

Short Communication

SADE: Designing a sensory symphony in dental clinics for special smiles

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Abstract

Dental anxiety is a serious obstacle in conventional oral healthcare delivery. Children with special health care needs, are at particular risk of oral health disparities.

The dental setting can be a source of anxiety and discomfort for many individuals. Creating a sensory-adapted dental environment (SADE) is a crucial aspect of enhancing the overall experience for individuals seeking dental care, especially those with sensory sensitivities and special health care needs. A literature review on sensory-adapted dental environments delves into the research and strategies employed to address this issue. It explores various studies, interventions, and innovations aimed at optimizing the dental experience for individuals with sensory challenges, such as those with autism spectrum disorders, sensory processing disorders, or other related conditions.

Keywords: Dental anxiety, Sensory adapted dental environment, Special healthcare needs

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1. Introduction

Approximately 650 million individuals around the globe are affected by disabilities, and this number continues to rise as the population grows. According to a 2006 report from the United Nations Development Programme, roughly 80% of these individuals reside in developing countries,¹ with India being particularly affected, especially among children vulnerable to developmental disabilities.² Intellectual disability, which involves significantly below-average intellectual functioning from early childhood, is common in this population.³ These children frequently struggle with poor oral hygiene, a key factor contributing to the high rates of periodontal disease in them.⁴

Despite of the advancements in awareness and treatment options, significant barriers still exist that prevent effective dental care for these individuals. One major challenge is the fear of dental procedures among children, which has been identified as a critical public health issue.⁵ Many patients view dental offices as unwelcoming, distressing places

characterized by loud noises, strong odours, bright lighting, invasive procedures, and the potential for pain.⁶ Due to these anxieties, pediatric dentists need a variety of techniques to manage children during dental visits. These techniques include the tell-show-do approach, use of language euphemisms, voice modulation, and distraction, alongside methods to control anxiety and fear, such as nitrous oxide sedation, passive restraint, premedication, general anesthesia, hypnosis, and behavioral management.⁷

2. Traditional Dental setup and Anxiety among Children

In a typical dental setting, children with disabilities are often highly sensitive to sensory stimuli such as the sound of high-speed dental instruments, overhead lighting, loud background noise, and the texture and taste of prophylaxis paste. According to Fallea et al. (2016), children with intellectual disabilities (ID) frequently exhibit atypical responses to these sensory inputs.⁸ This altered neurophysiological sensitivity in individuals with developmental disabilities can lead to

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behavioural challenges and reduced co-operation during dental appointments, making it more difficult for dentists to provide adequate care.⁹

Research has explored sensory-based approaches as innovative techniques to alleviate dental anxiety in children. These approaches aim to enhance sensory processing, support self-regulation, improve adaptive behaviours, and help children better manage their responses to external stimuli. One such approach is the sensory-adapted dental environment (SADE).¹⁰

3. Discussion

The Sensory-Adapted Dental Environment (SADE) is an developing restorative approach picking up acknowledgment among nonpharmacological strategies. This strategy utilizes a multisensory-stimulating environment, regularly made in a alleviating and pleasant space alluded to as a "Snoezelen room".¹¹

The Snoezelen environment comprises of a multisensory adjusted environment coupled with client-centred treatment. It has been proposed to make strides the quality of life of changed populaces enduring from uneasiness, torment, and distress, counting people with formative inability, Alzheimer's illness, or traumatic brain harm. These rooms are planned with delicate, slow-moving lights, calming sounds, and carefully controlled material sensations.¹²

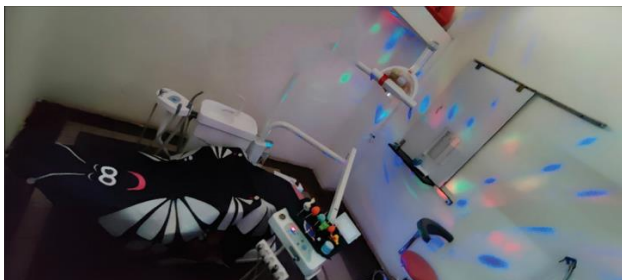


Figure 1: Representative photograph showing multisensory environment with coloured lights, butterfly wrap.

3.1. Visual sensation

The room is mostly diminished to decrease any troublesome visual jolts, as coordinate fluorescent lighting is known to be seriously and outwardly upsetting. To moderate this, the standard shining lighting in the dental chair is exchanged off and supplanted with soft-coloured, gradually moving lights, making a more relieving and controlled tactile environment.¹³

The standard overhead fluorescent lighting (50 Hz) can be evacuated, counting the regular dental overhead light. Instep, diminished upward intelligent fluorescent lighting was utilized, working at a higher recurrence (30–40,000 Hz). Furthermore, a Sun powered Projector (Rompa, Chesterfield, UK) was utilized to deliver slow-moving, tedious visual color impacts, which were anticipated onto off-white netting inside the child's field of vision. The dental practitioner can utilize a head-mounted Driven light (Dark Precious stone Zenix IQ;

Salt Lake City, CO, USA) that coordinates a narrow-spectrum bar into the patient's mouth.¹⁴

3.2. Camouflaging the instruments

The visual nearness of dental disobedient is concealed by covering them with colourful, child-friendly toys to offer assistance occupy the child and reduce uneasiness amid the procedure¹³.



Figure 2: Camouflaged armamentarium for sensory adapted dental environment

3.3. Auditory sensation

Previous reports archive the negative impacts of clamour, showing that higher commotion levels can raise blood weight, heart rate, and breath rates. To cover this moment tangible boost, which is the "commotion," delicate music is played in the foundation to divert children from the normal boisterous sounds created by dental gear, such as the airtor and suction.¹³

Rhythmic music can be played through amplifiers (Dan Gibson's Isolations: Investigating Nature with Music; Somerset Amusement, Essex, UK) at a volume of 75dB. And at the same time, somato - sensory incitement can be given by a bass vibrator (Atmosphere Bass Shaker, Show AST-1B, 4 Ohms; Unical Undertakings, Michigan, CA, USA), joined to the dental chair.¹⁴

3.4. Tactile sensation

The third sensation is profound weight, which is conveyed through the butterfly like body wrap. The wings of the butterfly wrap, wrap the child from shoulders to lower legs, giving a profound "hugging" weight expecting to make a calming impact. Past inquire about bolsters the utilize of weighted vests, which have a comparable impact to the butterfly wrap, for diminishing maladaptive practices and upgrading consideration in children with extraordinary needs. The butterfly wrap is utilized since it effectively slips over the dental chair, disposing of the require for the child to be strapped to a board, such as the papoose utilized in a few dental settings.¹³

In 2009, Shapiro et al.¹⁴ examined the impact of an adjusted dental environment on uneasiness in children with formative incapacities compared to their ordinarily creating peers. In both bunches, execution was more successful in the adjusted environment than in the regular setting; in expansion, the distinction between the two situations was more apparent in children with formative disabilities.

In a later orderly audit, Ismail et al. dissected four ponders evaluating the adequacy of SADE on children with extraordinary needs who gotten dental treatment. The considers analyzed appeared that children with uncommon needs treated in SADE make critical changes in terms of physiological changes, conduct, torment, and tactile inconvenience.¹¹



Figure 3: Representative photograph showing butterfly wrap being wrapped around child in sensory adapted dental environment

4. Conclusion

Evidence from recent studies suggests that adapting the visual, tactile, and auditory aspects of the dental environment, especially through a sensory-adapted approach, has modest positive effects on psychophysiological responses and helps reduce maladaptive behaviours linked to dental anxiety in individuals with special health care needs.

The application of an SADE has demonstrated an important potential effect on the relaxation of children during dental hygiene care. This promising approach demands further research for more complex dental treatments.

5. Source of Funding

None.

6. Conflict of Interest

None.

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