Scientific Article

Effect of Sensory Adaptation on Anxiety of Children With Developmental Disabilities: A New Approach

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Abstract: ***Purpose:*** *The aim of this study was to evaluate the effect of a sensory-adapted dental environment (SADE) on anxiety, relaxation, and cooperation of children with developmental disabilities (CDDs). Pharmacological treatment has been widely used to reduce anxiety, but nonpharmacological methods may be similarly effective. The standardized clinical situation chosen was a dental hygiene cleaning.* ***Methods:*** *A SADE was structured. Sixteen CDDs participated in an open cross-over intervention trial measuring behavioral and psychophysiological variables.* ***Results:*** *There was a substantial increase in relaxation and cooperation in the SADE as opposed to the regular dental environment (RDE). This was reflected by: mean duration of anxious behaviors (SADE=9.04 minutes vs RDE=23.44 minutes; P<.01); mean magnitude of anxious behaviors (SADE=8.49 vs RDE=15.50; P<.01); cooperation levels (SADE=3.31 vs RDE=1.94; P<.01); mean electrodermal activity (EDA; SADE=1,230 vs RDE=446; P<.001); and difference in degree of relaxation by EDA (SADE=2,014 vs RDE=763; P<.004).* ***Conclusions:*** *The findings indicate the potential importance of considering the sensory-adapted environment as a preferable dental environment for this population. (Pediatr Dent 2009;31:)* *Received February 8, 2008 | Last Revision May 1, 2008 | Revision Accepted May 3, 2008*

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Anxiety symptoms in persons with developmental delays (DD) has been consistently documented.[1] The limited communication skills and varying behavior patterns of people with DD make the treatment of anxiety a challenging task.

According to the Diagnostic and Statistical Manual of Mental Disorders, 4th edition (DSM-IV), DD has 3 essential features: (1) significantly subaverage general intellectual functioning; (2) significant deficits or impairments in adaptive functioning; and (3) onset before the age of 18.[2]

General intellectual functioning is defined as an intelligence quotient obtained by assessment with intelligence tests. There are 4 degrees of severity, reflecting the degree of intellectual impairment: (1) mild (50-55 to 65-70); (2) moderate (35-40 to 50-55); (3) severe (20-25 to 35-40); and (4) profound (<20-25).[2]

Sparse published scientific data exist on the subject of dental care in children with DD (CDDs).[3] Due to poor dental hygiene and an increased prevalence of gingivitis and caries, CDDs usually require more dental attention than the general population.[4] Periodic dental calculus removal is a normative recommendation in the maintenance of satisfactory dental health. The normally harsh sensory stimuli of light and sound particularly in the normal dental clinic may have the effect of arousing anxiety in CDDs. The combination of the dental clinic environment and the altered physiological predisposition of CDDs may make a dental visit stressful.

Earlier studies have shown that a controlled, multisensory environment (Snoezelen, Rompa, Chesterfield, UK) reduces maladaptive behaviors and stabilizes heart rate, and that adapted lighting reduces maladaptive behaviors and noise levels in a special needs' classroom.[5,6] Wigram and Dileo reported the use of low-frequency sinusoidal tones with relaxing music on reducing arousal and favorably influencing emotions.[7]

The aim of the present study was to evaluate the effect of sensory adaptation of an anxiety-provoking environment on participants' responses, based on the observation that the physical environment has a significant influence on the behavior of CDDs.[5,6] Specific objectives were to measure the effect of the sensory-adapted dental environment (SADE) on the number, duration, and magnitude of negative dental behaviors, on levels of dental cooperation, and on electrodermal activity during dental scaling and polishing, as compared with a regular dental environment (RDE).

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