

**FUNDAMENTALS IN PEDIATRIC DENTAL CLINIC SET – UP;  
A COMPREHENSIVE REVIEW**

**ABSTRACT**

The behaviour management of the child patient includes many techniques and policies. It requires skills in communication, empathy, coaching and listening. Designing a paediatric dental clinic that accommodates these management strategies and techniques is a part of the “art” of behaviour management. The dental environment as such have an important role in physical, physiological and psychological health and nowadays it is becoming a topic of concern. Designing a dental clinic in yesteryear, evolved into an art form into which subjectivity, creativity, and esthetics were introduced. Along with all modifications in therapeutic and mechanical amenities, the importance of integrating nature into the dental environment to take advantage of its positive psychological impact is also discussed.

**INTRODUCTION**

While designing a paediatric dental clinic not only therapeutic and mechanical facilities should be modified accordingly , but also the architectural reflections as it have an impact on child psychology .<sup>1</sup> Evidence-based design is a theoretical concept in the creation of healing environments which has been used successfully in recent years while constructing hospitals especially for children.<sup>2</sup> Fear from dental environment enhances dental anxiety,

with prevalence of 4 to 43% in children of different population <sup>3</sup> and it is a common problem in children and adolescents worldwide. <sup>4</sup> Therefore every effort should be to design a child friendly environment.

Internal and external environment, even, attitude of staff members <sup>5</sup> have a role in providing patients a sense of relaxation and comfort. It could be achieved by proper application of sciences of light and shadows, rules of colours and laws of architecture finally resulting in a very special and relaxing adaptive space design.<sup>1, 6</sup> As access and utilization of oral health services by children is dependent on various factors related to the children, parents, and health facilities <sup>7</sup>, getting everything under a single roof is quite strenuous job.

Ever more dental technicalities are also evolving, such as electronic dental records, advances in digital imaging, tele-dentistry and many more.<sup>8</sup> So one should be aware of the trends of century while dealing with technical and architectural side of dental clinic working space.

Often children and adolescents are neglected in fields such as architectural and urban planning, although they are typically more sensitive to environmental aspects compared with adults. A child's interaction with the clinic environment and the health care providers can influence even their future health behaviours, as children do not like to visit a place where they have experienced discomfort previously.

## **HEALING ENVIRONMENT**

A healing environment can be defined as a holistic environment that distracting the patient from the anxiety and facilitates effective patient rehabilitation.

### **1. a. Concept of healing environment**

According to literature it also facilitate an easy patients recovery<sup>16</sup>. This in turn indirectly improve doctor-patient relationships in future, augmenting quality of healthcare provided.

A physical environment can be;

Indoor environment –Various literature suggest safety, lighting , sound , color, creative artworks , furnishing , and the general atmosphere as the essential factors to be considered.

Outdoor environments – According to Altimier an outdoor view, natural sunlight, neutral colors, therapeutic sounds in clinic, and also collaboration with family are curative.<sup>16</sup>

National Taiwan University Hospital in Taiwan, (estd.1895) and Sapienza university of rome<sup>17</sup> are good examples for healing environment for children.

### **1.b. Incorporating effects of healing environment in dental clinic set up**

#### **Reception**

When a child is introduced into a new environment, his or her mind will try to perceive it distinctively. And it is unique for each child. As child enter the first space, the reception, it should meet and greet his needs and expectations. The behavior management starts right here. In the initial dental visit, the child is unsure about what is going to happen. To alleviate his anxiety he should be provided with a warm welcome, jovial conversation and a bouncy atmosphere.

#### **Waiting and play area**

While designing a waiting area for children, one should keep in mind that, they usually do not sit in one place and cannot be idle for long time. So enough empty spaces to move around should be provided so that even waiting for long time is tolerable, at any chance.

According to Mitcherlikh, game can fosters talents, abilities, capabilities of children and strengthens their mind, body and soul.<sup>21</sup> According to Pakzad & Bozorg, play is the child's effort to cope with the environment, through which he finds himself and understands the world.<sup>2</sup> Spending the waiting time in playing smarter and cooler games will itself rise a happy mood before entering the operatory room. Literature reports that such children are more likely to be co-operative for the treatment as games can relieve the dental anxiety.<sup>1</sup> If the clinic has a great deal of space it can create an environment where children can get involved in multiple activities with peer group.

#### **Management room/health education room**

Every pediatric dental clinic should have a management room/health education room,<sup>18</sup> where proper instructions regarding preventive procedures are provided to the child and the parent. On entering the room, the child should not feel a quantum leap and should maintain the state of comfort. So, this area should be possibly away from all kind of stress. Slide, film strips, records, films, pamphlets, charts and models are useful for instilling a positive dental attitude.

#### **Examination room and treatment room**

In most clinics, examination room has been integrated into the treatment room due to lack of space. But for a pediatric dental clinic, the separation of such a room is essential, because direct entry of child to the treatment elevate their anxiety. This is the first place a child gets familiar with the dentist and the dental operatory environment. Every efforts should be taken to familiarize child to the setup, in accordance with his cognitive level. Arranging oral hygiene kits including baby doll toothbrush and children's toothpaste besides dental chair is

suggested. Even on the dental chair, installing devices such as kid's dental turbines, kid's hand pieces with a rubber tip on it, and small monitor's helps child to get acclimatized.

Special attention should be given in decoration and design of the treatment room. There must be a special creativity, that upon the arrival child should have a feeling that he has entered into a friendly and childish environment or imaginary space just as an extension of examination room. This explains the need of implementing child centric themes and decors.

In addition, the work area preferably should face the reception area, so that even while performing clinical duties, staff can have look at reception area for any patient needs and can greet patients immediately on their arrival.<sup>19</sup>

### **Radiography in children**

For an infant below 3 years of age, it is always recommended to use size 0 intraoral periapical films for the exposures. Extra oral radiographs like panoramic, lateral jaw or 45° projections are preferred for handicapped children, young patients or patient with a gag reflex. Management techniques such as desensitization, Tell, show and do technique, Lollipop radiograph, Reverse bitewing<sup>21</sup> can be used accordingly.

### **Additional considerations**

Nitrous oxide/oxygen inhalation sedation is the most commonly used behavior management technique in Pediatric dentistry. To ensure systematic & thorough preparation for every sedation, the AAP recommends following S O A P M E. (Suction, Oxygen, Airway, Pharmacy, Monitor, Equipment)<sup>23</sup>. The use of rubber dam improves the effect of the sedation and reduces atmospheric pollution .<sup>24</sup> Plumbing requirements should be adequate for ventilation and also the suction system so that it will not reenter the building.

Hartig et al. and Franz et al., considered that the positive effects of green spaces on mental health are countless both during treatment and healing post treatment<sup>20</sup>. Recent advances like

laser technology, have set the stage of revolution in pediatric dental practice to provide optimal, preventive, interceptive and restorative dental care in a stress free environment.<sup>22</sup> Design consideration should consider newer non-invasive techniques as well.

## **2. DENTAL CHAIR MODIFICATION IN PEDIATRIC CLINIC<sup>25</sup>**

Pediatric dental chair and patient positioning aids delivers more safety because of its compact size appropriate for a child. Small, thin and adjustable headrests allow enhanced accessibility to the child.<sup>25</sup>

A movable or adjustable spittoon should be available, so that patients don't have to stand or lean forward to reach. Proper positioning of the child patient, not only increase productivity but also have positive upshots for the operator's posture, comfort, and career longevity.

## **3. EFFECT OF SOUND, SMELL, TASTE AND COLOUR IN DENTAL CLINIC**

Sound proofing in the pediatric dental office is important, where periodic crying, unexpected yells, or screams are inevitable. The voice of the air-rotor hand piece, ultrasonic cleaner also cause objectionable anxiety in child. Light instrumental music can be used to mask these sound.

Different scents can evoke different feelings. For example, citrus smell is often associated with cleanliness .However, it is difficult to find one scent to please everyone.<sup>6</sup>

Children are very sensitive to taste. The sense of taste can be evoked by anything that is put in patients mouths ranging from the food and drink provided in the reception area to the

polishing paste and fluoride used in treatment. Care must be taken while spraying LA or while doing any restorations, as they can evoke a negative behavior at any point of time.

Goethe (1840) created a color wheel showing the psychological effect of each color. The use of warm colors like yellow and cool colors like blue in the operatory could create a positive dental attitude. Black and red colors are not suitable.<sup>26</sup>

#### **4. CONSIDERATIONS IN DENTAL CLINIC DESIGN FOR SPECIAL CHILDREN**

In a flawless design, efficient environment is a multiple interactive area between the constituent elements of a space, where the people of all kind can mingle without much hindrance.<sup>27</sup> As dental office is place of public accommodation. Failure to accommodate patients with SHCN could be considered discrimination and a violation of fundamental rights.<sup>29</sup> Therefore a pediatric dental clinic should be disable friendly.

Movable equipment should enhance the opportunity for the patient's wheelchair to be backed into the operatory. Dental chairs should be adjustable for height to match different wheelchair designs. The Diaco dental chair is an innovative product, which allows patients to stay in their wheelchair during their dental appointment.<sup>29</sup> Modalities for alternative behaviour management such as protective stabilisation (bean bag dental chair, Head stabilizer, forearm body support), conscious sedation, general anaesthesia should be considered.

#### **5. DENTAL ANXIETY MANAGEMENT AIDS IN PEDIATRIC CLINIC**

An understanding of the child psychology especially, the Classical conditioning theory, that, operates by the simple process of association of one stimulus with another.<sup>30</sup> Dental clinic atmosphere is presented with wider range of stimuli, including feelings, sounds, smells and tastes, all evoking distress.<sup>31</sup> Because of this association, behaviour management is easier if the dental office looks different from a regular hospital clinic as possible. It is helpful in reducing children's anxiety if the attire of dentist and staff is different from those associated

with the typical physician. Moreover, treatment that might produce pain should be avoided if at all possible on the first visit to the dental office.<sup>32</sup>

Dental clinic should have a full spectrum of techniques available to manage a child with anxiety such as tell-show-do, relaxation, distraction, systematic desensitization, modelling, audio analgesia, hypnosis, and behaviour rehearsal.<sup>33</sup> According to some studies white noise appears to directly suppress the pain caused by dental operation and also removes source of anxiety by masking the sound of the drilling machine.<sup>34</sup> Studies reported maximum clinical anxiety/fear reduction was found in audio-visual group followed by audio group. Therefore both audio-visual and audio distraction aids may be considered while designing a clinic as good alternative in managing anxious child.<sup>35</sup>

The Snoezelen environment can also be considered while designing a dental clinic. It consists of a multisensory adapted environment united with client-centred therapy, which help patient to get rid of anxiety, pain, and unrest, including individuals with developmental disability. Research documenting the outcome of the Snoezelen environment reports reduction of pain, behaviour facilitation, and even balance in heart rate.<sup>36</sup>

According to some studies maladaptive behaviours and noise levels in a classroom for special needs children, reduced when adapting overhead lighting. This can be tried in dental atmosphere as on distraction, the processing of pain signals is correspondingly reduced.<sup>37</sup>

## **6. PATIENT SAFETY**

Patient safety is the most essential component of quality oral health care for infants, children, adolescents and children with special health care needs. Therefore American Academy of Pediatric Dentistry (AAPD) recommend that the design features should be planned and evaluated periodically for patient safety. Especially, play structures, games, and toys should be assessed, which are some possible sources for accidents and infection.<sup>38</sup>



## CONCLUSION

Designing a child friendly dental clinic not only instils a positive dental attitude in child but also creates a great atmosphere for child, parent and clinician.

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