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TREATMENT

Management of child behavior in the dental office

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Abstract

In children, the prevalence of anxiety, distress and fear in association with dental treatment is common. To improve the quality of dental care, management of the child's behavior during the dental treatment is necessary. For successful behavioral management, it is essential to identify the factors leading to anxiety and fear during treatment. This will allow the adoption of an appropriate attitude along with utilization of specific behavioral management techniques for decreasing the child's stressful perspective toward dental treatment.

Keywords Pediatric dentistry · Dental anxiety · Behavior control · Child behavior

Quick reference/description

In children, the prevalence of anxiety, distress and fear in association with dental treatment is common. To improve the quality of dental care, management of the child's behavior during the dental treatment is necessary. For successful behavioral management, it is essential to identify the factors leading to anxiety and fear during treatment. This will allow the adoption of an appropriate attitude along with utilization of specific behavioral management techniques for decreasing the child's stressful perspective toward dental treatment.

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Overview

Methods of child behavior management	Indications	Objectives
1. Non-pharmacologic techniques		
Tell–show–do	Very young children in the pre-cooperative stage (0–3 years old)	Familiarizing the child with the dental setting and acceptance of the dental procedures
	Children in the cooperative stage (generally > 4 years old)	
Voice control	Uncooperative children	Gain the child's attention and compliance, and avoid negative behavior
Non-verbal communication	Young children in the pre-cooperative stage (0–3 years old)	Enhance the effectiveness of other communicative management techniques and gain or maintain the patient's attention and compliance
	Children in the cooperative stage (generally > 4 years old)	
Positive reinforcement	Young children in the pre-cooperative stage (0–3 years old)	Reinforce desired behaviors in order to be repeated
	Children in the cooperative stage (generally > 4 years old)	
Distraction	Young children in the pre-cooperative stage (0–3 years old)	Divert the child's attention from unpleasant and invasive procedures
	Children in the cooperative stage (generally > 4 years old)	
Cognitive behavior therapy	Teach patients (and often their parents) skills for the self-management of their anxiety	Help people in the management of their problems by changing how they think and behave in relation to these problems through the incorporation of a variety of different cognitive and behavioral strategies
	Assessment and management of dental anxiety	
2. Advanced techniques		
Protective stabilization	Very young children (0–3 years old)	Decrease the risk of injury or accident
	Children with special health care needs, who don't have ability to collaborate	Reduce the time for completion of the dental treatment
		Optimizing and enhancing the quality of the procedures
Pharmacologic techniques	Extensive treatments in uncooperative children due to the lack of psychological or emotional maturity and/or mental, physical or medical disability	Reduction or elimination of anxiety and pain
a. Sedation	Patients classified as healthy (ASA I) or with mild systemic disease without functional limitation (ASA II)	Patient comfort due to reduction of pain and anxiety and the muscular relaxation

Methods of child behavior management	Indications	Objectives
b. General anesthesia	In case of inefficacy of local anesthesia due to acute infection or allergy	Patient unconsciousness, analgesia and muscular relaxation during procedures
	Patients requiring major surgical procedures	Single-step treatment
	Patients with special care needs like syndromes, dementia and cognitive decline	

Materials/instruments

- Video eyewear
- Sedative agents (Midazolam, ketamine, nitrous oxide/oxygen)
- Local anesthetic agents
- General anesthetic agents

Procedure

Dental treatment is commonly linked with fear, anxiety and distress in children. Dental fear and anxiety lead to avoidance of dental care, which in turn cause worsening of oral health and ultimately affect the quality of life.

Etiology of dental fear and anxiety

The etiology of dental fear and anxiety is multifactorial (Table 1). It is important to recognize these factors to prevent and relieve the anticipated distress associated with dental treatment.

Table 1 Etiology of dental fear and anxiety

Dental factors	Social aspects	Parental factors
Past pain experience and pain during the treatment	Fear of separation from parents	Parent's expectation of child's behavior during dental examination
Fear of invasive procedures	Contact with unknown people	Family income
Presence of toothache	Lack of control	Parent's negative attitude toward dental treatment
Severity of dental caries	First visit to the dentist	Depression and anxiety in adolescent mothers

Classification of child behavior

The psychological and motor development of children from birth to adolescence is a continuous process. The acceptance of oral health care and dental treatment is directly impacted by this development.

The dentist should evaluate the patient's ability to act independently, the linguistic ability and the socialization level along with the presence of physical or mental disabilities based on the patient's chronological age, social and cultural status and the parents' profile. This assessment is essential as temperament and personality are not age-related factors and children of the same age group may demonstrate different behaviors. Therefore, the behavior of children is classified as follows (Table 2).

Depending on the duration and complexity of dental treatment, modification of the child's behavior can be observed. In case of children who are cooperative during preventive dental procedures, uncooperative behavior can be observed during invasive treatment procedures.

Techniques of child behavior management

The control of pain has supreme importance in the behavior management of children of all ages. While choosing an appropriate behavioral management technique, the clinician should assess the following factors:

- Child's oral health status
- Complexity of the required dental treatment
- Mental and physical development of the child
- Parental characteristics

The techniques of behavior management can be classified into non-pharmacological and advanced techniques:

Table 2 Classification and characteristics of child behavior during dental treatment. Adapted from: Wright GZ, Alpern GD

Behavior stage	Main characteristics
Pre-cooperative	Young children (0–3 years)
	Strong connection between the child and his/her mother/parents
	Lack of comprehension of the dental treatment
	Lack of cooperative ability at actual moment
	Parent–child separation not recommended (anxiety of separation)
Cooperative	Children who demonstrate socialization and communication skills (generally more than 4 years old)
	Establishment of conversation between the dentist and the child
	The child can follow directions
Uncooperative	Personality/temperament or negative previous experience
	Mental disabilities

1. Non-pharmacological techniques

Tell–show–do

The main goal of the tell–show–do technique is to acquaint the child with the dental setting and facilitate acceptance of dental treatment. This technique is shown to be a remarkably effective method of behavior management. It can be used along with verbal and non-verbal communication skills and positive reinforcement. The tell–show–do technique comprises (Fig. 1):

- Verbal explanations of the dental procedures in a suitable language as per the cognitive and emotional development of the child (tell) (Fig. 1a).
- Presentation of the materials and instruments through visual, auditory, olfactory and tactile exploration and successive approximation (show) (Fig. 1b).
- Completion of the scheduled dental procedure (do) (Fig. 1c).

Voice control

The voice control technique, a form of verbal communication, is beneficial in uncooperative children. The aim of this technique is attain the patient's attention and compliance along with prevention of negative behavior. In the voice control technique, the dentist deliberately alters the tone, volume or pace of his/her voice for influencing and directing the patient's behavior.

In case of parents, who are not acquainted with the voice control technique, the dentist should explain the technique beforehand to avoid misunderstanding as the use of an assertive voice can be considered aversive.

Non-verbal communication

Non-verbal communication is also known as multisensory communication. The goals of this technique are obtaining or maintaining the patient's attention and compliance and increasing the efficacy of other forms of communicative management techniques. Non-verbal communication recommends the utilization of body

Fig. 1 Tell–show–do technique in three stages: **a** explanation of the dental procedure to the child using words and expressions according to age (tell). **b** Demonstration of dental prophylaxis on the child's finger (show). **c** Performing dental prophylaxis (do)

language, posture and facial expression for communication like greeting a child with a handshake and a smile.

Positive reinforcement

The objective of positive reinforcement technique is to reinforce the appropriate behavior to ensure repetition of the behavior. This technique involves:

- Positive voice modulation
- Use of facial expression
- Verbal praise
- Praise and encouragement of cooperative behaviors in the form of toys and small rewards

Distraction

Distraction involves diversion of the patient's attention away from the unpleasant and invasive dental treatment by drawing attention to certain alternative auditory or visual stimuli. This technique includes the use of:

- Complementary comments
- Music
- Imaginative plays
- Video eyewear
- Discussion or viewing of various subjects like cartoon characters, superheroes or favorite sports

Cognitive behavior therapy

The cognitive behavior therapy concentrates on the patient's altered thinking, emotions, behavior, life situation and physical symptoms related to anxiety. This technique provides an accessible model for implementation in the clinic for evaluation and management of dental anxiety. The objective of cognitive behavior therapy is to aid individuals in managing their problems through alteration of their thoughts and behavior in association with the problems by utilizing various cognitive and behavioral approaches. This technique is often used as an education tool for the self-management of anxiety in patients.

2. Advanced techniques

The advanced techniques of behavior management are used when the non-pharmacological techniques prove insufficient for child behavior management.

Protective stabilization

Protective stabilization is an advanced technique of behavior management. This technique includes restricting the patient's movement during the dental procedure (Fig. 2). It is used in patients with special health care needs and very young children (0–3 years). Prior to using protective stabilization, explaining the technique and acquiring permission through an informed consent from the parents is essential. The objectives of this technique are:

- Reduction of the risk of injury or accident
- Decrease in the time duration required for the dental procedure
- Optimization and improvement of the quality of the procedures

Pharmacological techniques

Pharmacological techniques are utilized during extensive dental treatments in patients, who are uncooperative because of deficient psychological or emotional maturity, or mental, physical or medical disability. These techniques include:

a. Sedation

Sedation is defined as the use of a drug or combination of drugs to depress the patient's central nervous system (CNS), reducing, thereby, his/her alertness. In sedation, the patient responds to verbal, tactile or painful stimuli while spontaneous ventilation and cardiovascular function is maintained. Sedation improves patient comfort during dental treatment through reduction in pain and anxiety, and muscular relaxation. During pediatric dental treatment, sedation with oral midazolam in combination with or without ketamine facilitates positive response from patients during follow-up sessions.

According to the American Society of Anesthesiologists (ASA), sedation is recommended only in patients classified as healthy (ASA I) or with mild systemic disease without functional limitation (ASA II). A variety of factors affect the depth of sedation:

- High drug dose
- Medication type

Fig. 2 Protective stabilization: the child wrapped in a tissue sheet and supported by the mother

- Delivery route
- Patient characteristics

Therefore, the patient's cardiac function, respiratory frequency, blood pressure and blood oxygen saturation should be monitored continuously by a trained professional team including an anesthesiologist. Depending on the degree of CNS depression, sedation can be mild, moderate or deep.

Mild sedation Mild sedation is also called conscious or minimum sedation. In mild sedation, normal response to verbal commands, normal airway reflexes and cardiovascular function are seen. Oral drugs alone (midazolam) or inhalation of nitrous oxide and oxygen (N_2O/O_2) is used for mild sedation. In patients with dental fear and mental disabilities, and young children, a safe and efficient method to attain cooperation is conscious sedation with N_2O/O_2. Inhalation N_2O/O_2 sedation offers rapid induction and recovery of the patient, and easy dosage titration. Oral sedation shows a significant variation in patient response. Following administration of the drug, dose increment is not recommended considering the risk of over sedation.

Moderate sedation In moderate sedation, responsiveness to verbal commands is either spontaneous or by light tactile stimulation. The patient's vital functions are maintained spontaneously. Oral drugs can be administered alone or in combination with N_2O/O_2 inhalation to obtain moderate sedation. The N_2O/O_2 sedation is contraindicated in children who do not accept the technique, and in case of nasal obstruction, amygdala and adenoid hypertrophy, chronic respiratory problems (e.g., emphysema, chronic bronchitis, pneumothorax, cystic fibrosis), ophthalmic and otorhinolaryngologic recent surgeries, throat infections, and patients undergoing treatment with bleomycin sulfate.

Deep sedation In deep sedation, easy arousal of patients is not seen. Patients show deliberate response only after repeated or painful stimulation. Maintenance of a patent airway needs support. Inadequate spontaneous ventilation can also be noted without alteration of cardiovascular function. Deep sedation is achieved through intravenous administration of a combination of sedative drugs.

b. General anesthesia

A controlled state of unconsciousness with a loss of protective reflexes, including the ability to maintain a patent airway, is known as general anesthesia. In this state, patients show no response to any stimuli. Most cases need ventilator support. General anesthesia should be administered in the hospital and under medical care.

Pitfalls and complications

- Oral sedative agents have a bitter taste and can be refused by the pediatric patients.

- The patient response to oral sedation is also highly variable.
- In sedation, complete elimination of pain is not achieved by the sedative agents necessitating local anesthesia.
- Nausea and vomiting are rare adverse effects of inhalational sedation with nitrous oxide and oxygen.
- During sedation using midazolam, individuals can experience anterograde amnesia.
- General anesthesia increases the cost and complexity of dental treatment.

Further reading

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