jcpd.31.2.773784g75vq15w45>
50. Kuscu OO, Caglar E, Sandalli N. Parents' assessments on the effectiveness of nonaversive behavior management techniques: A pilot study. *J Dent Sci*. 2014;9(1):29-34. <https://doi.org/10.1016/j.jds.2013.02.001>
51. Simões FX, Macedo TG, Coqueiro RS, Pithon MM. Percepção dos pais sobre as técnicas de manejo comportamental utilizadas em Odontopediatria. *Rev Bras Odontol*. 2016;73(4):277-82. <https://doi.org/10.18363/rbo.v73n4.p.277>
52. Wilson S, Antalis D, McTigue DJ. Group effect on parental rating of acceptability of behavioral management techniques used in pediatric dentistry. *Pediatr Dent*. 1991 Jul-Aug;13(4):200-3.
53. Alkandari SA, Almousa F, Abdulwahab M, Boynes SG. Dentists' and Parents' Attitude Toward Nitrous Oxide Use in Kuwait. *Anesth Prog*. 2016;63(1):8-16. <https://doi.org/10.2344/14-00008.1>
54. Acharya S. Parental acceptance of various behaviour management techniques used in pediatric dentistry: a pilot study in Odisha, India. *Pesqui Bras Odontopediatria Clin Integr*. 2017;17(1):1-6. <https://doi.org/10.4034/PBOCI.2017.171.26>
55. Betancur E, Londoño S, Alvarez C, Cárdenas JM, Manrique RD. Evaluación de la aceptación de la técnica de sedación inhalada con oxido nitroso por parte de padres y niños entre los 4 y 12 años de edad. *CES Odontol*. 2006;19(1):33-7.
56. Bhandari R, Thakur S, Singhal P, Chauhan D, Jayam C, Jain T. Parental awareness, knowledge, and attitude toward conscious sedation in North Indian children population: A questionnaire-based study. *Indian J Dent Res*. 2018 Sep-Oct;29(5):693-7. [https://doi.org/10.4103/ijdr.IJDR\\_120\\_17](https://doi.org/10.4103/ijdr.IJDR_120_17)
57. Brill WA. Parents' assessment and children's reactions to a passive restraint device used for behavior control in a private pediatric dental practice. *ASDC J Dent Child*. 2002 Sep-Dec;69(3):310-3.
58. Chen X, Jin SF, Liu HB. [Survey of parental acceptance rate to behavior management techniques used in pediatric dentistry]. *Shanghai Kou Qiang Yi Xue*. 2008;17(5):475-8. Chinese.
59. Frankel RI. The Papoose Board and mothers' attitudes following its use. *Pediatr Dent*. 1991 Sep-Oct;13(5):284-8.
60. Fúccio F, Ferreira K, Watanabe S, Jorge M, Pordeus I, Paiva S. Aceitação dos pais em relação às técnicas de manejo do comportamento utilizadas em odontopediatria. *JBP*. 2003;6(30):146-51.
61. Kamolmatayakul S, Nukaw S. Parent attitudes toward various behaviour management techniques used in pediatric dentistry in Southern Thailand. *Int J Health Promot Educ*. 2002;40(3):75-7. <https://doi.org/10.1080/14635240.2002.10806202>
62. Peretz B, Kharouba J, Blumer S. Pattern of parental acceptance of management techniques used in pediatric dentistry. *J Clin Pediatr Dent*. 2013;38(1):27-30. <https://doi.org/10.17796/jcpd.38.1.8264110prh577428>
63. Subramaniam P, Girish Babu KL, Lakhota D. Evaluation of nitrous oxide-oxygen and triclofos sodium as conscious sedative agents. *J Indian Soc Pedod Prev Dent*. 2017 Apr-Jun;35(2):156-61. [https://doi.org/10.4103/JISPPD.JISPPD\\_82\\_16](https://doi.org/10.4103/JISPPD.JISPPD_82_16)
64. Tsuchihashi N, Uehara N, Takagi Y, Miwa Z, Sugimoto K. Internal stress in children and parental attitude to dental treatment with passive restraint. *Pediatr Dent J*. 2012;22(2):170-7. [https://doi.org/10.1016/S0917-2394\(12\)70268-9](https://doi.org/10.1016/S0917-2394(12)70268-9)
65. Venkataraghavan K, Shah J, Kaur M, Trivedi K, Shah S, Virda M. Pro-activeness of parents in accepting behavior management techniques: a cross-sectional evaluative study. *J Clin Diagn Res*. 2016 Jul;10(7):ZC46-9. <https://doi.org/10.7860/JCDR/2016/18378.8162>
66. Martinez Mier EA, Walsh CR, Farah CC, Vinson LA, Soto-Rojas AE, Jones JE. Acceptance of behavior guidance techniques used in pediatric dentistry by parents from diverse backgrounds. *Clin Pediatr (Phila)*. 2019 Aug;58(9):977-84. <https://doi.org/10.1177/0009922819845897>
67. Al Zoubi L, Schmoedel J, Mustafa Ali M, Splieth CH. Parental acceptance of advanced behaviour management techniques in paediatric dentistry in families with different cultural background. *Eur Arch Paediatr Dent*. 2021 Aug;22(4):707-13. <https://doi.org/10.1007/s40368-021-00607-4>
68. Boutron I, Page MJ, Higgins JP, Altman DG, Lundh A, Hróbjartsson A. Chapter 7: Considering bias and conflicts of interest among the included studies. In: Higgins JPT, Thomas J, Chandler J, Cumpston M, Li T, Page MJ, Welch VA (eds.). *Cochrane handbook for systematic reviews of interventions version 6.2 (updated February 2021)*. Cochrane, 2021 [cited 2021 Oct 15]. Available from: <https://www.training.cochrane.org/handbook>

69. Brito G, Machado C. Parents' perception of behavioral control techniques at the Pediatric Dentistry Clinic at UniRuy Faculty, Salvador-BA. *J. Dent. Public. Health, Salvador*. 2021 Dec;12(2): <https://doi.org/10.17267/2596-3368dentistry.v12i2.3805>
70. Thirunavakarasu R, Sudhan M, Ramakrishnan M. Parental Acceptance Towards Behavioural Management Techniques in Pediatric Dentistry. *J Res Med Dent Sci*. 2021;9(1):308-13.
71. Rahman MT, Kamarudin A, Eusufzai SZ, Mamat N, Zakaria AS, Karobari MI. Acceptability of different behaviour management techniques in paediatric dentistry: a study of chinese, indian and malay parents. *Int J Curr Res Rev*. 2021;13(4):157-61. <https://doi.org/10.31782/IJCRR.2021.13408>
72. Hashemi E, Amirabadi F, Esmail Jami M. Evaluation of parental acceptance of different behavior management techniques in pediatric dentistry, Zahedan, Iran. *Int J Pediatr*. 2021;9(2):13103-11. <https://doi.org/10.22038/ijp.2020.53106.4216>