

BREATHING EXERCISES FOR BEHAVIOR GUIDANCE IN PEDIATRIC DENTISTRY

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NARRATIVE REVIEW

ABSTRACT

Breathing Exercises (BE) have gained significant attention as a non-pharmacological approach to managing various aspects of children's health, including anxiety, stress, and pain. This comprehensive review aims to provide an in-depth analysis of the effectiveness and applications of BE in pediatric populations.

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INTRODUCTION

Pediatric dentistry has made remarkable strides in creating a welcoming environment for young patients. One of the innovative approaches that has gained traction is the integration of breathing exercises (BE). These exercises not only help children manage their anxiety and fear during dental procedures but also contribute to overall oral health.

BEs are not just a tool; they are a bridge to transforming dental visits from daunting experiences into moments of empowerment and relaxation. In this article, we will explore the benefits of pediatric dentistry and delve into some effective techniques that can transform a dental visit into a more positive and calming experience.



UNDERSTANDING PEDIATRIC DENTAL ANXIETY AND FEAR

Dental fear can be defined as a response to any familiar unpleasant state, substantially involving a fight or flight reaction when confronted with an external dangerous stimulus.¹ Dental anxiety or phobia is characterized by marked anxiousness and apprehension during dental treatment. Dental fear and anxiety in children usually tend to decrease as the child grows older.² Cognitive behavioral methods such as active and passive distraction, relaxation strategies, and coping mechanisms are frequently reported to alleviate dental procedural pain and anxiety.³ The successful management of dental anxiety and fear in children involves considerable time, effort, and expertise. Distraction is a strategy that tends to reduce the child's attention from painful stimuli through the engagement of other senses. One such group of techniques is breathing exercises.

THE SCIENCE BEHIND BREATHING EXERCISES

BEs are rooted in the principles of mindfulness and controlled breathing. These exercises activate the body's parasympathetic nervous system, triggering a relaxation response.⁴

Relaxation BE is an active distraction that induces vagus nerve stimulation followed by cortisol reduction and secretion of antidepressant neurotransmitters like serotonin. These mechanisms alleviate the patient's anxiety and pain perception.⁵

Breathing techniques developed due to spiritual and religious beliefs. However, they have now found their way into healthcare therapies (e.g., progressive relaxation, biofeedback, autogenic training). These breathing techniques are referred to as paced breathing and are usually based on slowing down the breath frequency to induce relaxation and well-being. Fast breathing for a very long time has been often mutually linked to anxiety and stress.⁴

EFFECTIVE BREATHING TECHNIQUES FOR CHILDREN

Diaphragmatic breathing



A majority of fearful dental patients can benefit from this form of paced deep breathing. In the dental literature, the association between high levels of anxiety, and increased pain perception is well established; anxiety upregulates the sympathetic nervous system, which, in turn, decreases pain threshold. Diaphragmatic breathing reduces respiration frequency and at the same time maximizes the amount of blood gases through expansion of the belly, contraction of the diaphragm, and deepening inhalation and exhalation, reducing stress and anxious states (Figure 1). Some evidences indicate even a single breathing practice significantly reduces blood pressure and increases heart rate variability and oxygenation.⁶ The advantages of this technique include its low cost and the ease with which it can be taught to children through modeling and imitations.

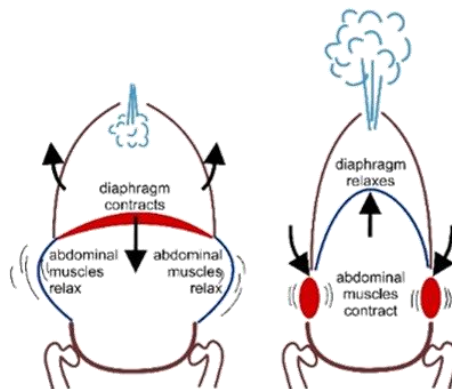


Figure 1 Diaphragmatic Breathing

BE using a bubble blower

In this technique, the child inhales deep breaths from the stomach and exhales very slowly. The child is advised to perform this exercise 4–5 times a day for one week at home before the dental visit. During a dental appointment, the same exercise is repeated during the administration of local anesthesia injection. It helps the child to gain control over his/her breath, subsequently promoting relaxation.⁷ Quick administration, cost-effectiveness, and simplicity are the pros of this technique.

BE using pinwheel

The pinwheel serves as a tool for opportunities. Almost every kid can remember watching the colors go round and round. The pinwheel toy emphasizes the long slow exhale, thus becoming

a light-hearted pinwheel breathing. It is a releasing breath focusing on synchronization that helps control the nervous system and relax anxiety. Pinwheel BE is also a highly successful “play therapy” method that is used by therapists to engage with intensely anxious kids.⁸

BENEFITS OF BREATHING EXERCISES IN PEDIATRIC DENTISTRY

BEs in pediatric dentistry can target every factor that is directed toward a successful treatment delivery. The neurological mechanisms involved help in the reduction of anxiety, which in turn improves patient cooperation as they start feeling comfortable in the dental environment. Comfort enhancement is also linked with a reduction in physiologic distress. Eventually, following a successful treatment delivery, the child departs from the dental clinic in a positive mood which instills a positive dental attitude.⁶

CONCLUSION

Overall, incorporating BE into pediatric dentistry can contribute to a more positive and comfortable dental experience for children. It can help reduce anxiety, improve cooperation, enhance comfort, and promote a positive mood during dental visits.

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