# MULTISENSORY ENVIRONMENT IN PEDIATRIC CLINICS

**Abstract**

Pediatric clinics play a crucial role in providing comprehensive healthcare for children. However, traditional clinical settings often lack engagement and may induce stress or anxiety in pediatric patients. Introducing multisensory environments (MSE) within these clinics presents an innovative approach to enhance the healthcare experience for children. Incorporating MSEs in pediatric clinics aims to create therapeutic atmospheres conducive to relaxation, distraction, and emotional regulation for young patients. The incorporation of multisensory environments in pediatric clinics represents a promising avenue for enhancing the overall healthcare experience for children, fostering a nurturing environment that prioritizes their emotional and psychological needs alongside medical treatment.

**Keywords:** Multisensory, Pediatric, Clinics.

**Author**

**Dr. Anshula Deshpande**
Professor
Department of Pediatric and Preventive Dentistry
K M Shah Dental College and Hospital
Sumandeep Vidyapeeth
Vadodara, India.
dranshula@gmail.com

**Dr. Sneha Dori**
Post Graduate Student
Department of Pediatric and Preventive Dentistry
K M Shah Dental College and Hospital
Sumandeep Vidyapeeth
Vadodara, India.
snehadori16@gmail.com

## I. INTRODUCTION

The term “Sensory Integrative Dysfunction” was coined in 1960s, by A. Jean Ayres (1969, 1971), since then occupational therapy professionals have researched and treated children's sensory integration (SI) issues. The term "Sensory Processing Disorder" was used to describe children who had trouble putting sensory information into order and using it to complete daily tasks but who did not have a medical history, an intellectual disability, or a history of environmental deprivation that could explain their behavioral, learning, or motor coordination difficulties (Ayres, 1972, 2005). Children with differences in sensory processing abilities (Dunn,1997) or children with sensory processing disorders (Miller, Anzalone, Lane, Cermak, & Osten, 2007) are two words that have been used to describe this demographic over the years. [1]

In 1975, The 'Multisensory' room was developed by “Verheul” at the Hartenburg Centre in the Netherlands.[2] Occupational therapists today frequently employ it when caring for older patients and those with learning difficulties and/or emotional disturbances in residential settings.[3] It is also occasionally referred to by the trademark names "Snoezelen" and "White Tower" which are held by the companies Rompa and TFH (Toys for the Handicapped), respectively.[4]

Since the 1990s, there are significantly increase in number of children with developmental disorders (DD). According to data from the Centers for Disease Control and Prevention (CDC), the number of children with developmental disabilities increased by 17.1% between 1997 and 2008. According to recent estimates, 15% of children aged 3 to 17 in the United States have one or more developmental problems. This equates to around one in six children.[5] Multiple obstacles have been identified, including the (1) residential effect, which encourages community-based living to improve quality of life for people with DD without making a parallel effort to assure that this vulnerable population has access to a comprehensive and consistent health care system,(2) a lack of qualified healthcare professionals who can accommodate the special health care needs of patients with DD; (3) challenging behaviour towards person with DD.

The field of healthcare has recently undergone an evolution that extends beyond conventional medical treatments and diagnostics. Paediatric clinics are adopting a pioneering concept of the sensory-adapted environment—in recognition of the varied needs of patients, particularly kids with sensory sensitivities. This innovative approach aims to provide a comfortable and supportive space for children who struggle with sensory processing, ensuring that their medical experiences are less distressing and more inclusive. This chapter delves into the significance of sensory-adapted environments in pediatric clinics, exploring its benefits and the key elements involved in its successful implementation.

Sensory sensitivities are often seen in children associated with condition such as Autism Spectrum Disorder (ASD) or Sensory Processing Disorder (SPD). These sensitivities can manifest as heightened responses to sensory stimuli, causing distress and anxiety in environments that are not tailored to their needs. Bright lights, loud noises, unfamiliar textures, and unpredictable surroundings can all contribute to overwhelming experiences for these children. As a result, their interactions with healthcare settings, such as pediatric clinics, can be particularly challenging.

 

## II. THE IMPORTANCE OF SENSORY-ADAPTED ENVIRONMENTS

A sensory-adapted environment in a pediatric clinic is a response to these challenges. It is a meticulously designed space that takes into account the diverse sensory needs of children. Such environments are advisable for several reasons:


1. **Reduced Stress and Anxiety:** Sensory sensitivities can lead to heightened stress and anxiety when individuals are exposed to overwhelming sensory stimuli. For children, especially those with sensory sensitivities, medical settings like pediatric clinics can be particularly distressing due to unfamiliar sounds, bright lights, and clinical equipment. Creating a sensory-adapted environment helps reduce these stressors, allowing individuals to feel more at ease and less anxious during their visits.

2. **Enhanced Comfort and Cooperation:** Sensory-adapted environments promote a sense of comfort and security, which can lead to increased cooperation during medical procedures. Children who are more comfortable in their surroundings are more likely to cooperate with medical staff, making examinations, tests, and treatments smoother and more efficient.

3. **Improved Focus and Communication:** Individuals with sensory sensitivities might struggle to focus or communicate effectively when their senses are overwhelmed. A sensory-adapted environment minimizes distractions, allowing patients to better focus on interactions with medical professionals. Clear communication becomes easier, enabling medical staff to gather accurate information and provide appropriate care.

4. **Positive Emotional Associations:** Sensory-adapted environments can foster positive emotional associations with medical settings. Traditional clinical environments can create negative associations due to discomfort or anxiety. By contrast, sensory-adapted spaces provide a more positive experience, helping patients associate medical visits with comfort and support.

5. **Empowerment and Self-Regulation:** Sensory-adapted environments often incorporate sensory tools such as fidget toys, weighted blankets, and textured surfaces. These tools empower individuals to self-regulate their sensory experiences, helping them manage anxiety and sensory overload. This empowerment can lead to increased confidence and a greater sense of control during medical visits.

6. **Increased Accessibility and Inclusion:** Sensory-adapted environments promote inclusivity by catering to a broader range of sensory needs. They create an environment where individuals with sensory sensitivities can access healthcare services without feeling excluded or marginalized.

7. **Enhanced Medical Outcomes:** A calm and cooperative patient is more likely to have accurate medical assessments and treatments. Sensory-adapted environments contribute to improved medical outcomes by ensuring that medical professionals can perform necessary procedures without unnecessary resistance.

8. **Support for Families and Caregivers:** Families and caregivers of individuals with sensory sensitivities also benefit from sensory-adapted environments. When the environment is calming and supportive, parents and caregivers can better focus on supporting their loved ones instead of managing their sensory distress.

9. **Promotion of Patient-Centered Care:** Sensory-adapted environments align with the principles of patient-centred care, where the patient's physical and emotional comfort is a priority. By acknowledging and addressing sensory sensitivities, healthcare providers demonstrate their commitment to understanding and accommodating each patient's unique needs.

10. **Broader Impact on Healthcare Practices:** The implementation of sensory-adapted environments encourages a shift towards more inclusive and patient-focused healthcare practices. This mindset can inspire medical professionals to consider other aspects of patient experience, potentially leading to improvements in various areas of healthcare delivery.

Creating effective sensory-adapted environments involves careful consideration of various key elements. These elements work together to provide a comfortable and supportive space for individuals with sensory sensitivities. Whether in pediatric clinics, schools, or other settings, these elements contribute to a holistic approach that enhances the overall experience for individuals with sensory processing difficulties. Here's a detailed explanation of the key elements of sensory-adapted environments:

 


- **Lighting:** Lighting plays a crucial role in sensory-adapted environments. Harsh fluorescent lights can be overwhelming for individuals with sensitivities. Soft, adjustable lighting is preferred. Natural light is ideal, and the option to dim or control lighting levels can help create a more soothing atmosphere. This reduces sensory overload and promotes a calming environment.

  - **Flexible Lighting Options:** Offer a variety of lighting options, such as warm and cool lighting, to accommodate individual preferences and sensory sensitivities.

  - **Natural Light:** Maximize natural light in the clinic space. Natural light can positively influence mood and create a welcoming atmosphere.

- **Sound:** Sound is another significant factor. Loud or sudden noises can be distressing. Incorporating sound-absorbing materials, white noise machines, or calming music can help reduce auditory stimuli and create a more serene atmosphere. Managing sound levels helps prevent sensory overload and anxiety. It has been proposed that listening to music has positive impacts on one's health through reducing stress. In a study by Cermak S et al.[6], the lowest cortisol concentrations were observed in the acoustic control condition (i.e., listening to rippling water). The researchers or the participants themselves can choose standardized musical stimuli. Independent of personal preferences, a musical stimulus that has already been found to be calming can be used

 

as a stress-relieving stimulus. In a study by Cermak S et al.[6], portable speakers were used to project rhythmic music by Dan Gibson's "Exploring Nature" music.[7] They came to the conclusion that use of auditory sensation create less anxiety and psychological stress in patient.

- **Color and Decor:** The term "Color Psychology" describes a variety of emotional, intellectual, and behavioral reactions and associations that are connected to a particular color. According to Logan-Clarke and Appleby[8], color therapy, or chroma-therapy, can be prescribed as a "holistic, non-invasive, and potent therapy." Blue is frequently used to represent calm, quiet, peaceful, safe, and well-ordered environments because it promotes sentiments of serenity and tranquillity Blue can make people feel melancholy or aloofness. Compared to indigo, it is less calming, therapeutic, and peaceful. Green is calming, relaxing, upbeat, and healthy. Green is considered to promote healing and stress reduction. Given that it represents harmony and balance, it could aid in stress relief. These color therapy ideas can be used to lessen anxiety-provoking environments in dental offices.[8]

  The choice of colours and decor can impact the sensory experience. Opt for calming, neutral colours for walls and decor. Avoid overly bright or visually overwhelming patterns that might be distracting or distressing. Subdued colours contribute to a more comfortable environment.

- **Aroma Therapy:** Aromatherapy is a quick-acting, safe, and effective method for treating a variety of pediatric diseases, and it can be a very useful tool in therapeutic settings. Aromatherapy has been proven to be a successful treatment for battling bacteria and viruses as it strengthens the immune system, in addition to its effects on the Central Nervous System, helping to balance emotions, behavior, and stress regulation. Aromatherapy is thought to have both psychological and physical effects. Olfactory nerve cells become activated when an aroma is present, which motivates the limbic system. Different neurotransmitters are released by nerve cells depending on the type of fragrance. Aromatherapy inhalation was found to be a successful strategy for reducing patient anxiety before the surgery in a study by Venkatramana M.[10] Based on the findings, the authors claim that it can be used as a creative and useful choice.

- **Texture Variety:** Providing seating and surfaces with different textures addresses tactile sensitivities or preferences. Some individuals may seek tactile input, while others may be sensitive to certain textures. Offering a range of options, such as soft cushions, bean bags, or textured fabrics, caters to diverse sensory needs.Integrate textured surfaces or wall coverings that children can touch and explore. Textured walls or panels can provide a tactile sensory experience.

- **Sensory Tools:** Sensory-friendly tools like fidget toys, weighted blankets, and tactile items can help individuals regulate their sensory experiences. These tools provide a means to manage sensory input and self-soothe, promoting a sense of control and comfort.
  - Weighted Blankets: These blankets provide deep pressure stimulation, which can have a calming effect on children with sensory sensitivities or anxiety.

 

- **Fidget Toys:** Fidget toys come in various shapes and textures and are designed to provide tactile input and help children focus or self-regulate.

- **Sensory Balls:** Textured or bumpy balls can offer tactile stimulation and help improve hand-eye coordination.

- **Sensory Brushes:** Soft brushes designed for sensory brushing techniques can help children with sensory sensitivities regulate their tactile sensations.

- **Gross Motor Equipment:** Swings, trampolines, and other gross motor equipment can provide proprioceptive and vestibular input, helping children develop body awareness and balance.

- **Scented Playdough or Putty:** Playdough infused with scents or textured putty can engage multiple senses, such as touch and smell.

- **Calming Areas:** A calming area, often referred to as a sensory or quiet space, can have significant positive effects on a special child, especially those with sensory processing disorders, autism spectrum disorder, ADHD, or other developmental challenges. These spaces are designed to provide a controlled and soothing environment where children can self-regulate and manage sensory overload or emotional distress.Designating quiet, cozy spaces where individuals can retreat to when overwhelmed is essential. These areas should be free from excessive sensory stimuli and offer a safe space to decompress and recharge.Calming areas provide a safe space for children to express and process their emotions. Engaging with calming sensory activities can help them manage their emotions and prevent emotional meltdowns and also helps to reduce distractions and create an environment where they can regain their focus and attention.

- **Visual Supports:** Visual supports aid in understanding the environment and routines. Picture schedules, social stories, and visual cues can help individuals anticipate what to expect, reducing anxiety related to the unknown.

  - **Soft and Soothing Colors:** Use calming colors like blues, greens, and soft pastels on the walls and decor. Avoid overly bright or intense colors that might be overwhelming.

  - **Visual Calming Elements:** Consider adding elements like water features, projected images, or bubble tubes that create soothing and mesmerizing visual effects.

  - **Themed Areas:** Design different areas with specific themes, such as nature, space, or underwater scenes, to provide visual variety and engage children's imaginations.

- **Flexible Waiting Areas:** Waiting areas with flexible seating arrangements cater to individual preferences. Different seating options, including private spaces, help

 

individuals choose the environment that aligns with their sensory needs at that moment.

- **Collaborative Approach:** Involving families, caregivers, and individuals themselves in the design process ensures that the environment meets individual needs. Understanding the unique sensory preferences and challenges of each person allows for customization and personalization.

  - **Team Collaboration**: Create a team consisting of parents, teachers, therapists (occupational, speech, physical, etc.), school counselors, and any other relevant professionals. Regular communication and collaboration among team members are crucial to ensure everyone is on the same page regarding the child's needs, progress, and strategies.

  - **Individualized Education Plan (IEP):** Develop an IEP for the child. An IEP is a personalized plan that outlines the child's strengths, weaknesses, goals, and strategies to support their learning and development. The IEP should be developed collectively by the team members and regularly reviewed and adjusted as needed.

  - **Flexible Strategies:** Be open to trying different strategies and approaches. Not every method works for every child, so being flexible and adaptable is important.

- **Staff Training:** Educating staff members about sensory sensitivities and their impact on individuals is essential. Sensory training helps staff provide empathetic care and create a supportive atmosphere, enhancing the overall experience.

By incorporating these key elements into sensory-adapted environments, whether in healthcare settings like pediatric clinics or other spaces, you create an inclusive, patient-centered atmosphere that respects and addresses the sensory needs of individuals. These elements contribute to a more comfortable, supportive, and calming experience, promoting positive interactions and outcomes for those with sensory sensitivities.

## III. CONCLUSION

The implementation of sensory-adapted environments in pediatric clinics marks a significant advancement in healthcare. By recognizing and addressing the sensory sensitivities of children, clinics are creating spaces that prioritize patient comfort, well-being, and cooperation. The benefits of such environments extend beyond immediate medical procedures, impacting long-term patient outcomes and overall quality of care. As healthcare continues to evolve, the integration of sensory adaptation serves as a testament to the industry's commitment to holistic and patient-centered approaches.

## REFERENCE

[1] Bodison SC, Parham LD. Specific sensory techniques and sensory environmental modifications for children and youth with sensory integration difficulties: A systematic review. The American Journal of Occupational Therapy. 2018 Jan 1;72(1):7201190040p1-1.
[2] Hulsegge J, Verheul A. snoezeten. Chesterfield: ROMPA, 1987.

 

[3] Willcocks 5. 5noezelen in elderly care (conference report). Br J OccupTher 1994; 57(6): 242.
[4] Thompson SB, Martin S. Making sense of multisensory rooms for people with learning disabilities. British Journal of Occupational Therapy. 1994 Sep;57(9):341-4.
[5] Boyle CA, Boulet S, Schieve LA, Cohen RA, Blumberg SJ, Yeargin-Allsopp M, … Kogan MD. Trends in the Prevalence of Developmental Disabilities in US Children, 1997–2008. Pediatrics.2011;127(6):1034-1042.
[6] Cermak SA, Stein Duker LI, Williams ME,Dawson ME, Lane CJ, Polido JC. Sensoryadapted dental environments to enhance oral carefor children with autism spectrum disorders: Arandomized controlled pilot study. J Autism DevDisord 2015;45:2876-288
[7] Gibson D.Solitudes: Exploring nature withmusic. [Internet] 2022 [cited 2022 June 10]. Availablefrom:http://www.allmusic.com/album/the-classics-2-exploring-nature-with-music-mw0000916892.
[8] Logan-Clarke V, Appleby J. What is colortherapy? Color Therapy Healing Workshops. UK:Bognor Regis; 2009
[9] Burnett KM, Solterbeck LA, StrappCM.Scent and mood state following an anxiety-provoking task. Psychol Rep 2004;95:707-722
[10] Venkataramana M, Pratap KV, Padma M,Kalyan S, Reddy AA, Sandhya P. Effect ofaromatherapy on dental patient anxiety: arandomized controlled trial. J Indian AssocPublicHealth Dent 2016;14:131-139

 