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# DISTRACTION AIDS IN PAEDIATRIC DENTISTRY

Paediatrics

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## ABSTRACT

Distraction is a useful technique of diverting the patient's attention from what may be perceived as an unpleasant procedure. This enables decreased perception of unpleasantness and averting negative or avoidance behaviour. A short break given to patient during a stressful procedure can be an effective distraction before trying more advanced behavior-guidance techniques. This review emphasizes on how dentists help children cope with dental treatment by using different distraction aids.

## KEYWORDS

Distraction Aids ; Pediatric Dentist ; Children

## INTRODUCTION

Paediatric dentistry is a specialty that adapts techniques and procedures from general dentistry and specialties to provide primary and comprehensive preventive and therapeutic oral health care for children. [1] Paediatric dentists use their knowledge of psychologic development and current theories of behaviour modification to direct children in coping with the anxieties present at any dental visit. Only if these psychologic techniques are inadequate will conscious sedation, restraints, or general anaesthesia be used to control children's behaviour during dental treatment.[2] One of the most challenging aspects of dental care that medical practitioners face today is the treatment of patient pain. In order to experience pain, conscious attention is required.[3]

Distraction is useful in the management of pain and anxiety by diverting the attention of an individual or group from an area of focus and thereby reducing the reception of desired information. The patient loses the ability and interest to pay attention or will have great intensity, novelty or attractiveness towards some other object. Distractions come from both external sources (eg: visual triggers, social interactions, music, text messages, and phone calls) and internal sources (eg: hunger, fatigue, illness, worrying, and daydreaming). [4]

Distraction has been found to take a patient's attention away from pain. Attention should be given to the patient determines the level of pain and distress levels. By encouraging a patient to focus his/her attention on other thoughts, less attention is available for the pain.[5,6]

## DENTAL FEAR & ANXIETY

Dental fear usually refers to a normal unpleasant emotional reaction to specific threatening stimuli occurring in situations associated with dental treatment, while dental anxiety is an excessive and unreasonable negative emotional state experienced by certain patients.

People develop dental anxieties and phobias for reasons like pain, feelings of helplessness and loss of control, embarrassment, negative past experiences etc

Some of the signs of dental phobia among children include :

- Feeling tense or have trouble sleeping the night before a dental exam.
- Nervousousness while in the waiting room.
- Feeling like crying when you think of going to the dentist. The sight of dental instruments — or of white-coated personnel in the dentist's office — increases your anxiety.
- The thought of a dental visit makes the child feel physically ill.
- The child will panic or have trouble breathing when objects are placed in your mouth during a dental appointment.

## DISTRACTION AS A BEHAVIOUR MANAGEMENT TOOL

Distraction is a behaviour management strategy that comes naturally to parents in situations where behaviour might be a problem – for example, when children are getting cranky, when they've been sitting still for a long time, when sharing or taking turns with others is getting hard and so on. Pointing out something interesting, starting a simple game, pulling funny faces – you've probably come up with many tricks like these to distract your child.

Give your child something else to do like introducing a new activity, toy or game. Show the children a new thing that they can do with the toy. Change the scene. Position the children so they can see different things, or move a child to a new spot.

Distraction can even work for older children like changing the topic for conversation or introducing a simple game or activity. Suggest something else your child could do when you can see that things aren't going well. It's easy to suggest some screen time when you need a quick distraction. Child development experts recommend limiting children's daily screen time. This is because real-life interactions with you and others are much better for your child's wellbeing and development.[7]

## DISTRACTION TECHNIQUES

There are three key 'distraction' approaches:
-cognitive distraction
-behavioural distraction
-physiological distraction

Though techniques can overlap. Cognitive distracters can include reading aloud, humming, as well as voice mastery (e.g. replying to the voices, responding only to pleasant voices, or describing hallucinations aloud). Behavioural distracters are largely social, with the person making a conscious effort to interact with other people to change focus and remove attention from the voices. Physiological techniques can include relaxation strategies, doing exercise, using an earplug in the dominant ear, and playing music.[8]

**Table1: Age Appropriate Distraction techniques:[9,10]**

| AGE OF THE PATIENT | ITEMS AND TECHNIQUES |
|---|---|
| Neonates and infants up to age of 1 year | Mobiles, mirrors, pacifiers, rattles, blankets, soft toys, music, swaddling, presence of parents(s), skin-to-skin contact with mother, holding, and rocking |
| Toddlers ages 1 to 3 years | Pinwheels, bubbles, blocks, cloth books, plastic bowls and spoons, singing, and peek -a-boo games |

| | |
|---|---|
| Pre-schoolers ages 3 to 6 years | Puzzles, books, puppets, soft stuffed toys, stickers, dolls, action figures, trains, cars, trucks, and kaleidoscopes |
| School – age children ages 6 to 12 years | Soft stuffed toys, books, dolls, action figures, puppets, puzzles, colouring books and crayons, play dough, stickers, electronic devices, videos, music, singing, and counting |
| Adolescents ages 12 to 18 years | Video and computer games, music, pet therapy, board games and movies |

## NON-PHARMACOLOGICAL PAIN MANAGEMENT

**Biofeedback** is a painless, non-invasive technique that trains people to control body processes which normally occurs voluntarily such as blood pressure, heart rate, skin temperature or muscle tension. Through the electrodes attached to the skin, the processes are measured and displayed on a monitor. Biofeedback is used to relieve pain, increase relaxation and reduce effects of stress.[11]

**Hypnosis** is an artificial induced altered state of consciousness, characterized by heightened suggestibility and receptive to direction. This altered state of consciousness happening within a relaxed physical state allows a trance that is different from both the normal state of being awake and any stages associated with sleep. Through hypnosis technique, children can be helped focus their attention away from pain and towards an imagined experience they view as calming, fun or safe. ( Evans et al. 2008.)

The hypnotic process usually includes the following steps:

- assessment of hypnotic ability;
- induction of analgesia, dissociation from the environment, and development of individual pain management strategies;
- suggestion, imagery of a favourite safe place, and metaphors; and
- termination of hypnosis, psychodynamic reprocessing of emotional factors, and posthypnotic suggestions.

Paediatric hypnosis has been used not only for pain control, but also in treatment of many disorders, including anxiety, phobias, posttraumatic stress, sleep walking, behavioural disorders, conversion reactions, anorexia nervosa, enuresis, soiling, intractable cough, speech and voice problems, tics, learning disabilities, drug abuse, dermatologic problems, diabetes, and juvenile rheumatoid arthritis.[12]

Adverse effects are mostly short-term (fatigue, anxiety, confusion, fainting, dizziness, nausea), but can include such serious reactions as stupor, chronic psychological problems, spontaneous dissociative episodes, resurrection of memories of previous trauma, and seizures. Therefore, screening for vulnerable individuals is recommended before beginning treatment. [13]

**Relaxation** comprises of several techniques that promotes stress reduction, the elimination of the tension throughout of the body and peaceful and calm state of mind. In younger children, relaxation may consist of being held in a comfortable well-supported position and for older children, it involves actively teaching them to engage in progressive relaxation on muscles. A systematic review by Eccleston et al. (2012) found good evidence that relaxation is effective in reducing severity and frequency of recurrent abdominal pain, fibromyalgia and chronic headache in children. Cognitive Behaviour T is effective in altering mood and catastrophising outcomes and used to manage chronic pain. [14]

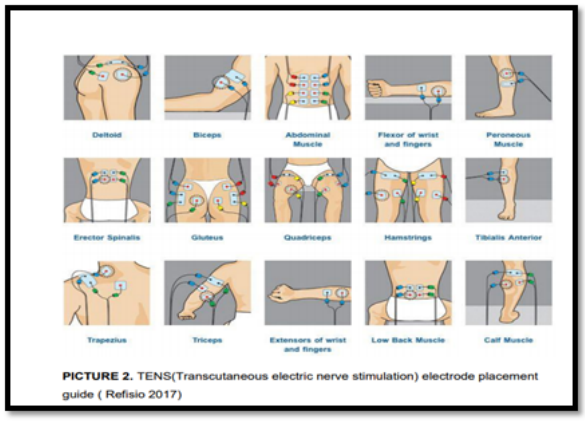
**Music Therapy** acts as a method of pain-relief in an active or passive form. In active music therapy, a music therapist is involved and music is used as a form of active communication while in passive music therapy, patients listens to music without the involvement of a music therapist. (Evans et al. 2008.) RCT conducyed by Kristjnsdttir (2011) with children aged 14 years undergoing a routine immunization put into three groups: musical distraction with headphones (n=38), musical distraction without headphones (n=41) and standard care (n=39). Results showed that adolescents receiving music therapy were less likely to report pain compared to the control group.[15]

**Preparation/education** involves providing information about the medical intervention as appropriate. Sensations, visuals and sounds that will occur during a procedure are explained in an age/developmentally appropriate manner. Information provision allows children to have a greater sense of control and to plan coping strategies.[16] Descriptive study with registered nurses (n=134) investigating nurse's use of non-pharmacological methods for children's postoperative pain relief was done. Fifty-four percent of nurses reported that they always or nearly always provided preparatory information to the children. The nurses also reported that they talked openly about fear and anxiety if they noticed that the child looked anxious or scared and this helped the child become more prepared to cope with pain.[17]

**Acupuncture** as a non-pharmacological pain relief is based on theory that energy flows through the body along channels known as meridians, which are connected by acupuncture points. The obstructed flow results in pain. The energy flow is restored by inserting needles at the acupuncture points along the obstructed meridians, which eliminates or reduces pain. A RCT to evaluate effectiveness of acupuncture to control pain and agitation after bilateral myringotomy tube placement in children (n=60) found that acupuncture provided significant benefit in pain and agitation reduction.[18] Another study by Gottschling et al.43 children with migraine or tension-type headache were randomized to low-level laser acupuncture(one treatment per week) or placebo in the control group. The intervention group had significantly fewer headaches per month, lower headache severity and fewer monthly hours of headache compared to the control group.[19]

**Massage therapy** involves manipulation of the body by combining tactile and kinaesthetic stimulation performed in purposeful sequential application [20]. Suresh et al. in 2008 examined the efficacy of massage therapy in children (n=57) presenting to a chronic pediatric pain clinic for pain management. After massage therapy, the children reported significant improvement in their level of distress, tension, pain, mood and discomfort compared with their pre-massage ratings.[21]

**Transcutaneous electric nerve stimulation** (TENS) is a method for stimulating nerves through electrodes applied to the skin. TENS is a noninvasive and safe pain-relieving method for partially or completely blocking the pain sensation based on gate control theory that decrease pain throughout nociceptive cell at presynaptic stage in the dorsal horn and restraining its essential communication.[22]




**PICTURE 2.** TENS(Transcutaneous electric nerve stimulation) electrode placement guide ( Refisio 2017)

**Figure 1: TENS electrode placement guide**

**Heat and cold therapies** involves applying topic sources of heat or cold to a painful area for pain relief or comfort. A literature review by Lane et al.(2009) found that heat and cold therapies provide an immediate relief and are useful in multi-modal treatment of pain in children. Heat and cold therapy should not be used on skin which has an absence of sensation caused by vascular disorders, burns, wounds, dermatological conditions, area treated with radiation or grafted tissue with epidural/local anesthesia, patients who are unable to move away from heat or cold sources or patients who are unable to communicate that heat or cold source has become uncomfortable .[23]

**Facilitated tucking** involves holding a child's body so that the limbs are in close proximity to the trunk. The child is held in a flexed, side-lying position using both touch and position. Kucukoglu et al conducted a study on children (n=30) to evaluate the pain perceptions of newborns during hepatitis B vaccinations performed in the facilitated tucking position and classical holding position, respectively. They found that the pain perceptions of the newborns held in facilitated tucking position were lower[24]. Another RCT by Liaw et al. with infants (n=34) was carried out to compare the effectiveness

of non-nutritive sucking (NNS) and facilitated tucking. Both interventions reduced pain scores more than routine care during heel-stick procedures. [25]

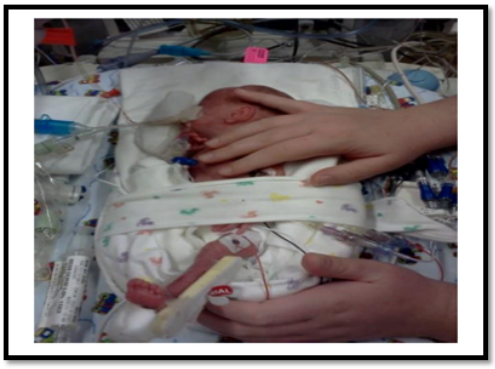


**Figure 2: Facilitated tucking**

**Kangaroo care (Skin-to-skin)** is a method of holding that involves skin-to-skin contact. The baby is held upright at a 40-60 degree angle and covered by the parent's blouse or shirt; a second covering maybe used to provide additional warmth.[26] Infants experienced better autonomic balance in response to kangaroo care than remaining in the incubator.[27]

**Swaddling** involves wrapping the child firmly in a cloth or blanket to make them feel secure (Srouji et al. 2010). Ho, Ho undertook a randomized control trial with premature neonates (n=54) between 30 to 36 weeks gestation age to investigate the effects of facilitated swaddling. Pain scores were significantly reduced in the intervention group compared to the control group. [28]

**Breast milk:** A systematic review by Harrison showed that breastfeeding may help reduce pain during vaccinations for infants beyond the neonatal period.[29]

**Non-nutritive sucking** (NNS) refers to using a dummy with an infant to promote sucking without breast or infant formula. Liu et al carried out a study to compare the efficacy of non-nutritive sucking and a glucose solution as a pain-relieving intervention for neonates undergoing veni-puncture. The non-nutritive and glucose groups had significantly lower pain scores than the control group during the procedure and the recovery phase.[30]

**Sucrose** as a method of pain relief intervention is thought to reduce the effect of pain by providing taste stimulation to the further membrane receptors in the brain, where the endogenous opioid system is located. A randomized control trial by Liu et al. (2010) was carried out to compare the efficacy of non-nutritive sucking and a glucose solution as a pain-relieving intervention for neonates undergoing venipuncture. The study suggested that nurses can provide 2ml of 25% glucose solution through a syringe for a breast feeding infant before an invasive procedure if nipple confusion is the concern.[31]

## CONCLUSION

The dentist should communicate with the patient and identify their source of fear and anxiety, with adjuvant use of self-reporting anxiety and fear scales to enable categorization as mild, moderate, or extreme anxiety or dental-phobic. All successful treatment will rest on dentist–patient cooperation, and thus a relaxed patient will obviously result in a less stressful atmosphere for the dental team and better treatment outcomes.

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