Aversive Conditioning: Hand-over-Mouth Technique & Physical Restraint

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Abstract

It is generally acknowledged that behaviour control is important in providing children with dental care. Indeed, it is challenging, if not impossible, to do any necessary dental care if a child's behaviour in the dental office is not controlled. Usually, various psychological behaviour management techniques are used in child in dental clinic. But when all psychological behaviour management techniques fail to calm down the child then use of physiological management techniques like Hand over Mouth Exercise & Physical Restraint are used to eliminate the inappropriate behaviour of child and deliver the dental treatment with the consent of parents.
Keywords: Hand-over-mouth technique, Physical restraint, Children, Pediatric Dentistry

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Date of Submission: 10 October 2023
Date of Revision: 11 November 2023
Date of Acceptance: 5 December 2023

Introduction

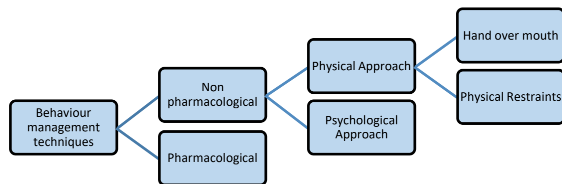
The American Academy of Pediatric Dentistry (AAPD) recognizes that dental care is medically necessary for the purpose of preventing and eliminating oro-facial disease, infection and pain, restoring the form and function of the dentition, and correcting facial disfiguration or dysfunction.[1] Behaviour is any activity that can be observed, recorded and measured.[2] A child's good behaviour is not magic; it takes various skills of encouragement to help them through their distress. One of the main qualities of a dentist is to manage a child positively while satisfying their dental needs. Thereby instilling a positive dental attitude and good oral health in them.[3] Wright et al. (1975) defined behaviour management as the method by which the dental health team treats a young patient effectively and efficiently while also fostering a healthy dental attitude.[2,3]

Objectives of behaviour management:[2]
According to Snowder (1980),

- To establish effective communication with child and parent
- Gain child and parent confidence for dental treatment
- Teach child positive aspect of preventive dental care
- Provide a comfortable, relaxing environment to the child

Classification of behavior management techniques:[2]

The first national clinical guidelines on non-pharmacological behaviour management techniques were published online by the Royal College of Surgeons (England) in 2002.[3,4]



Hand–over–Mouth Technique (Home):
This technique was first described in 1920 by Dr. Evangeline Jordan.
Dr. Evangeline Jordan wrote "if a normal child will not listen but continues to cry and struggle – hold a folded napkin over the child's mouth and gently but firmly hold the mouth shut. His scream increased his condition of Hysteria, but if the mouth is held closed, there is little sound, and he soon begins to reason".[2]
As described by Craig (1971) the purpose of the technique is to gain the attention of a child to allow communication.[5] Rombom et al (1981) argued that the technique is best described in psychological terms as response prevention, a flooding procedure, rather than an aversive technique.[6]

Barton (1993) suggested HOME might better be described in terms of negative reinforcement, where the child's behaviour of stopping the protest and being quiet is reinforced by the cessation of the unpleasantness of not being allowed to protest loudly and of having his/her limbs restrained. It has been found that children do not remember, nor are affected by, hand over mouth/restraint experiences.[7] Table 1 shows types of mechanical aids for protective stabilization.[1]

Other terminologies: Emotional surprise therapy by Lampshire, HOM Airway Restricted (HOMAR) by Levitas (1947), Aversion by Crammer (1973), Aversive Conditioning by Lenchner and Wright (1975)[2]

Objectives:
- To gain child's attention enabling communication with dentist so that appropriate behavioral expectation can be explained.
- To eliminate inappropriate avoidance behaviour to dental treatment and to establish appropriate learned response.
- To increase child's confidence in coping with anxiety provoking dental stimuli.
- To assure child safety in delivery of quality dental care.[2]

Indications:
- A healthy child who is able to understand and cooperate but who exhibits defiant, obstreperous or hysterical behaviour to dental treatment.[2]
- Mainly used in age-range 3-8 years old and with children who are capable of effective communication[8]

Contraindications:
- Immature child
- When it prevents child from breathing
- When the dentist is emotionally involved with the child[2]
- Any child whose mental capacity and command of language means that effective communication would be impossible[8]

Technique:
- When indicated, a hand is placed over child's mouth and behavioural expectations are calmly explained.
- Child is told that the hand will be removed as soon as the appropriate behaviour begins.
- When child responds, the hand is removed and child's appropriate behaviour is reinforced.
- If the child shows negative behaviour again the procedure is repeated[2]

Legality of use of home:

- It has been pointed out that the use of HOME will not subject the dentist to liability by the patient when it is used properly with parental consent.
- Use of Hand Over Mouth Airway Restricted (HOMAR) is more nearly objectionable legally and may result in liability of the dentist.[2]

Review of literature:

Association of Pedodontic Diplomates (1970) found out that 80% Pediatric Dentist used HOME technique frequently.[2]

Acs G et al (1990) suggested that HOM was indicated in situations other than for the control of hysterical and tantrum-like behaviour.[9]

Carr et al. (1999) found out the number of clinicians who did not practice HOME was around 57%.[10]

Adair et al. (2004) observed that 79% of the clinicians did not use HOME.[11]

Hassan SQ et al (2010) did the survey to check the alternative behaviour management techniques that might be utilized by pediatric dentists in place of HOME after its elimination from the clinical guidelines of the AAPD. He found that 50% pediatric dentist believed that HOME is an acceptable behaviour management technique, and 41% believed it should be continued to be recognized by the AAPD. Only 7% believed that HOME elimination affected access to care for some children.[12]

Desai SP et al (2019) conducted study to assess the attitudes of parents of children towards Behaviour management techniques used by pediatric dentists. He found tell show do, positive reinforcement, and live modeling were the most accepted techniques, while the least accepted techniques were HOME and voice control technique.[13]

Segarra Ortells C et al (2021) did the survey of members of the Spanish Society of Pediatric Dentistry about behaviour modification techniques and He found the most common techniques were Tell Show Do and positive reinforcement, while the most abandoned HOM because it was rejected by parents and because of potential legal problems and psychological consequences for the patients.[14]

Variations of the techniques: Airway uninstructed, hand over both nose and mouth (HOMAR), towel held over mouth only, dry towel over nose and mouth, wet towel over nose and mouth.[2]

Protective stabilizers: Partial or complete immobilization of the patient is sometimes a necessary and effective way to diagnose and deliver dental care to patients who need help in controlling their extremities. Immobilization is also useful for managing combative, resistant patients, so that the patient, practitioner or dental staff may be protected from injury while care is being provided. The parents must be informed and the consent must be documented, before immobilization is used, they should have a clear understanding of the type of immobilization to be used, the rationale, and duration of use.[2]

The AAPD Standard of Care for Behaviour Management, revised in May 1996, indicates that the need to diagnose and treat, as well as protect the safety of the patient and practitioner, must justify the use of immobilization. This decision should take into consideration the patient's emotional development, physical and medical considerations, dental need, other alternative behavioural modalities and the quality of dental care. The older terminology of physical restraints has been replaced with the term medical immobilization or protective stabilization because we are not just strapping the child to the chair minimizing his movement. The idea is to immobilize the child benefiting and protecting both the child and the dentist.[2]

Active immobilization involves restriction of movement by another person such as the parent, dentist, or dental auxiliary. Passive immobilization utilizes a restraining device.[11]According to Frankel et al (1991) Restraint in the dental setting is the act of physically limiting the body movements of the child in order to facilitate dental procedures and to decrease possible injuries to the child and/or dentist.[15]

Whole-body restraint is often used in conjunction with sedation for patients who have physical or mental handicapping conditions to help prevent involuntary limb or head movements or in very young children as an alternative to sedation or general anaesthesia.[8]

Objective:

- Used to control unwanted physical movement of the child, both to facilitate treatment and also to prevent harm to the child and dental staff.[8]
- Facilitate delivery of quality dental treatment.[16]

Indications:

- A patient who requires diagnosis or treatment and cannot cooperate because of lack of maturity.
- A patient who requires diagnosis or treatment and cannot cooperate because of mental or physical disabilities.
- A patient who requires diagnosis or treatment and does not cooperate after other behaviour management techniques have failed.
- When the safety of the patient or practitioner would be at risk without the protective use of immobilization.[2]
- To control involuntary movement with sedated patients,
- When sedation or general anaesthesia are not available or permitted by parents.[8]

Contraindications:

- A cooperative patient
- A patient who cannot be safely immobilized because of underlying medical or systemic conditions
- As punishment
- It should not be used solely for the convenience of the staff.[2]
- 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.[16]

Connicket al (2000) distilled 5 salient points on use of restraint:[17]

i. It should only be used when absolutely necessary
ii. The least restrictive alternative should be chosen
iii. It should not be used as punishment
iv. It should not be used solely for the convenience of the dental team
v. Staff should closely monitor its use.

Precautions:[18,19]

The following precautions are recommended:

The patient's medical history must be reviewed carefully to ascertain any medical conditions or medications that can compromise physiologic function, may contra indicate the use of protective stabilization, or are associated with specific risk factors including: Cardiac instability, Pulmonary and respiratory instability, Musculoskeletal alignment issues or weakness, Joint hypermobility, Bone fragility, Cutaneous vulnerability to mechanical stress, Psychological instability, Thermoregulation disorders, Psychotropic medications, 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.

Table 1: Types of mechanical aids for protective stabilization:[1]

PART	AID	FEATURES
Mouth	Tongue blades Open wide mouth prop	These can be used directly to open mouth It has a durable foam core on the outside of a tongue depressor It is also easy to use, durable and available in two sizes
	Molt mouth prop	It can be very helpful in the management of a difficult patient for a prolonged period. It is made in both adult and child sizes, allows accessibility to the opposite side of the mouth Its disadvantages include the possibility of lip and palatal lacerations and luxation of teeth if it is not used correctly The patient's mouth should not be forced beyond its natural limits because patient's discomfort and panic will result, causing further resistance and perhaps airway compromise
	Rubber bite blocks	Available in various sizes to fit on the occlusal surfaces of the teeth and stabilize the mouth in an open position. The bite blocks should have floss attached for easy retrieval if they become dislodged in the mouth
	Finger guards	Used directly to open mouth
Body	Papoose Board	Simple to store and use It is available in areas to hold both large and small children It has attached head stabilizers It is reusable Necessary to monitor respiration if it is used in combination with sedation An extremely resistant patient may develop hyperthermia if immobilized too long Any restrained patient requires constant attendance and supervision
	Triangular sheet	Mink described this technique using a triangular sheet to control an extremely resistant child It allows the patient to upright during radiographic examinations Its disadvantages include the frequent need for straps to maintain the patient's position in the chair, the difficulty of its use on small patients, and the possibility of airway impingement Hyperthermia may be another problem during long periods of immobilization The need for constant supervision is emphasized so that these problems may be avoided
	Pedi-Wrap	Comes in various sizes and allows some movement while still confining the patient Its mesh fabric prevents developing hyperthermia Requires straps to maintain body position in the dental chair Constant supervision to prevent the patient from rolling out of the chair
	Beanbag dental chair insert	Developed to help comfortably accommodate hypnotic and severely spastic persons who need more support and less immobilization in a dental environment It is reusable and washable, and one size fits most people Many patients with physical disabilities relax more in this setting
	Safety belt and extra assistant	Useful in controlling movements
Extremities	Posey straps Velcro straps Towel and tape Extra assistant	Fasten to the arms of the dental chair and allow limited movement frequently prevents overreaction by resistant or combative patients Helpful for an athetoid-spastic cerebral palsy patient who tries desperately, but without success, to control body movements
Head	Head positioner Plastic bowl Extra assistant	Used to stabilize head

Review of literature:

Association of Pedodontic Diplomats (1972) conducted a survey and found out that 84% of the pediatric dentist's used physical restraints in selected patients.[2]

Nathan JE (1989) observed that only 4% of the pediatric dentist's employed immobilization technique. [2]

Newton JT et al (2004) did the questionnaire survey of pediatric dentist and found a large proportion of practitioners (62%) felt that the use of physical restraint was appropriate with certain disabled patients. The most commonly anticipated psychological sequeala which may accompany the use of these techniques was subsequent fear of dental treatment.[3]

Boka V et al (2014) examine the acceptance by Greek parents of nine behaviour-management techniques and he found least accepted techniques were passive restraint and General Anaesthesia.[20]

Guinot F et al (2021) compare the acceptance of behaviour management techniques used in pediatric dentistry by Spanish and Portuguese parents. From the 8 different behaviour management techniques the least accepted techniques in both countries were active and passive restraint.[21]

Ramadevi RP (2024) did the study to elicit parents' opinion and record their response to their children's experience who underwent dental treatment with an extra assistant for protective stabilization. In result she found the dental assistant was most preferred as the extra assistant to provide active stabilization. An overwhelming 98% of the parents agreed to protective stabilization with an extra assistant as advantageous and a good 88% of the parents recommended its use for further appointments of their children.[22]

Conclusion

This literature review has described the various modalities available in a clinical scenario. However, it is pertinent to prioritize psychological approaches first. Avoid resorting to physiological methods for behaviour management unless absolutely necessary, as they can impact a child’s long-term behaviour. Judicious use of physical restraints with parental consent would aid safe completion of treatment modalities while avoiding legal implications.

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How to cite the article:

Fernandes S, Bafna Y, Patel D, Parmar D, Bhoot D, Prajapati H. Aversive Conditioning: Hand-over-Mouth Technique & Physical Restraint. JIHR 2024;1(1):14-20.