Behavior Guidance for the Pediatric Dental Patient

Latest Revision
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Abstract

This best practice provides health care personnel, parents, and others with information for predicting and guiding behavior in children during dental procedures. Successful treatment of pediatric dental patients depends on effective communication and developing customized behavior guidance plans dependent on the patient's treatment needs and the skills of the dentist. Behavior guidance is a continual process from basic to advanced techniques, using non-pharmacological and pharmacological options. The following items should be addressed before, during, and after patient treatment: informed consent, pain assessment, behavior documentation, and preventive and deferred treatment considering all behavior guidance options. Basic behavior guidance includes communication guidance, positive pre-visit imagery, direct observation, tell-show-do, ask-tell-ask, voice control, non-verbal communication, positive reinforcement and descriptive praise, distraction, and desensitization. For anxious patients and those with special health care needs, additional behavior guidance options include sensory-adapted dental environments, animal assisted therapy, picture exchange communication systems, and nitrous oxide-oxygen inhalation. Advanced behavior guidance includes protective stabilization, sedation, and general anesthesia. Each option should be assessed for objectives, indications, contraindications, and precautions. Knowledge of these options will aid healthcare professionals in providing appropriate patient-specific and family-centered behavior guidance for infants, children, adolescents, and persons with special health care needs.

This document was developed through a collaborative effort of the American Academy of Pediatric Dentistry Councils on Clinical Affairs and Scientific Affairs to offer updated information and recommendations to inform health care providers, parents and others about the behavior guidance techniques used and behavioral influences impacting contemporary pediatric dental care.

KEYWORDS: ANESTHESIA, GENERAL, BEHAVIOR THERAPY, CHILD, INFORMED CONSENT, NITROUS OXIDE, PAIN MEASUREMENT

Purpose

The American Academy of Pediatric Dentistry (**AAPD**) recognizes that dental care is medically necessary for the purpose of preventing and eliminating orofacial disease, infection, and pain, restoring the form and function of the dentition, and correcting facial disfiguration or dysfunction.[1] Behavior guidance techniques, both nonpharmalogical and pharmalogical, are used to alleviate anxiety, nurture a positive dental attitude, and perform quality oral health care safely and efficiently for infants, children, adolescents, and persons with special health care needs (**SHCN**). Selection of techniques must be tailored to the needs of the individual patient and the skills of the practitioner. The AAPD offers these recommendations to inform health care providers, parents, and other interested parties about influences on the behavior of pediatric dental patients and the many behavior guidance techniques used in contemporary pediatric dentistry. Information regarding pain management, protective stabilization, and pharmacological behavior management for pediatric dental patients is provided in greater detail in additional AAPD best practices documents.[2-6]

Methods

Recommendations on behavior guidance were developed by the Clinical Affairs Committe, Behavior Management Subcommittee and adopted in 1990.[7] This document by the Council of Clinical Affairs is a revision of the previous version, last revised in 2015.[8] The original guidance was developed subsequent to the AAPD's 1988 conference on behavior management and modified following the AAPD's symposia on behavior guidance in 2003[10] and 2013.[11] This update reflects a review of the most recent proceedings, other dental and medical literature related to behavior guidance of the pediatric patient, and sources of recognized professional expertise and stature including both the academic and practicing pediatric dental communities and the standards of the American Dental Association Commission on Dental Accreditation.[12] In addition, a search of the PubMed®/MEDLINE electronic database was performed, (see Appendix 1 after References). Articles were screened by viewing titles and abstracts. Data was abstracted and used to summarize research on behavior guidance for infants and children through adolescents, including those with special healthcare needs. When data did not appear sufficient or were inconclusive, recommendations were based upon expert and/or consensus opinion by experienced researchers and clinicians.

ABBREVIATIONS

AAPD: American Academy of Pediatric Dentistry. **AAT:** Animal-assisted therapy. **ITR:** Interim therapeutic restoration. **PECS:** Picture exchange communication system. **SADE:** Sensory-adapted dental environment. **SDF:** Silver diamine fluoride. **SHCN:** Special healthcare needs.

Background

Dental practitioners are expected to recognize and effectively treat childhood dental diseases that are within the knowledge and skills acquired during their professional education. Safe and effective treatment of these diseases requires an understanding of and, at times, modifying the child's and family's response to care. Behavior guidance a continuum of interaction involving the dentist and dental team, the patient, and parent directed toward communication and education, while also ensuring the safety of both oral health professionals and the child, during the delivery of medically necessary care. Goals of behavior guidance are to: 1) establish communication, 2) alleviate the child's dental fear and anxiety, 3) promote patient's and parents' awareness of the need for good oral health and the process by which it is achieved, 4) promote the child's positive attitude toward oral health care, 5) build a trusting relationship between dentist/staff and child/parent, and 6) provide quality oral health care in a comfortable, minimally-restrictive, safe, and effective manner. Behavior guidance techniques range from establishing or maintaining communication to stopping unwanted or unsafe behaviors.[13] Knowledge of the scientific basis of behavior guidance and skills in communication, empathy, tolerance, cultural sensitivity, and flexibility are requisite to proper implementation. Behavior guidance should never be punishment for misbehavior, power assertion, or use of any strategy that hurts, shames, or belittles a patient.

Predictors of child behaviors

Patient attributes

A dentist who treats children should be able to accurately assess the child's developmental level, dental attitudes, and temperament to anticipate the child's reaction to care. The response to the demands of oral health care is complex and determined by many factors.

Factors that may contribute to noncompliance during the dental appointment include fears, general or situational anxiety, a previous unpleasant and/or painful dental/medical experience, pain, inadequate preparation for the encounter, and parenting practices.[13-19] In addition, cognitive age, developmental delay, inadequate coping skills, general behavioral considerations, negative emotionality, maladaptive behaviors, physical/mental disability, and acute illness or chronic disease are potential reasons for noncompliance during the dental appointment.[13-19]

Dental behavior management problems often are more readily recognized than dental fear/anxiety due to associations with general behavioral considerations (e.g., activity, impulsivity) versus temperamental traits (e.g., shyness, negative emotionality) respectively.[20] Only a minority of children with uncooperative behavior have dental fears, and not all fearful children present with dental behavior guidance problems.[14,21,22] Fears may occur when there is a perceived lack of control or potential for pain, especially when a child is aware of a dental problem or has had a painful healthcare experience. If the level of fear is incongruent with the circumstances and the patient is not able to control impulses, disruptive behavior is likely.[20]

Cultural and linguistic factors also may play a role in patient cooperation and selection of behavior guidance techniques.[23-26] Since every culture has its own beliefs, values, and practices, it is important to understand how to interact with patients from different cultures and to develop tools to help navigate their encounters. Translation services should be made available for those families who have limited English proficiency.[26,27] A federal mandate requires translation services for non-English speaking families be available at no cost to the family in healthcare facilities that receive federal funding for services.[28] As is true for all patients/families, the dentist/staff must listen actively and address the patient's/parents' concerns in a sensitive and respectful manner.[23]

Parental influences

Parents influence their child's behavior at the dental office in several ways. Positive attitudes toward oral health care may lead to the early establishment of a dental home. Early preventive care leads to less dental disease, decreased treatment needs, and fewer opportunities for negative experiences.[29,30] Parents who have had negative dental experiences as a patient may transmit their own dental anxiety or fear to the child thereby adversely affecting her attitude and response to care.[14,17,31,32] Long term economic hardship leads to stress, which can lead to parental adjustment problems such as depression, anxiety, irritability, substance abuse, and violence.[23] Parental depression may result in parenting changes, including decreased supervision, caregiving, and discipline for the child, thereby placing the child at risk for a wide variety of adjustment issues including emotional and behavior problems.[23] In America, evolving parenting styles[17,18] and parental behaviors influenced by economic hardship have left practitioners challenged by an increasing number of children ill-equipped with the coping skills and self-discipline necessary to contend with new experiences.[23,24,26] Frequently, parental expectations for the child's response to care (e.g., no tears) are unrealistic, while expectations for the dentist who guides their behavior are great.[19]

Orientation to dental environment

The non-clinical office staff plays an important role in behavior guidance. The scheduling coordinator or receptionist often will be the first point of contact with a prospective patient and family, either through the internet or a telephone conversation. The tone of the communication should be welcoming. The scheduling coordinator or receptionist should actively engage the patient and family to determine their primary concerns, chief complaint, and any special health care or cultural/linguistic needs. The communication can provide insights into patient or family anxiety or stress. Staff should help set expectations for the initial visit by providing relevant information and may suggest a pre-appointment visit to the

office to meet the doctor and staff and tour the facility.[20] The non-clinical staff should confirm the office's location, offer directions, and ask if there are any further questions. Such encounters serve as educational tools that help to allay fears and better prepare the family and patient for the first visit.

The parent's/patient's initial contact with the dental practice allows both parties to address the child's primary oral health needs and to confirm the appropriateness of scheduling an appointment.[33] From a behavioral standpoint, many factors are important when appointment times are determined.[20] Appointment-related concerns include patient age, presence of a special health care need, the need for sedation, distance the parent/patient travels, length of appointment, additional staffing requirements, parent's work schedule, and time of day. Emergent or urgent treatment should not be delayed on these grounds alone.[34] Appointment scheduling should be tailored to the needs of the individual patient's circumstances and the skills of the practitioner. The practitioner should formulate a policy regarding scheduling, and scheduling should not be left to chance.[20] Appointment duration should not be prolonged beyond a patient's tolerance level solely for the practitioner's convenience.[20] Consideration of appointment scheduling will benefit the parent/patient and practitioner by building a trusting relationship that promotes the patient's positive attitude toward oral health care.

Reception staff are usually the first team members the patient meets upon arrival at the office. The caring and assuring manner in which the child is welcomed into the practice at the first and subsequent visits is important.[19,35] A child-friendly reception area (e.g., age-appropriate toys and games) can provide a distraction for and comfort young patients. These first impressions may influence future behaviors.

Patient assessment

An evaluation of the child's cooperative potential is essential for treatment planning. No single assessment method or tool is completely accurate in predicting a patient's behavior, but awareness of the multiple influences on a child's response to care can aid in treatment planning.[36] Initially, information can be gathered from the parent through questions regarding the child's cognitive level, temperament/personality characteristics,[15,22,37,38,39] anxiety and fear,[14,22,40] reaction to strangers,[41] and behavior at previous medical/dental visits, as well as how the parent anticipates the child will respond to future dental treatment. Later, the dentist can evaluate cooperative potential by observation of and interaction with the patient. Whether the child is approachable, somewhat shy, or definitely shy and/or withdrawn may influence the success of various communicative techniques. Assessing the child's development, past experiences, and current emotional state allows the dentist to develop a behavior guidance plan to accomplish the necessary oral health care.[20] During delivery of care, the dentist must remain attentive to physical and/or emotional indicators of stress.[23-26,42] Changes in behaviors may require alterations to the behavioral treatment plan.

Dentist/dental team behaviors

The behaviors of the dentist and dental staff members are the primary tools used to guide the behavior of the pediatric patient. The dentist's attitude, body language, and communication skills are critical to creating a positive dental visit for the child and to gain trust from the child and parent.[29] Dentist and staff behaviors that can help reduce anxiety and encourage patient cooperation include giving clear and specific instructions, having empathetic communication style, and offering verbal reassurance.[43] Dentists and staff must continue to be attentive to their communication styles throughout interactions with patients and families.[44]

Communication (i.e., imparting or interchange of thoughts, opinions, or information) may occur by a number of means but, in the dental setting, it is accomplished primarily through dialogue, tone of voice, facial expression, and body language.[45] Communication between the doctor/staff and the child and parent is vital to successful outcomes in the dental office.

The four essential ingredients of communication are:

1. the sender,
2. the message, including the facial expression and body language of the sender,
3. the context or setting in which the message is sent, and
4. the receiver.[46]

For successful bi-directional communication to take place, all four elements must be present and consistent. Without consistency, there may be a poor fit between the intended message and what is understood.[45]

Communicating with children poses special challenges for the dentist and the dental team. A child's cognitive development will dictate the level and amount of information interchange that can take place.[26] With a basic understanding of the cognitive development of children, the dentist can use appropriate vocabulary and body language to send messages consistent with the receiver's intellectual development.[26,45]

Communication may be impaired when the sender's expression and body language are not consistent with the intended message. When body language conveys uncertainty, anxiety, or urgency, the dentist cannot effectively communicate confidence or a calm demeanor.[45]

In addition, the operatory may contain distractions (e.g., another child crying) that, for the patient, produce anxiety and interfere with communication. Dentists and other members of the dental team may find it advantageous to discuss certain information (e.g., post-operative instructions, preventive counseling) away from the operatory and its many distractions.[19]

The communicative behavior of dentists is a major factor in patient satisfaction.[46,47] Dentist actions that are reported to correlate with low parent satisfaction include rushing through appointments, not taking time to explain procedures, barring parents from the examination room, and generally being impatient.[37,43] However, when a provider offers compassion, empathy, and genuine concern, there may be better acceptance

of care.[43] While some patients may express a preference for a provider of a specific gender, female and male practitioners have been found to treat patients and parents in a similar manner.[39]

The clinical staff is an extension of the dentist in behavior guidance. A collaborative approach helps assure that both the patient and parent have a positive dental experience. All dental team members are encouraged to expand their skills and knowledge through dental literature, video presentations, and/or continuing education courses.[49]

Informed consent

All behavior guidance decisions must be based on a review of the patient's medical, dental, and social history followed by an evaluation of current behavior. Decisions regarding the use of behavior guidance techniques other than communicative management cannot be made solely by the dentist. They must involve a parent and, if appropriate, the child. The practitioner, as the expert on dental care (i.e., the timing and techniques by which treatment can be delivered), should effectively communicate behavior and treatment options, including potential benefits and risks, and help the parent decide what is in the child's best interests.[29] Successful completion of diagnostic and therapeutic services is viewed as a partnership of dentist, parent, and child.[29,50,51] The conversation should allow questions from the parent and patient in order to clarify issues and to verify the parents' and child's comprehension. This should be done in the family's preferred language, with assistance of a trained interpreter if needed.[13,28]

Communicative management, by virtue of being a basic element of communication, requires no specific consent. All other behavior guidance techniques require informed consent consistent with the AAPD's *Best Practices on Informed Consent*[52] and applicable state laws. A signature on the consent form does not necessarily constitute informed consent. Informed consent implies information was provided to the parent, risks/benefits and alternatives were discussed, questions were answered, and permission was obtained prior to administration of treatment.[13] If the parent refuses treatment after discussions of the risks/benefits and alternatives of the proposed treatment and behavior guidance techniques, an informed refusal form should be signed by the parent and retained in the patient's record.[53] If the dentist believes the informed refusal violates proper standard of care, he should recommend the patient seek another opinion and/or dismiss the patient from the practice.[52] If the dentist suspects dental neglect[54], he is obligated to report to appropriate authorities.[52,55]

In the event of an unanticipated behavioral reaction to dental treatment, it is incumbent upon the practitioner to protect the patient and staff from harm. Following immediate intervention to assure safety, if a new behavior guidance plan is developed to complete care, the dentist must obtain informed consent for the alternative methods.[52,56,57]

Pain assessment and management during treatment

Pain has a direct influence on behavior and should be assessed and managed throughout treatment.[58] Anxiety may be a predictor of increased pain perception.[59] Findings of pain or a painful past health care visit are important considerations in the patient's medical/dental history that will help the dentist anticipate possible behavior problems.[2,53,58] Prevention or reduction of pain during treatment can nurture the relationship between the dentist and the patient, build trust, allay fear and anxiety, and enhance positive dental attitudes for future visits.[60-64] Pain can be assessed using self-report, behavioral, and biological measures. In addition, there are several pain assessment instruments that can be used in patients.[2] The subjective nature of pain perception, varying patient responses to painful stimuli, and lack of use of accurate pain assessment scales may hinder the dentist's attempts to diagnose and intervene during procedures.[31,61,62,65-67] Observing changes in patient behavior (e.g., facial expressions, crying, complaining, body movement during treatment) as well as biologic measures (e.g., heart rate, sweating) is important in pain evaluation.[2,61,64] The patient is the best reporter of her pain.[31,62,65,66] Listening to the child at the first sign of distress will facilitate assessment and any needed procedural modifications.[62] At times, dental providers may underestimate a patient's level of pain or may develop pain blindness as a defense mechanism and continue to treat a child who really is in pain.[31,61,68-71] Misinterpreted or ignored changes in behavior due to painful stimuli can cause sensitization for future appointments as well as psychological trauma.[72]

Documentation of patient behaviors

Recording the child's behavior serves as an aid for future appointments.[66] One of the more reliable and frequently used behavior rating systems in both clinical dentistry and research is the Frankl Scale.[20,66,73] This scale (see Appendix 2) separates observed behaviors into four categories ranging from definitely negative to definitely positive.[20,66,73] In addition to the rating scale, an accompanying descriptor (e.g., "+, non-verbal") will help practitioners better plan for subsequent visits.

Treatment deferral

Dental disease usually is not life-threatening, and the type and timing of dental treatment can be deferred in certain circumstances. When a child's cognitive abilities or behavior prevents routine delivery of oral health care using communicative guidance techniques, the dentist must consider the urgency of dental need when determining a plan of treatment.[56,57] In some cases, treatment deferral may be considered as an alternative to treating the patient under sedation or general anesthesia. However, rapidly advancing disease, trauma, pain, or infection usually dictates prompt treatment. Deferring some or all treatment or employing therapeutic interventions (e.g., silver diamine fluoride [**SDF**][74] interim therapeutic restoration [**ITR**],[75,76] fluoride varnish, antibiotics for infection control) until the child is able to cooperate may be appropriate when

based upon an individualized assessment of the risks and benefits of that option. The dentist must explain the risks and benefits of deferred or alternative treatments clearly, and informed consent must be obtained from the parent.[52,53,56] In select cases where ITR or SDF is employed, regular reevaluations are recommended and retreatment may be needed.[77,78]

Treatment deferral also should be considered in cases when treatment is in progress and the patient's behavior becomes hysterical or uncontrollable. In such cases, the dentist should halt the procedure as soon as possible, discuss the situation with the patient/parent, and either select another approach for treatment or defer treatment based upon the dental needs of the patient. If the decision is made to defer treatment, the practitioner immediately should complete the necessary steps to bring the procedure to a safe conclusion before ending the appointment.[57,75,76]

Caries risk should be reevaluated when treatment options are compromised due to child behavior.[79] An individualized preventive program, including appropriate parent education and a dental recall schedule, should be recommended after evaluation of the patient's caries risk, oral health needs, and abilities. Topical fluorides (e.g., brush-on gels, fluoride varnish, professional application during prophylaxis) may be indicated.[80] ITR may be useful as both preventive and therapeutic approaches.[75,76]

Behavior guidance techniques

Since children exhibit a broad range of physical, intellectual, emotional, and social development and a diversity of attitudes and temperament, it is important that dentists have a wide range of behavior guidance techniques to meet the needs of the individual child and be tolerant and flexible in their implementation.[18,25] Behavior guidance is not an application of individual techniques created to deal with children, but rather a comprehensive, continuous method meant to develop and nurture the relationship between the patient and doctor, which ultimately builds trust and allays fear and anxiety. Some of the behavior guidance techniques in this document are intended to maintain communication, while others are intended to extinguish inappropriate behavior and establish communication. As such, these techniques cannot be evaluated on an individual basis as to validity but must be assessed within the context of the child's total dental experience. Techniques must be integrated into an overall behavior guidance approach individualized for each child. Consequently, behavior guidance is as much an art as it is a science.

Recommendations

Basic behavior guidance

Communication and communicative guidance

Communicative management and appropriate use of commands are applied universally in pediatric dentistry with both the cooperative and uncooperative child. At the beginning of a dental appointment, asking questions and active/reflective listening can help establish rapport and trust.[81,82] The dentist may establish teacher/student roles in order to develop an educated patient and deliver quality dental treatment safely.[20,29] Once a procedure begins, bi-directional communication should be maintained, and the dentist should consider the child as an active participant in his well-being and care.[83] With this two-way interchange of information, the dentist also can provide one-way guidance of behavior through directives. Use of self-disclosing assertiveness techniques (e.g., "I need you to open your mouth so I can check your teeth", "I need you to sit still so we can take an X-ray") tells the child exactly what is required to be cooperative.[82] The dentist can ask the child 'yes' or 'no' questions where the child can answer with a 'thumbs up' or 'thumbs down' response. Also, observation of the child's body language is necessary to confirm the message is received and to assess comfort and pain level.[60,61,82] Communicative guidance comprises a host of specific techniques that, when integrated, enhance the evolution of a cooperative patient. Rather than being a collection of singular techniques, communicative guidance is an ongoing subjective process that becomes an extension of the personality of the dentist. Associated with this process are the specific techniques of pre-visit imagery, direct observation, tell-show-do, ask-tell-ask, voice control, nonverbal communication, positive reinforcement, various distraction techniques (e.g., audio, visual, imagination, thoughtful designs of clinic), memory restructuring desensitization to dental setting and procedures, parental presence/absence, enhanced control, additional considerations for patients with anxiety or SHCN and nitrous oxide/oxygen inhalation.[81] The dentist should consider the development of the patient, as well as the presence of other communication deficits (e.g., hearing disorder), when choosing specific communicative guidance techniques.

Positive pre-visit imagery

- Description: Patients preview positive photographs or images of dentistry and dental treatment before the dental appointment.[84]

- Objectives: The objectives of positive pre-visit imagery are to:
  - — provide children and parents with visual information on what to expect during the dental visit; and
  - — provide children with context to be able to ask providers relevant questions before dental procedures commence.
- Indications: Use with any patient.
- Contraindication: None.

Direct observation

- Description: Patients are shown a video or are permitted to directly observe a young cooperative patient undergoing dental treatment.[85,86]
- Objectives: The objectives of direct observation are to:
  - — familiarize the patient with the dental setting and specific steps involved in a dental procedure; and

  - — provide an opportunity for the patient and parent to ask questions about the dental procedure in a safe environment.
- Indications: Use with any patient.
- Contraindications: None.

Tell-show-do

- Description: The technique involves verbal explanations of procedures in phrases appropriate to the developmental level of the patient (tell); demonstrations for the patient of the visual, auditory, olfactory, and tactile aspects of the procedure in a carefully defined, nonthreatening setting (show); and then, without deviating from the explanation and demonstration, completion of the procedure (do). The tell-show-do technique operates with communication skills (verbal and nonverbal) and positive reinforcement.[29,34,35,81]
- Objectives: The objectives of tell-show-do are to:
  - — teach the patient important aspects of the dental visit and familiarize the patient with the dental setting and armamentarium; and
  - — shape the patient's response to procedures through desensitization and well-described expectations.
- Indications: Use with any patient.
- Contraindications: None.

Ask-tell-ask

- Description: This technique involves inquiring about the patient's visit and feelings toward or about any planned procedures (ask); explaining the procedures through demonstrations and non-threatening language appropriate to the cognitive level of the patient (tell); and again inquiring if the patient understands and how she feels about the impending treatment (ask). If the patient continues to have concerns, the dentist can address them, assess the situation, and modify the procedures or behavior guidance techniques if necessary.[26]
- Objectives: The objectives of ask-tell-ask are to:
  - — assess anxiety that may lead to noncompliant behavior during treatment;
  - — teach the patient about the procedures and their implementation; and
  - — confirm the patient is comfortable with the treatment before proceeding.
- Indications: Use with any patient able to dialogue.
- Contraindications: None.

Voice control

- Description: Voice control is a deliberate alteration of voice volume, tone, or pace to influence and direct the patient's behavior. While a change in cadence may be readily accepted, use of an assertive voice may be considered aversive to some parents unfamiliar with this technique. An explanation before its use may prevent misunderstanding.[20,29,34,35]
- Objectives: The objectives of voice control are to:
  - — gain the patient's attention and compliance;
  - — avert negative or avoidance behavior; and
  - — establish appropriate adult-child roles.
- Indications: Use with any patient.
- Contraindications: Patients who are hearing impaired.

Nonverbal communication

- Description: Nonverbal communication is the reinforcement and guidance of behavior through appropriate contact, posture, facial expression, and body language.[29,34,35,51,81]
- Objectives: The objectives of nonverbal communication are to:
  - — enhance the effectiveness of other communicative guidance technique; and
  - — gain or maintain the patient's attention and compliance.
- Indications: Use with any patient.
- Contraindications: None.

Positive reinforcement and descriptive praise

- Description: In the process of establishing desirable patient behavior, it is essential to give appropriate feedback. Positive reinforcement rewards desired behaviors thereby strengthening the likelihood of recurrence of those behaviors. Social reinforcers include positive voice modulation, facial expression, verbal praise, and appropriate physical demonstrations of affection by all members of the dental team. Descriptive praise emphasizes specific cooperative behaviors (e.g., "Thank you for sitting still", "You are doing a great job keeping your hands in your lap") rather than a generalized praise (e.g., "Good job").[82] Nonsocial reinforcers include tokens and toys.
- Objective: The objective of positive reinforcement and descriptive praise is to reinforce desired behavior.[20,34,45,81,87]
- Indications: Use with any patient.
- Contraindications: None.

Distraction

- Description: Distraction is the technique of diverting the patient's attention from what may be perceived as an unpleasant procedure. Distraction may be achieved by imagination (e.g., stories), clinic design, and audio (e.g., music) and/or visual (e.g., television, virtual reality eyeglasses) effects.[81,88] Giving the patient a short break during a stressful procedure can be an effective use of distraction before considering more advanced behavior guidance techniques.[20,45,87]
- Objectives: The objectives of distraction are to:
  - — decrease the perception of unpleasantness; and
  - — avert negative or avoidance behavior.
- Indications: Use with any patient.
- Contraindications: None.

Memory restructuring

- Description: Memory restructuring is a behavioral approach in which memories associated with a negative or difficult event (e.g., first dental visit, local anesthesia, restorative procedure, extraction) are restructured into positive memories using information suggested after the event has taken place.[89] This approach was utilized with children who received local anesthesia at an initial restorative dental visit and showed a change in local anesthesia-related fears and behaviors at subsequent treatment visits.[89,90] Restructuring involves four components: (1) visual reminders; (2) positive reinforcement through verbalization; (3) concrete examples to encode sensory details; and (4) sense of accomplishment. A visual reminder could be a photograph of the child smiling at the initial visit (i.e., prior to the difficult experience). Positive reinforcement through verbalization could be asking if the child had told her parent what a good job she had done at the last appointment. The child is asked to role-play and to tell the dentist what she had told the parent. Concrete examples to encoding sensory details include praising the child for specific positive behavior such as keeping her hands on her lap or opening her mouth wide when asked. The child then is asked to demonstrate these behaviors, which leads to a sense of accomplishment.
- Objectives: The objectives of memory restructuring are to:
  - — restructure difficult or negative past dental experiences; and
  - — improve patient behaviors at subsequent dental visits.
- Indications: Use with patients who had a negative or difficult dental visits.
- Contraindications: None.

Desensitization to dental setting and procedures

- Description: Systematic desensitization is a psychological technique that can be applied to modify behaviors of anxious patients in the dental setting.[91] It is a process that diminishes emotional responsiveness to a negative, aversive, or positive stimulus after progressive exposure to it. Patients are exposed gradually through a series of sessions to components of the dental appointment that cause them anxiety. Patients may review information regarding the dental office and environment at home with a preparation book or video or by viewing the practice website. Parents may model actions (e.g., opening mouth and touching cheek) and practice with the child at home using a dental mirror. Successful approximations would continue with an office tour during non-clinical hours and another visit in the dental operatory to explore the environment. After successful completion of each step, an appointment with the dentist and staff may be attempted.[91]
- Objectives: The objective of systematic desensitization is for the patient to:
  - — proceed with dental care after habituation and successful progression of exposure to the environment;
  - — identify his fears;
  - — develop relaxation techniques for those fears; and
  - — be gradually exposed, with developed techniques, to situations that evoke his fears and diminish the emotional responses.[34]
- Indications: Use with patients who have experienced fear-invoking stimuli, anxiety, and/or neurodevelopmental disorders (e.g., autism spectrum disorder).
- Contraindications: None.

Enhancing control

- Description: Enhancing control is a technique used to allow the patient, especially an anxious/fearful one, to assume an active role in the dental experience. The dentist provides the patient a signal (e.g., raising a hand) to use if he becomes uncomfortable or needs to briefly interrupt care. The patient should practice this gesture before treatment is initiated to emphasize it is a limited movement away from the operatory field. When the patient employs the signal during dental procedures, the dentist should quickly respond with a pause in treatment and acknowledge the patient's concern. Enhancing control has been shown to be effective in reducing intraoperative pain.[92]
- Objectives: The objective is to allow a patient to have some measure of control during treatment in order to contain emotions and deter disruptive behaviors.[92,93]
- Indications: Use with patients who can communicate.
- Contraindications: None, but if used prematurely, fear may increase due to an implied concern about the impending procedure.

Communication techniques for parents (and age-appropriate patients)

Because parents are the legal guardians of minors, successful bi-directional communication between the dentist/staff and the parent is essential to assure effective guidance of the child's behavior.[52] Socioeconomic status, stress level, marital discord, dental attitudes aligned with a different cultural heritage, and linguistic skills may present challenges to open and clear communication.[23,26,94] Communication techniques such as ask-tell-ask, teach back, and motivational interviewing can reflect the dentist/staff's caring for and engaging in a patient/parent centered-approach.[26] These techniques are presented in Appendix 3.

Parental presence/absence

- Description: The presence or absence of the parent sometimes can be used to gain cooperation for treatment. A wide diversity exists in practitioner philosophy and parents' attitude regarding parental presence/absence during pediatric dental treatment. As establishment of a dental home by 12 months of age continues to grow in acceptance, parents will expect to be with their infants and young children during examinations as well as during treatment. Parental involvement, especially in their children's health care, has changed dramatically in recent years.[29,95] Parents' desire to be present

during their child's treatment does not mean they intellectually distrust the dentist; it might mean they are uncomfortable if they visually cannot verify their child's safety. It is important to understand the changing emotional needs of parents because of the growth of a latent but natural sense to be protective of their children.[96] Practitioners should become accustomed to this added involvement of parents and welcome the questions and concerns for their children. Practitioners must consider parents' desires and wishes and be open to a paradigm shift in their own thinking.[9,19,29,81,96,97]

- Objectives: The objectives of parental presence/absence for parents are to:
  - — participate in examinations and treatment;
  - — offer physical and psychological support; and
  - — observe the reality of their child's treatment.

  The objectives of parental presence/absence for practitioners to:
  - — gain the patient's attention and improve compliance;
  - — avert negative or avoidance behaviors;
  - — establish appropriate dentist-child roles;
  - — enhance effective communication among the dentist, child, and parent;
  - — minimize anxiety and achieve a positive dental experience; and
  - — facilitate rapid informed consent for changes in treatment or behavior guidance.
- Indications: Use with any patient.
- Contraindications: Parents who are unwilling or unable to extend effective support.

Additional considerations for dental patients with anxiety or special health care needs

*Sensory-adapted dental environments (**SADE**)*

- Description: The SADE intervention includes adaptions of the clinical setting (e.g., dimmed lighting, moving projections such as fish or bubbles on the ceiling, soothing background music, application of wrap/blanket around the child to provide deep pressure input) to produce a calming effect.[91,98]
- Objectives: The objective of SADE is to enhance relaxation and avert negative or avoidance behaviors.[99]
- Indications: Use with patients having autism spectrum disorder, sensory processing difficulties, other disabilities, or dental anxiety.[100]
- Contraindications: None.

*Animal-assisted therapy (**AAT**)*

- Description: AAT has been beneficial in a variety of settings including the dental environment.[101] It is a goal-oriented intervention which utilizes a trained animal in a healthcare setting to improve interactions or decrease a patient's anxiety, pain, or distress. Unlike animal-assisted activities (e.g., a pet entertains patients in the waiting area), AAT appointments are scheduled for specific time and duration to include an animal that has undergone temperament testing, rigorous training, and certification. The animal, which is available for companionship during the dental visit, can help break communication barriers and enable the patient to establish a safe and comforting relationship, thereby reducing treatment-related stress. For each visit, the goals and results of the intervention should be documented.
- Objectives: The objectives of AAT include to:
  - — enhance interactions between the patient and dental team;
  - — calm or comfort an anxious or fearful patient;
  - — provide a distraction from a potentially stressful situation; and
  - — decrease perceived pain.[102]

  The health and safety of the animal and its handler need to be maintained.[102]
- Indications: Use AAT as an adjunctive technique to decrease a patient's anxiety, pain, or emotional distress.
- Contraindications: The contraindications for the parent:
  - — allergy or other medical condition (e.g., asthma, compromised immune system) aggravated by exposure to the animal; and
  - — lack of interest in or fear of the therapy animal.

  The contraindications for the parent:
  - — a situation that presents a significant risk to one's health or safety.[103]

*Picture exchange communication system (**PECS**)*

- Description: PECS is a communication technique developed for individuals with limited to no verbal communication abilities, specifically those with autism). The individual shares a picture card with a recognizable symbol to express a request or thought. PECS has a one-to-one correspondence with objects, people, and concepts, thereby reducing the degree of ambiguity in communication.[104] The patient is able to initiate communication, and no special training is required by the recipient.
- Objectives: The objective is to allow individuals with limited to no verbal communication abilities to express requests or thoughts using symbolic imagery. A prepared picture board may be present for the dental appointment so the dentist can communicate the steps required for completion (e.g., pictures of a dental mirror, handpiece). The patient may have symbols (e.g., a stop sign) to show they need a brief interruption in the procedure.[105]
- Indications: Use as an adjunctive approach to assist individuals with limited to no verbal communication abilities improve exchange of ideas.[91,106]
- Contraindications: None.[107]

Nitrous oxide/oxygen inhalation

- Description: Nitrous oxide/oxygen inhalation is a safe and effective technique to reduce anxiety and enhance effective communication. Its onset of action is rapid, the effects easily are titrated and reversible, and recovery is rapid and complete. Additionally, nitrous oxide/oxygen inhalation mediates a variable degree of analgesia, amnesia, and gag reflex reduction. The need to diagnose and treat, as well

as the safety of the patient and practitioner, should be considered before the use of nitrous oxide/oxygen analgesia/anxiolysis. If nitrous oxide/oxygen inhalation is used in concentrations greater than 50 percent or in combination with other sedating medications (e.g., benzodiazepines, opioids), the likelihood for moderate or deep sedation increases.[108] In these situations, the clinician must be prepared to institute the guidelines for moderate or deep sedation.[5] Detailed information concerning the indications, contraindications, and additional clinical considerations appear in the AAPD's *Use of Nitrous Oxide for Pediatric Dental Patients*[4] and *Guidelines for Monitoring and Management of Pediatric Patients Before, During and After Sedation for Diagnostic and Therapeutic Procedures*[5] by the AAPD and the American Academy of Pediatrics.

- Objectives: The objectives of nitrous oxide/oxygen inhalation include to:
  - — reduce or eliminate anxiety;
  - — reduce untoward movement and reaction to dental treatment;
  - — enhance communication and patient cooperation;
  - — raise the pain reaction threshold;
  - — increase tolerance for longer appointments;
  - — aid in treatment of the mentally/physically disabled or medically compromised patients;
  - — reduce gagging; and
  - — potentiate the effect of sedatives.
- Indications: Indications for use of nitrous oxide/oxygen inhalation analgesia/anxiolysis include:
  - — a fearful, anxious, or obstreperous patient;
  - — certain patients with SHCN;
  - — a patient whose gag reflex interferes with dental care;
  - — a patient for whom profound local anesthesia cannot be obtained; and
  - — a cooperative child undergoing a lengthy dental procedure.
- Contraindications: Contraindications for use of nitrous oxide/oxygen inhalation may include:
  - — some chronic obstructive pulmonary diseases;[108,109]
  - — current upper respiratory tract infections;[109]
  - — recent middle ear disturbance/surgery;[109]
  - — severe emotional disturbances or drug-related dependencies;[108,109]
  - — first trimester of pregnancy;[108,110]
  - — treatment with bleomycin sulfate; [111]
  - — methylenetetrahydrofolate reductase deficiency;[112] and
  - — cobalamin (vitamin B-12) deficiency[113].

Advanced behavior guidance

Most children can be managed effectively using the techniques outlined in basic behavior guidance. Such techniques should form the foundation for all behavior guidance provided by the dentist. Children, however, occasionally present with behavioral considerations that require more advanced techniques. These children often cannot cooperate due to lack of psychological or emotional maturity and/or mental, physical, or medical disability. The advanced behavior guidance techniques commonly used and taught in advanced pediatric dental training programs include protective stabilization, sedation, and general anesthesia.[49] The use of general anesthesia or sedation for dental rehabilitation may improve quality of life in children. It is unclear if these behavior guidance techniques address factors that contribute to the initial dental fear and anxiety.[114,115] Protective stabilization, active or passive, may not always be accepted by parents who may be more accepting of pharmacologic behavior guidance.[116]

Consideration of advanced behavior guidance techniques requires the practitioner to thoroughly assess the patient's medical, dental, and social histories and temperament. Risks, benefits, and alternatives should be discussed prior to obtaining an informed consent for the recommended technique.[117] Skillful diagnosis of behavior and safe and effective implementation of these techniques necessitate knowledge and experience that are generally beyond the core knowledge students receive during predoctoral dental education. While most predoctoral programs provide didactic exposure to treatment of very young children (i.e., aged birth through two years), patients with special health care needs, and patients requiring advanced behavior guidance techniques, hands-on experience is lacking.[49] Dentists considering the use of advanced behavior guidance techniques should seek additional training through a residency program, a graduate program, and/or an extensive continuing education course that involves both didactic and experiential mentored training.

Protective stabilization

- Description: The use of any type of protective stabilization in the treatment of infants, children, adolescents, or patients with special health care needs is a topic that concerns health care providers and care givers.[56,118-127] Protective stabilization is the restriction of a patient's freedom of movement, with or without the patient's permission, to decrease risk of injury while allowing safe completion of treatment. "A restraint is any manual method, physical or mechanical device, material, or equipment that immobilizes or reduces the ability of a patient to move his or her arms, legs, body, or head freely; or a drug or medication when it is used as a restriction to manage the patient's behavior or restrict the patient's freedom of movement and is not a standard treatment or dosage for the patient's condition".[128] Protective stabilization can be performed by the dentist, staff, or parent with or without the aid of a stabilization device.[56] If the restriction involves another person(s), it is considered active restraint. If a patient stabilization device is utilized, it is considered passive restraint. Active and passive restraint can be used in combination.

Stabilization devices such as a papoose board (passive restraint) placed around the chest may restrict respirations. They must be used with caution, especially for patients with respiratory compromise (e.g., asthma) and/or for patients

who will receive medications (e.g., local anesthetics, sedatives) that can depress respirations. Because of the associated risks and possible consequences of use, the dentist is encouraged to evaluate thoroughly their use on each patient and possible alternatives.[56,128] Careful, continuous monitoring of the patient is mandatory during protective stabilization.[56,128]

Partial or complete stabilization of the patient sometimes is necessary to protect the patient, practitioner, staff, or the parent from injury while providing dental care. The dentist always should use the least restrictive, but safe and effective, protective stabilization.[56,128] The use of a mouth prop in a compliant child is not considered protective stabilization.

The need to diagnose, treat, and protect the safety of the patient, practitioner, staff, and parent should be considered prior to the use of protective stabilization. The decision to use protective stabilization must take into consideration:

— alternative behavior guidance modalities;
— dental needs of the patient;
— the effect on the quality of dental care;
— the patient's emotional development; and
— the patient's medical and physical considerations.

Protective stabilization, with or without a restrictive device, led by the dentist and performed by the dental team requires informed consent from a parent. Informed consent must be obtained and documented in the patient's record prior to use of protective stabilization. Furthermore, when appropriate, an explanation to the patient regarding the need for restraint, with an opportunity for the patient to respond, should occur.[52,56,129]

- Objectives: The objectives of patient stabilization are to:
  — reduce or eliminate untoward movement;
  — protect patient, staff, dentist, or parent from injury; and
  — facilitate delivery of quality dental treatment.
- Indications: Patient stabilization is indicated for:
  — a patient who requires immediate diagnosis and/or urgent limited treatment and cannot cooperate due to developmental levels (emotional or cognitive), lack of maturity, or mental or physical conditions;
  — a patient who requires urgent care and uncontrolled movements risk the safety of the patient, staff, dentist, or parent without the use of protective stabilization;
  — a previously cooperative patient who quickly becomes uncooperative and cooperation cannot be regained by basic behavior guidance techniques in order to protect the patient's safety and help complete a procedure and/or stabilize the patient;
  — an uncooperative patient who requires limited (e.g., quadrant) treatment and sedation or general anesthesia may not be an option because the patient does not meet sedation criteria or because of a long operating room wait time, financial considerations, and/or parental preferences after other options have been discussed;
  — a sedated patient requires limited stabilization to help reduce untoward movement during treatment; and
  — a patient with SHCN exhibits uncontrolled movements that would be harmful or significantly interfere with the quality of care.[3]
- Contraindications: Patient stabilization is contraindicated for:
  — a cooperative non-sedated patient;
  — an uncooperative patient when there is not a clear need to provide treatment at that particular visit;
  — a patient who cannot be immobilized safely due to associated medical, psychological, or physical conditions;
  — a patient with a history of physical or psychological trauma, including physical or sexual abuse or other trauma that would place the individual at greater psychological risk during restraint;
  — a patient with non-emergent treatment needs in order to accomplish full mouth or multiple quadrant dental rehabilitation;
  — a practitioner's convenience; and
  — a dental team without the requisite knowledge and skills in patient selection and restraining techniques to prevent or minimize psychological stress and/or decrease risk of physical injury to the patient, the parent, and the staff.
- Precautions: The following precautions are recommended:
  — the patient's medical history must be reviewed carefully to ascertain if there are any medical conditions (e.g., asthma) which may compromise respiratory function;
  — tightness and duration of the stabilization must be monitored and reassessed at regular intervals;
  — stabilization around extremities or the chest must not actively restrict circulation or respiration;
  — observation of body language and pain assessment must be continuous to allow for procedural modifications at the first sign of distress; and
  — stabilization should be terminated as soon as possible in a patient who is experiencing severe stress or hysterics to prevent possible physical or psychological trauma.
- Documentation: The patient's record must include:
  — indication for stabilization;
  — type of stabilization;
  — informed consent for protective stabilization;
  — reason for parental exclusion during protective stabilization (when applicable);
  — the duration of application of stabilization;
  — behavior evaluation/rating during stabilization;
  — any untoward outcomes, such as skin markings; and
  — management implication for future appointments.

Sedation

- Description: Sedation can be used safely and effectively with patients who are unable to cooperate due to lack of psychological or emotional maturity and/or mental, physical, or medical conditions. Background information and documentation for the use of sedation is detailed in the *Guideline for Monitoring and Management of Pediatric Patients During and After Sedation for Diagnostic and Therapeutic Procedures* by the AAPD and the American Academy of Pediatrics.[5]

The need to diagnose and treat, as well as the safety of the patient, practitioner, and staff, should be considered for the use of sedation. The decision to use sedation must take into consideration:
- — alternative behavioral guidance modalities;
- — dental needs of the patient;
- — the effect on the quality of dental care;
- — the patient's emotional development; and
- — the patient's medical and physical considerations.

- Objectives: The goals of sedation are to:
  - — guard the patient's safety and welfare;
  - — minimize physical discomfort and pain;
  - — manage anxiety, minimize psychological trauma, and maximize the potential for amnesia;
  - — manage behavior and/or movement so as to allow the safe completion of the procedure; and
  - — return the patient to a state in which safe discharge from medical supervision, as determined by recognized criteria, is possible.
- Indications: Sedation is indicated for:
  - — fearful/anxious patients for whom basic behavior guidance techniques have not been successful;
  - — patients who cannot cooperate due to a lack of psychological or emotional maturity and/or mental, physical, or medical conditions; and
  - — patients for whom the use of sedation may protect the developing psyche and/or reduce medical risk.
- Contraindications: The use of sedation is contraindicated for:
  - — the cooperative patient with minimal dental needs; and
  - — predisposing medical and/or physical conditions which would make sedation inadvisable.
- Documentation: The patient's record shall include:[5]
  - — informed consent that is obtained from the parent and documented prior to the use of sedation;
  - — pre- and post-operative instructions and information provided to the parent;
  - — health evaluation;
  - — a time-based record that includes the name, route, site, time, dosage, and effect on patient of administered drugs;
  - — the patient's level of consciousness, responsiveness, heart rate, blood pressure, respiratory rate, and oxygen saturation prior to treatment, at the time of treatment, and post-operatively until predetermined discharge criteria have been attained;
  - — adverse events (if any) and their treatment; and
  - — time and condition of the patient at discharge.

General anesthesia

- Description: General anesthesia is a controlled state of unconsciousness accompanied by a loss of protective reflexes, including the ability to maintain an airway independently and respond purposefully to physical stimulation or verbal command. Depending on the patient, general anesthesia can be administered in a hospital or an ambulatory setting, including the dental office. Practitioners who provide in-office general anesthesia (dentist and the anesthesia provider) should be familiar with and follow the recommendations found in the AAPD's *Use of anesthesia providers in the administration of office-based deep sedation/general anesthesia to the pediatric dental patient*.[6]

Because laws and codes vary from state to state, each practitioner must be familiar with his state guidelines regarding office-based general anesthesia. The need to diagnose and treat, as well as the safety of the patient, practitioner, and staff should be considered for the use of general anesthesia. Anesthetic and sedative drugs are used to help ensure the safety, health, and comfort of children undergoing procedures. Increasing evidence from research studies suggests the benefits of these agents should be considered in the context of their potential to cause harmful effects.[130] Additional research is needed to identify any possible risks to young children. "In the absence of conclusive evidence, it would be unethical to withhold sedation and anesthesia when necessary".[131]

The decision to use general anesthesia must take into consideration:
- — alternative modalities;
- — the age of the patient;
- — risk benefit analysis;
- — treatment deferral;
- — dental needs of the patient;
- — the effect on the quality of dental care;
- — the patient's emotional development;
- — the patient's medical status; and
- — barriers to care (e.g., finances).

- Objectives: The goals of general anesthesia are to:
  - — provide safe, efficient, and effective dental care;
  - — eliminate anxiety;
  - — eliminate untoward movement and reaction to dental treatment;
  - — aid in treatment of the mentally- physically-, or medically-compromised patient; and
  - — minimize the patient's pain response.
- Indications: General anesthesia is indicated for patients:
  - — who cannot cooperate due to a lack of psychological or emotional maturity and/or mental, physical, or medical disability;
  - — for whom local anesthesia is ineffective because of acute infection, anatomic variations, or allergy;
  - — who are extremely uncooperative, fearful, or anxious;
  - — who are precommunicative or non-communicative child or adolescent;
  - — requiring significant surgical procedures that can be combined with dental procedures to reduce the number of anesthetic exposures;
  - — for whom the use of general anesthesia may protect the developing psyche and/or reduce medical risk; and
  - — requiring immediate, comprehensive oral/dental care (e.g., due to dental trauma, severe infection/cellulitis, acute pain).

- Contraindications: The use of general anesthesia is contraindicated for:
  - — a healthy, cooperative patient with minimal dental needs;
  - — a very young patient with minimal dental needs that can be addressed with therapeutic interventions (e.g., ITR, fluoride varnish, SDF) and/or treatment deferral;
  - — patient/practitioner convenience; and
  - — predisposing medical conditions which would make general anesthesia inadvisable.
- Documentation: Prior to the delivery of general anesthesia, appropriate documentation shall address the rationale for use of general anesthesia, informed consent, instructions provided to the parent, dietary precautions, and preoperative health evaluation. Because laws and codes vary from state to state, each practitioner must be familiar with her state guidelines. For information regarding requirements for a time-based anesthesia record, refer to the AAPD's *Use of Anesthesia Providers in the Administration of Office-based Deep Sedation/General Anesthesia to the Pediatric Dental Patient*.[6]

References appear after Appendices.

Appendices

Appendix 1. SEARCH STRATEGIES PubMed®/MEDLINE—date limit August 2019

Search #1. (ped & dental) 2557 results

((((((“behavior management”[tiab] OR “behavior guidance”[tiab] OR “child behavior”[tiab] OR “dental anxiety”[tiab] OR “personality test”[tiab] OR “patient cooperation”[tiab] OR “dentist-patient relations”[tiab] OR “behavior assessment”[tiab] OR “temperament assessment”[tiab] OR “personality assessment”[tiab] OR “treatment deferral”[tiab] OR “treatment delay”[tiab] OR compliance[tiab] OR adherence[tiab] OR “protective stabilization”[tiab] OR immobilization[tiab] OR restraints [tiab] OR Sedation [tiab] OR general anesthesia[tiab] OR “Restraint, Physical”[mesh] OR “Protective Devices”[mesh] OR “Immobilization”[mesh] OR “Behavior Control”[mesh] OR “child behavior”[mesh] OR “dental anxiety”[mesh] OR “personality tests”[mesh] OR “patient compliance”[mesh] OR “dentist-patient relations”[mesh] OR “personality assessment”[mesh] OR “patient compliance”[mesh] OR “anesthesia, general”[mesh] OR “Conscious Sedation”[Mesh])))) AND (((dental[tiab] OR “dental health services”[MeSH Terms] OR dentistry [TIAB] OR “dentistry”[MeSH Terms] OR “dental care”[tiab] OR “dental care”[MeSH Terms] OR dentist[tiab] OR “dentists”[MeSH Terms] OR “Dental Care for Children”[mesh] OR “Pediatric Dentistry”[mesh])))) AND ((((“infant”[MeSH Terms] OR “infant”[tiab]) OR (“child”[MeSH Terms] OR “child”[tiab]) OR (“adolescent”[MeSH Terms] OR “adolescent”[tiab]) OR “pediatrics”[MeSH Terms] OR “pediatrics”[tiab] OR “pediatric”[tiab])))) AND ((“2009/01/01”[PDAT]: “3000/12/31”[PDAT]) AND english [filter] NOT (“animals”[MeSH Terms] NOT “humans”[MeSH Terms]))

Search #2. (ped & medical) 1081 results

((“behavior management”[tiab] OR “behavior guidance”[tiab] OR “toxic stress”[tiab] OR “protective stabilization”[tiab] OR restraints[tiab] OR “Restraint, Physical”[majr] OR “Behavior Control”[majr])) AND ((((“infant”[MeSH Terms] OR “infant”[tiab]) OR (“child”[MeSH Terms] OR “child”[tiab]) OR (“adolescent”[MeSH Terms] OR “adolescent”[tiab]) OR “pediatrics”[MeSH Terms] OR “pediatrics”[tiab]OR “pediatric”[tiab])) AND (((“2009/01/01”[PDAT]: “3000/12/31”[PDAT]) AND english[filter] NOT (“animals”[MeSH Terms] NOT “humans”[MeSH Terms]))))

Search #3. (adults & dentists) 62 results

(((“personality test” OR “personality tests”[MeSH Terms] OR “personality assessment”[MeSH Terms] OR personality[tiab] OR “gender shifts”[tiab] OR “gender equality” OR ((“Women, Working”[mesh] OR “Dentists, Women”[mesh]) AND “Practice Patterns, Dentists’”[MeSH Terms]))) AND (dentist[TIAB] OR dentist[TIAB] OR “Dentists”[Mesh])) AND ((“2009/01/01”[PDAT]: “3000/12/31”[PDAT]) AND english[filter] NOT (“animals”[MeSH Terms] NOT “humans”[MeSH Terms]))

Search #4. (adults & parents) 226 results

(((((dental[tiab] OR “dental health services”[MeSH Terms] OR dentistry[TIAB] OR “dentistry”[MeSH Terms] OR “dental care”[tiab] OR “dental care”[MeSH Terms] OR dentist[tiab] OR “dentists”[MeSH Terms] OR “Dental Care for Children”[mesh] OR “Pediatric Dentistry”[mesh])))) AND ((Parents[tiab] OR Fathers[tiab] OR mothers[tiab] OR parental[tiab] OR Parent[tiab] OR Father[tiab] OR mother[tiab] or “mothers”[MeSH Terms] OR “fathers”[MeSH Terms] OR “parents”[MeSH Terms]))) AND (“behavior management”[tiab] OR “behavior guidance”[tiab] OR “dentist parent relations”[tiab] OR “Informed consent”[tiab] OR “family compliance”[tiab] OR “parent compliance”[tiab] OR “family adherence”[tiab] OR “parent adherence”[tiab] OR “parenting style”[tiab] OR “dentist-patient relations”[tiab] OR “dentist-patient relations”[MeSH Terms] OR “Behavior Control”[mesh] OR “patient compliance”[MeSH Terms] OR “Informed Consent”[Mesh])) AND ((((“2009/01/01”[PDAT]: “3000/12/31”[PDAT]) AND english[filter] NOT (“animals”[MeSH Terms] NOT “humans”[MeSH Terms])))

Appendix 2. FRANKL BEHAVIORAL RATING SCALE

1	_ _	Definitely negative. Refusal of treatment, forceful crying, fearfulness, or any other overt evidence of extreme negativism.
2	_	Negative. Reluctance to accept treatment, uncooperative, some evidence of negative attitude but not pronounced (sullen, withdrawn).
3	+	Positive. Acceptance of treatmen, cautious behavior at times, willingness to comply with the dentist, at times with reservation, but patient follows the dentist's directions cooperatively.
4	++	Definitely positive. Good rapport with the dentist, interest in the dental procedures, laughter and enjoyment.

Appendix 3. SAMPLE COMMUNICATION TECHNIQUES FOR PATIENTS & PARENTS[1]

When clinicians share information, they predominantly TELL information, often in too much detail, and in terms that sometimes alarm patients. Information sharing is most effective when it is sensitive to the emotional impact of the words used. By using a technique of ask-tell-ask, it is possible to improve the patients' understanding and promote adherence. According to the adult learning theory, it is important to stay in dialogue (not monologue), begin with an assessment of the patient's or parents' needs, tell small chunks of information tailored to those needs, and check on the patient's understanding, emotional reactions, and concerns. This is summarized by the three step format **Ask-Tell-Ask**.

ASK to assess patient's emotional state and their desire for information. TELL small amounts of information in simple language, and ASK about the patient's understanding, emotional reactions, and concerns. Many conversations between clinicians and parents sound like **Tell-Tell-Tell**, a process known as doctor babble, because clinicians seem to talk to themselves, rather than have a conversation with parents or patients.

The Ask-Tell-Ask format maintains dialogue with patients and their parents. The important areas for sharing include:

ASK to assess patient needs:

1. **Make sure the setting is conducive**.
2. **Assess the patient's physical and emotional state**. If patients are upset or anxious, address their emotions and concerns before trying to share information. Sharing information when the patient is sleepy, sedated, in pain, or emotionally distraught is not respectful and the information won't be remembered.
3. **Assess the patient's informational needs**. Find out what information the patient wants, and in what format. Some patients want detailed information about their conditions, tests, and proposed treatments; recommendations for reading; websites; self-help groups; and/or referrals to other consultants. Others want an overview and general understanding. Patients may want other family members to be present for support or to help them remember key points. Reaching agreement with the patient about what information to review may require negotiation if the clinician understands the issues, priorities, or goals differently than the patient. Also, some patients may need more time, and so it might be wise to discuss the key points and plan to address others later or refer them to other staff or health educators. Instead of asking, *"Do you have any questions?"* to which patients often reply, "*No*," instead ask, "*What questions or concerns do you have?*" Be sure to ask, "*Anything else?*"
4. **Assess the patient's knowledge and understanding.** Find out what previous knowledge or relevant experience patients have about a symptom or about a test or treatment.
5. **Assess the patient's attitudes and motivation.** Patients will not be interested in hearing your health information if they are not motivated or if they have negative attitudes about the outcomes of their efforts, so ask about this directly. Start by asking general questions about attitudes and motivation: "*So – tell me how you feel about all of this?*" "*This is a complicated regimen. How do you think you will manage?*" If patients are not motivated, ask why and help the patient work through the issues.

TELL information:

1. **Keep each bit of information brief.** It is difficult to understand and retain large amounts of information, especially when one is physically ill, upset, or fearful.
2. **Use a systematic approach.** For example, name the problem, the next step, what to expect, and what the patient can do.
3. **Support the patient's prior successes.** Explicitly mention and appreciate patients' previous efforts and accomplishments in coping with previous problems or illness.
4. **Personalize the information.** Personalize your information by referring to the patient's personal and family history.
5. **Use simple language; avoid jargon.** Be mindful of how key points are framed.
6. **Choose words that do not unnecessarily alarm.** Words and phrases a practitioner takes for granted may be misinterpreted or alarm patients and families.
7. **Use visual aids, and share supplemental resources.** Find reliable resources and educational aids to meet the needs of your patients.

ASK: Continue to assess needs, comprehension, and concerns.

After each bit of telling, stop and check in with patients. When finished with information sharing, make a final check. This step closes the feedback loop with patients and helps the practitioner understand what patients hear, whether they are taking home the intended messages, and how they feel about the situation. The second ASK section consists of the following items:

1. **Check for patients' comprehension.** ASK about the patients' understanding. This ASK improves patient recall, satisfaction, and adherence.
2. **Check for emotional responses and respond appropriately.** Letting patients know their concerns and worries have been heard is compassionate, improves outcomes, and takes little time.
3. **Check about barriers.** Patients may face external obstacles as well as internal emotional responses that inhibit them from overcoming obstacles.

Teach Back

A strategy called teach back is similar. The dentist or dental staff asks the patient to **teach back** what he has learned. This may be especially effective for patients with low literacy who cannot rely on written reminders. It is important to present the process as part of the normal routine. This pertains to explanations or demonstrations: "*I always check in with my patients to make sure that I've demonstrated things clearly. Can you show me how you're going to floss your teeth*?" If the patient's demonstration is incorrect, the dentist may say, "*I'm sorry, I guess I didn't explain things all that well: let me try again*." Then go over the information again and ask the patient to teach it back to you again.

Motivational Interviewing

Motivational interviewing facilitates behavior change by helping patients or parents explore and resolve their ambivalence about change. It is done in a collaborative style which supports the autonomy and self-efficacy of the patient and uses the patient's own reasons for change. It increases the patient's confidence and reduces defensiveness. Motivational interviewing keeps the responsibility to change with the patient and/or parent, which helps to decrease staff burnout. In dentistry, it is useful in counseling about brushing, flossing, fluoride varnish, reducing sugar sweetened beverages, and smoking cessation. Open-ended questions, affirmations, reflective listening, and summarizing (OARS) characterize the patient-centered approach. It is especially helpful in higher levels of resistance, anger, or entrenched patterns. Motivational interviewing is empowering to both staff and patients and, by design, is not adversarial or shaming.

[1] Adapted from Goleman J. Cultural factors affecting behavior guidance and family compliance. Pediatr Dent 2014;36(2):121-7.

References

1. American Academy of Pediatric Dentistry. Policy on medically necessary care. Pediatr Dent 2015;37(special issue):18-22.
2. American Academy of Pediatric Dentistry. Guideline on use of nitrous oxide for pediatric dental patients. Pediatr Dent 2018;40(special issue):321-9.
3. American Academy of Pediatric Dentistry. Use of protective stabilization for pediatric dental patients. The Reference Manual of Pediatric Dentistry. Chicago, Ill.: American Academy of Pediatric Dentistry; 2020:311-7.
4. American Academy of Pediatric Dentistry. Best practices on use of nitrous oxide for pediatric dental patients. Pediatr Dent 2018;40(6):281-6.
5. Coté CJ, Wilson S, American Academy of Pediatric Dentistry, American Academy of Pediatrics. Guidelines for monitoring and management of pediatric patients before, during and after sedation for diagnostic and therapeutic procedures. Pediatr Dent 2019;41(4):E26-E52.
6. American Academy of Pediatric Dentistry. Use of anesthesia providers in the administration of office-based deep sedation/general anesthesia to the pediatric dental patient. The Reference Manual of Pediatric Dentistry. Chicago, Ill.: American Academy of Pediatric Dentistry; 2019:327-30.
7. American Academy of Pediatric Dentistry Clinical Affairs Committee Behavior Management Subcommittee. Guidelines for behavior management. Boston, Mass.: American Academy of Pediatric Dentistry; May 1990.
8. American Academy of Pediatric Dentistry. Guideline on behavior guidance for the pediatric dental patient. Pediatr Dent 2015;37(special issue):180-93.
9. American Academy of Pediatric Dentistry. Behavior Management for the Pediatric Dental Patient. Conference/ Workshop. Iowa City, Iowa. September 30-October 2, 1988. Final Proceedings. Chicago, Ill.: American Academy of Pediatric Dentistry; 1989.
10. American Academy of Pediatric Dentistry. Proceedings of the conference on behavior management for the pediatric dental patient. Pediatr Dent 2004;26(2): 110-83.
11. American Academy of Pediatric Dentistry. Behavior Symposium III: Conference Papers. Pediatr Dent 2014; 36(2):102-60.
12. American Dental Association Commission on Dental Accreditation. Accreditation Standards for Advanced Specialty Education Programs in Pediatric Dentistry. Chicago, Ill.: American Dental Association; 2013:1-38. Available at: "https://www.ada.org/~/media/CODA/Files/ped.pdf?la=en". Accessed September 24, 2020.
13. National Maternal and Child Oral Health Resource Center. 2018. Special Care: An Oral Health Professional's Guide to Serving Young Children with Special Health Care Needs, 2nd ed. Washington, D.C.: National Maternal and Child Oral Health Resource Center. Available at: "https://www.mchoralhealth.org/SpecialCare/5-behavior/". Accessed November 5, 2020.
14. Baier K, Milgrom P, Russell S, Mancl L, Yoshida T. Children's fear and behavior in private pediatric dentistry practices. Pediatr Dent 2004;26(4):316-21.
15. Rud B, Kisling E. The influnce of mental development on children's acceptance of dental treatment. Scand J Dent Res 1973;81(5):343-52.
16. Brill WA. The effect of restorative treatment on children's behavior at the first recall visit in a private pediatric dental practice. J Clin Pediatr Dent 2002;26(4):389-94.
17. Long N. Th changing nature of parenting in America. Pediatr Dent 2004;26(2):121-4.
18. Howenstein J, Kumar A, Casamassimo PS, McTigue D, Coury D, Yin H. Correlating parenting styles with child behavior and caries. Pediatr Dent 2015;37(1):59-64.
19. Sheller B. Challenges of managing child behavior in the 21st century dental setting. Pediatr Dent 2004;26(2): 111-3.
20. Stigers JI. Nonpharmacologic management of children's behaviors. In: Dean JA, ed. McDonald and Avery's Dentistry for the Child and Adolescent. 10th ed. St. Louis, Mo.: Elsevier; 2016:286-302.
21. Klingberg G, Broberg AG. Temperament and child dental fear. Pediatr Dent 1998;20(4):237-43.
22. Arnup K, Broberg AG, Berggren U, Bodin L. Lack of cooperation in pediatric dentistry: The role of child personality characteristics. Pediatr Dent 2002;24(2):119-28.
23. Long N. Stress and economic hardship: The impact on children and parents. Pediatr Dent 2014;36(2):109-14.
24. Boyce TW. The lifelong effects of early childhood adversity and toxic stress. Pediatr Dent 2014;36(2):102-7.
25. da Fonseca MA. Eat or heat? The effects of poverty on children's behavior. Pediatr Dent 2014;36(2):132-7.
26. Goleman J. Cultural factors affecting behavior guidance and family compliance. Pediatr Dent 2014;36(2):121-7.
27. Chen AH, Youdelman MK, Brooks J. The legal framework for language access in healthcare settings: Title VI and beyond. J Gen Intern Med 2007;22(suppl 2):362-7.
28. U.S. Department of Health and Human Services. Section 1557 of the Patient Protection and Affordable Care Act. Final rule June 19, 2020. Available at: "https://www.govinfo.gov/content/pkg/FR-2020-06-19/pdf/2020-11758.pdf". Accessed November 5, 2020.
29. Feigal RJ. Guiding and managing the child dental patient: A fresh look at old pedagogy. J Dent Educ 2001;65(12): 1369-77.
30. American Academy of Pediatric Dentistry. Policy on the dental home. Pediatr Dent 2018;40(6):12.
31. Versloot J, Craig KD. The communication of pain in paediatric dentistry. Eur Arch Paediatr Dent 2009;10(2); 61-6.
32. Klingberg G, Berggren U. Dental problem behaviors in children of parents with severe dental fear. Swed Dent J 1992;16(1-2):27-32, 39.

33. American Academy of Pediatric Dentistry. Management of dental patients with special health care needs. Pediatr Dent 2018;40(6):237-42.
34. Townsend JA. Wells MH. Behavior guidance in the pediatric patient. In: Nowak AJ, Christensen JR, Mabry TR, Townsend JA, Wells MH. eds. Pediatric Dentistry - Infancy through Adolescence. 6th ed. St Louis, Mo., Elsevier-Saunders Co.; 2019:352-70.
35. Law CS, Blain S. Approaching the pediatric dental patient: A review of nonpharmacologic behavior management strategies. J Calif Dent Assoc 2003;31(9):703-13.
36. Sharma A, Kumar D, Anand A, Mittal V, Singh A, Aggarwal N. Factors predicting behavior management problems during initial dental examination in children aged 2 to 8 years. Int J Clin Pediatr Dent 2017;10(1):5-9.
37. Radis FG, Wilson S, Griffen AL, Coury DL. Temperament as a predictor of behavior during initial dental examination in children. Pediatr Dent 1994;16(2):121-7.
38. Lochary ME, Wilson S, Griffen AL, Coury DL. Temperament as a predictor of behavior for conscious sedation in dentistry. Pediatr Dent 1993;15(5):348-52.
39. Jensen B, Stjernqvist K. Temperament and acceptance of dental treatment under sedation in preschool children. Acta Odontol Scand 2002;60(4):231-6.
40. Arnup K, Broberg AG, Berggren U, Bodin L. Treatment outcome in subgroups of uncooperative child dental patients: An exploratory study. Int J Paediatr Dent 2003; 13(5):304-19.
41. Holst A, Hallonsten AL, Schroder U, Ek L, Edlund K. Prediction of behavior-management problems in 3-year-old children. Scand J Dent Res 1993;101(2):110-4.
42. Shonkoff JP, Garner AS. The lifelong effects of early childhood adversity and toxic stress. Pediatrics 2012;129 (1):e232-46.
43. Zhou Y, Cameron E, Forbes, G, Humphris G. Systematic review of the effect of dental staff behavior on child dental patient anxiety and behavior. Patient Educ Couns 2011; 85(1):4-13.
44. Hall JA, Roter DL, Katz NR. Task versus socio-emotional behaviors in physicians. Med Care 1987;25(5):399-412.
45. Chambers DW. Communicating with the young dental patient. J Am Dent Assoc 1976;93(4):793-9.
46. Gale EN, Carlsson SG, Eriksson A, Jontell M. Effects of dentists' behavior on patients' attitudes. J Am Dent Assoc 1984;109(3):444-6.
47. Schouten BC, Eijkman MA, Hoogstraten J. Dentists' and patients' communicative behavior and their satisfaction with the dental encounter. Community Dent Health 2003;20(1):11-5.
48. Wells M, McTigue DJ, Casamassimo PS, Adair S. Gender shifts and effects on behavior guidance. Pediatr Dent 2014;36(2):138-44.
49. Adair SM, Schafer TE, Rockman RA, Waller JL. Survey of behavior management teaching in predoctoral pediatric dentistry programs. Pediatr Dent 2004;26(2):143-50.
50. Freeman R. Communicating with children and parents: Recommendations for a child-parent-centered approach for paediatric dentistry. Eur Arch Paediatr Dent 2008;9 (1):16-22.
51. Eaton JJ, McTigue DJ, Fields HW Jr, Beck M. Attitudes of contemporary parents toward behavior management techniques used in pediatric dentistry. Pediatr Dent 2005; 27(2):107-13.
52. American Academy of Pediatric Dentistry. Informed consent. The Reference Manual of Pediatric Dentistry. Chicago, Ill.: American Academy of Pediatric Dentistry; 2020:470-3.
53. American Dental Association Division of Legal Affairs. Dental Records. Chicago, Ill.: American Dental Association; 2010:16. Available at: "https://www.aapd.org/globalassets/media/safety-toolkit/dental-records-ada.pdf". Accessed July 24, 2020.
54. American Academy of Pediatric Dentistry. Definition of dental neglect. Pediatr Dent 2018;40(6):13.
55. Beard DK. Perspectives: Ethical moment. J Am Dent Assoc 2013;144(2):206-7.
56. Nunn J, Foster M, Master S, Greening S. British Society of Paediatric Dentistry: A policy document on consent and the use of physical intervention in the dental care of children. Int J Paediatr Dent 2008;18(suppl 1):39-46.
57. Seale NS. Behavior Management Conference Panel III Report: Legal issues associated with managing children's behavior in the dental office. Pediatr Dent 2004;26(2): 175-9.
58. Burgess J, Meyers A. Pain management in dentistry. Available at: "https://moodle2.units.it/pluginfile.php/89098/mod_resource/content/2/Pain%20Management%20in%20Dentistry.pdf". Accessed July 18, 2020.
59. Tickle M, Milson K, Crawford FI, Aggarwal VR. Predictors of pain associated with routine procedures performed in general dental practice. Community Dent Oral Epidemiol 2012;40(4):343-50.
60. Nutter DP. Good clinical pain practice for pediatric procedure pain: Target considerations. J Calif Dent Assoc 2009;37(10):719-22.
61. Nutter DP. Good clinical pain practice for pediatric procedure pain: Iatrogenic considerations. J Calif Dent Assoc 2009;37(10):713-8.
62. Nutter DP. Good clinical pain practice for pediatric procedure pain: Neurobiologic considerations. J Calif Dent Assoc 2009;37(10):705-10.
63. Nakai Y, Milgrom P, Mancl L, Coldwell SE, Domoto PK, Ramsay DS. Effectiveness of local anesthesia in pediatric dental practice. J Am Dent Assoc 2000;131(12): 1699-705.
64. American Academy of Pediatric Dentistry. Use of local anesthesia for pediatric dental patients. The Reference Manual of Pediatric Dentistry. Chicago, Ill.: The American Academy of Pediatric Dentistry; 2020:318-23.

References continued on the next page.

65. Versloot J, Veerkamp JS, Hoogstraten J. Children's self-reported pain at the dentist. Pain 2008;137(2):389-94.
66. Klingberg G. Dental anxiety and behaviour management problems in paediatric dentistry: A review of background factors and diagnostics. Eur Arch Paediatr Dent 2007; 8(4):11-5.
67. Stinson JN, Kavanagh T, Yamada J, Gill N, Stevens B. Systematic review of the psychometric properties, interpretability and feasibility of self-reporting pain intensity measures for use in clinical trials in children and adolescents. Pain 2006;125(1):143-57.
68. Versloot J, Veerkamp JS, Hoogstraten J. Assessment of pain by the child, dentist, and independent observers. Pediatr Dent 2004;26(5):445-9.
69. Rasmussen JK, Fredeniksen JA, Hallonsten AL, Poulsen S. Danish dentists' knowledge, attitudes and management of procedural dental pain in children: Association with demographic characteristics, structural factors, perceived stress during the administration of local analgesia and their tolerance towards pain. Int J Paediatr Dent 2005; 15(3):159-68.
70. Wondimu B, Dahllöf G. Attitudes of Swedish dentists to pain and pain management during dental treatment of children and adolescents. Euro J Paediatr Dent 2005;6 (2):66-72.
71. Murtomaa H, Milgrom P, Weinstein P, Vuopio T. Dentists' perceptions and management of pain experienced by children during treatment: A survey of groups of dentists in the USA and Finland. Int J Paediatr Dent 1966;6(1): 25-30.
72. McWhorter A, Townsend J. Behavior Symposium Workshop A Report-Current guidelines/revision. Pediatr Dent 2014;36(2):152-3.
73. Frankl SN, Shiere FR, Fogels HR. Should the parent remain with the child in the dental operatory? J Dent Child 1962;29:150-163.
74. Crystal YO, Marghalani AA, Ureles SD, et al. Use of silver diamine fluoride for dental caries management in children and adolescents, including those with special health care needs. Pediatr Dent 2017;39(5):E135-E145.
75. American Academy of Pediatric Dentistry. Pediatric restorative dentistry. The Reference Manual of Pediatric Dentistry. Chicago, Ill.: American Academy of Pediatric Dentistry; 2019:340-52.
76. American Academy of Pediatric Dentistry. Policy on interim therapeutic restorations (ITR). The Reference Manual of Pediatric Dentistry. Chicago, Ill.: American Academy of Pediatric Dentistry; 2019:64-5.
77. Lim SM, Kiang L, Manohara R, et al. Interim therapeutic restoration approach versus treatment under general anaesthesia approach. Int J Paediatr Dent 2017;27(6):551-7.
78. Nelson T. An improved interim therapeutic restoration technique for management of anterior early childhood caries: Report of two cases. Pediatr Dent 2012;35(4): 124-8.
79. American Academy of Pediatric Dentistry. Caries-risk assessment and management for infants, children, and adolescents. The Reference Manual of Pediatric Dentistry. Chicago, Ill.: American Academy of Pediatric Dentistry; 2020:243-7.
80. American Academy of Pediatric Dentistry. Fluoride therapy. The Reference Manual of Pediatric Dentistry. Chicago, Ill.: American Academy of Pediatric Dentistry; 2020:288-91.
81. Hamzah HS, Gao X, Yung Yiu CK, McGrath C, King NM. Managing dental fear and anxiety in pediatric patients: A qualitative study from the public's perspective. Pediatr Dent 2014;36(1):29-33.
82. Nash DA. Engaging children's cooperation in the dental environment through effective communication. Pediatr Dent 2006;28(5):455-9.
83. Makansi N, Carnevale FA, Macdonald ME. The conceptualization of childhood in North American pediatric dentistry texts: A discursive case study analysis. Int J Paediatr Dent 2018;28(2):189-97.
84. Fox C, Newton JT. A controlled trial of the impact of exposure to positive images of dentistry on anticipatory dental fear in children. Community Dent Oral Epidemiol 2006;34(6):455-9.
85. Melamed BG, Hawes RR, Heiby E, Glick J. Use of filmed modeling to reduce uncooperative behavior of children during dental treatment. J Dent Res 1975;54(4): 797-801.
86. Williams JA, Hurst MK, Stokes TF. Peer observation in decreasing uncooperative behavior in young dental patients. Behav Modif 1983;7(2):225-42.
87. Pinkham JR. The roles of requests and promises in child patient management. J Dent Child 1993;60(3):169-74.
88. Prado IM, Carcavalli L, Abreu LG, Serra-Negra JM, Paiva SM, Martins CC. Use of distraction techniques for the management of anxiety and fear in paediatric dental practice: A systematic review of randomized controlled trials. Int J Paediatr Dent 2019;29(5):650-68.
89. Kamath PS. A novel distraction technique for pain management during local anesthesia administration in pediatric patients. J Clin Pediatr Dent 2013;38(1):45-7.
90. Pickrell JE, Heima M, Weinstein P, et al. Using memory restructuring strategy to enhance dental behaviour. Int J Paediatr Dent 2007;17(6):439-48.
91. Nelson T, Sheller B, Friedman C, Bernier R. Educational and therapeutic behavioral approaches to providing dental care for patients with autism spectrum disorder. Spec Care Dentist 2015;35(3):105-13.
92. Thrash WJ, Marr JN, Boone SE. Continuous self-monitoring of discomfort in the dental chair and feedback to the dentist. J Behav Assess 1982;4(3):273-84.

93. Campbell C, Soldani F, Busuttil-Naudi A, Chadwick B: British Society of Paediatric Dentistry Guidelines: Update of non-pharmacological behaviour management guideline, 2011. Available at: "https://www.bspd.co.uk/Portals/0/Public/Files/Guidelines/Non-pharmacological%20behaviour%20management%20.pdf". Accessed July 18, 2020.
94. Fisher-Owens S. Broadening perspectives on pediatric oral health care provision: Social determinants of health and behavioral management. Pediatr Dent 2014;36(2):115-20.
95. La Rosa-Nash PA, Murphy JM. A clinical case study: Parent-present induction of anesthesia in children. Pediatr Nursing 1996;22(2):109-11.
96. Pinkham JR. An analysis of the phenomenon of increased parental participation during the child's dental experience. J Dent Child 1991;58(6):458-63.
97. Shroff S, Hughes C, Mobley C. Attitudes and preferences of parents about being present in the dental operatory. Pediatr Dent 2015;37(1):51-5.
98. Cermak SA. Stein Duker LI, Williams ME, et al. Feasibility of a sensory-adapted dental environment for children with autism. Am J Occup Ther 2015;69(3):6903220020p1-10. Available at: "http://dx.doi.org/10.5014/ajot.2015.013714". Accessed July 18, 2020.
99. Bodison SC, Parham DL. Specific sensory techniques and sensory environment modifications for children and youth with sensory integration difficulties: A systematic review. Am J Occup Ther 2018;72(1):7201190040p1-7201190040p11. Available at: "http://doi.org/10.5014/ajot.2018.029413". Accessed July 18, 2020.
100. Cermak SA, Stein Duker LI, Williams ME, et al. Sensory adapted dental environment to enhance oral care for children with autism spectrum disorders: A randomized controlled pilot study. J Autism Dev Disord 2015;45(9):2876-88.
101. Cajares CM, Rutledge CM, Haney TS. Animal assisted therapy in a special needs dental practice: An interprofessional model for anxiety reduction. J of Intell Disabl 2016;4(1):25-8.
102. Cruz-Fierro N, Vanegas-Farfano M, González-Ramírez MT. Dog-assisted therapy and dental anxiety: A pilot study. Animals 2019;9(8):512. Available at: "https://www.mdpi.com/2076-2615/9/8/512". Accessed September 24, 2020.
103. Gussard AM, Weese JS, Hensten A, Jokstad A. Dog-assisted therapy in the dental clinic. Part B. Hazards and assessment of potential risks to the health and safety of the dental therapy dog. Clin Exp Dent Res 2019;5(6):701-11.
104. Ganz JB, Davis JL, Lund EM, Goodwyn FD, Simpson RL. Meta-analysis of PECS with individuals with ASD: Investigation of targeted versus non-targeted outcomes, participant characteristics, and implementation phase. Res Dev Disabil 2012;33(2):406-18.
105. Flippin M, Reszka S, Watson LR. The effectiveness of picture exchange communication system (PECS) on communication and speech for children with autism spectrum disorders: A meta-analysis. Am J Speech Lang Pathol 2010;19(2):178-95.
106. Zink AG, Molina EC, Diniz MB, Santos MTBR, Guaré RO. Communication applications for use during the first dental visit for children and adolescents with autism spectrum disorders. Pediatr Dent 2018;40(1):18-22.
107. Kuhaneck HM, Chisholm EC. Improving dental visits for individuals with autism spectrum disorders through an understanding of sensory processing. Spec Care Dentist 2012;32(6):229-33.
108. Clark MS, Brunick AL. N2O and its interaction with the body. In: Handbook of Nitrous Oxide and Oxygen Sedation. 5th ed. Maryland Heights, Md.: Mosby Elsevier; 2019:103-13.
109. Becker DE, Rosenberg M. Nitrous oxide and the inhalation anesthetics. Anesth Prog 2008;55(4):124-31.
110. American Academy of Pediatric Dentistry. Oral health care for the pregnant adolescent. The Reference Manual of Pediatric Dentistry. Chicago, Ill.: American Academy of Pediatric Dentistry; 2020:267-74.
111. Fleming P, Walker PO, Priest JR. Bleomycin therapy: A contraindication to the use of nitrous oxide-oxygen psycho-sedation in the dental office. Pediatr Dent 1988;10(4):345-6.
112. Wyatt SS, Gill RS. An absolute contraindication to nitrous oxide. Anaesthesia 1999;54(3):307.
113. Sanders RDB, Weimann J, Maze M. Biologic effects of nitrous oxide: A mechanistic and toxicologic review. Anesthesiology 2008;109(4):707-22.
114. Guney S, Araz C, Tirali R, Cehreli S. Dental anxiety and oral health-related quality of life in children following dental rehabilitation under general anesthesia or intravenous sedation: A prospective cross sectional study. Niger J Clin Pract 2019;21(10):1304-10.
115. Aldossari GS, Aldosari AA, Alasmari AA, Aldakheel RM, Al-Natsha RR, Aldossary MS. The long-term effect of previous dental treatment under general anesthesia on children's dental fear and anxiety. Int J Paediatr Dent 2019;29(2):177-84.
116. Patel M, McTigue DJ, Thikkurissy S, Fields HW. Parental attitudes toward advanced behavior guidance techniques used in pediatric dentistry. Pediatr Dent 2016;38(1):30-6.
117. Hulin J, Baker S, Marshman Z, Albadri S, Rodd H. The decisional needs of young patients faced with the decision to undergo dental treatment with sedation or GA. SAAD Digest 2017;33:18-23.
118. Connick C, Palat M, Puagliese S. The appropriate use of physical restraint: Considerations. ASDC J Dent Child 2000;67(4):231, 256-62.
119. Crossley ML, Joshi G. An investigation of pediatric dentists' attitudes towards parent accompaniment and behavioral management techniques in the UK. Br Dent J 2002;192(9):517-21.

120. Peretz B, Gluck GM. The use of restraint in the treatment of pediatric dental patients: Old and new insights. Int J Paediatr Dent 2002;12(6):392-7.
121. 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;69(3):236, 310-3.
122. Kupietzky A. Strap him down or knock him out: Is conscious sedation with restraint an alternative to general anesthesia? Br Dent J 2004;196(3):133-8.
123. Manley MCG. A UK perspective. Br Dent J 2004;196 (3):138-9.
124. Morris CDN. A commentary on the legal issues. Br Dent J 2004;196(3):139-40.
125. 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 backgounds. Clin Pediatr 2019;58(9):977-984.
126. Theriot AL, Gomez L, Chang CT, et al. Ethnic and language influence on parents' perception of paediatric behaviour management techniques. Int J Paediatr Dent 2019;29(3):301-9.
127. Davis DM, Fadavi S, Kaste LM, Vergotine R, Rada R. Acceptance and use of protective stabilization devices by pediatric dentistry diplomates in the United States. J Dent Child 2016;83(2):60-6.
128. Centers for Medicare and Medicaid Services. State Operations Manual Appendix A - Survey protocol. Regulations, and Interpretive Guidelines for Hospitals. §482.13 Condition of Participation: Patient Rights A-0154 §482.13(e) Standard: Restraint or Seclusion. Available at: "https://www.cms.gov/Regulations-and-Guidance/Guidance/Manuals/downloads/som107ap_a_hospitals.pdf". Accessed November 5, 2020.
129. American Academy of Pediatrics Committee on Pediatric Emergency Medicine. The use of physical restraint interventions for children and adolescents in the acute care setting. Pediatrics 1997;99(3):497-8.
130. American Academy of Pediatrics. The pediatrician's role in the evaluation and preparation of pediatric patients undergoing anesthesia. Pediatrics 2014;134(3):634-41.
131. SmartTots. Consensus statement regarding anesthesia safety in children. Available at: "https://www.smarttots.org/smarttots-releases-consensus-statement-regarding-anesthesia-safety-in-children". Accessed July 18, 2020.