

Healing environment in pediatric dentistry: strategies adopted by “Sapienza” University of Rome

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Abstract

Children’s dental anxiety has been of great worry for many years and it is still a barrier for dental care. According to recent guidelines for oral health prevention in childhood, additional strategies for a preventive care should be applied for pediatric patients. So it’s important to encourage pediatric dentists to develop a “child-friendly” environment for treating children. Environmental elements that produce positive feelings can reduce anxiety. The analysis of environmental design and features applied in Pediatric Dentistry Unit, Department of Oral and Maxillo-facial sciences, Sapienza University of Rome, highlighted special attention to the aspects supporting sensory conditions (colors, light, spatial organization); reassurance strategies (decorations, dental team attire, drawings); anxiety control strategies (playing area, TV, comics, toys); behavioral management strategies (positive reinforcement, modeling); in-formation (brochures, posters).

Keywords: dental anxiety; dental environment; pediatric dentistry.

Introduction

Despite many advances in paediatric dentistry have been reached, the greatest challenge for any paediatric dentist is to remove the anxiety related to a dental visit and have a child patient to accept dental treatment easily. The child's dental anxiety has been of concern for many years and it is still a hurdle to dental care [1]. In fact, anxious children might miss or avoid the dental procedure as they misjudge it to be extremely painful which could lead to ill effects on their oral health. There are many factors that cause the dental anxiety in children.

They develop anxiety directly [by conditioning] or via indirect learning (by modeling or from information) [2]. The child's perception of the dental environment is also a significant factor causing the anxiety. In clinical practice only few children respond positively and cooperate for dental treatment, while most of them find it intolerable,

some may exhibit phobia to den-tal procedures. So it’s important to encourage pediatric dentists to develop a “child-friendly” environment for treating children.

Environmental elements that produce positive feelings can reduce anxiety. The concept of a healing environment, implies the creation of design solutions of hospital spaces, designed to meet the physical and psychosocial needs of all its occupants, with the specific aim to contribute positively to the clinical outcome. The environment must support the process of communication development and positive emotional reactions in order to improve the child's reactions and his perception of pain.

The Unit of Pediatric Dentistry, Oral and Maxillo-facial Department, “Sapienza” University of Rome, is equipped with ten dental chairs; nine ones are placed in an open space, following the psychological approach of emulation, where the presence of other children promotes a positive attitude and cooperation.

A dental unit is located in a separate area for special needs patients according to recent guidelines for oral health prevention in childhood [3]. The dental chairs have been provided with monitors and a wireless system allowing children to watch cartoons during the procedures, thus reducing anxiety and increasing their compliance [Fig.1-2].



Fig.1. The Pediatric Dentistry Unit, Oral and Maxillo-facial Department, "Sapienza" University of Rome, equipped with nine dental chairs in an open space, and one located in a separate area for special needs patients.



Fig.2. Dental chairs provided with monitors and a wireless system allowing children to watch cartoons during dental procedures.

This would also allow optimisation of visits schedule: in fact, a more comfortable environment that makes a child more collaborative, helps reducing time for treatment, and ultimately allows for a greater availability of staff and a higher number of patients treated. The space is designed for "four hands" treatment or "six hands" one, especially when therapy time should be quicker with little or uncooperative children. Also the environment has been prepared with boxes containing toys [Fig.3] for the application of behavioral management technique of positive reinforcement (the tangible reward, i.e. the gift, is useful with pre-school children, while for older children may be sufficient social reinforcement as appreciation) [4].

The first visits are made on a dedicated dental chair, easier to use for the absence of the operating block. It is separated from the other dental chairs in order to reduce the risk of unknown or alarming stimuli for children. In order to reduce any potential source of stress, it is generally used a plastic colored kit whose mirror is successively given to little patients, as a tangible reinforcement of their collaboration. In order to create a child-friendly environment, furniture surfaces, walls, and windows have been decorated with stickers depicting characters from the most known cartoons in order to find elements of daily life [5]. Concepts of 'clown doctors' have been observed to be effective in managing children's anxiety preoperatively [6]. In our Unit the intervention of entertainers clowns during all therapeutic procedures determines a shift of child's attention from the body to different external stimuli, such as soap bubbles [Fig.4].



Fig. 3. Boxes containing toys for the application of behavioral management technique of positive reinforcement.



Fig. 4. An entertainer clown standing at the chair during all therapeutic procedures.

This psychophysiological mechanism leads, consequently, to reduce or eliminate the physical perception of pain.

Environmental factors like colors, that impart a positive feeling in the child's mind help in reducing dental anxiety [7]. Dental setting plays an important role in child's behavior and cooperation to the planned dental treatment. Adding attractive colors to the dental environment and by incorporating colorful equipments can make the child feel good and be at ease [8]. Color has been studied from philosophical, biological, anthropological and psychological perspectives over the course of time [9]. A color wheel demonstrating the psychological impact of different colors was developed by Goethe in 1840 [10]. He observed that blue imparts a sense of coolness and yellow produces a warming feel.

Colors like black and red can be avoided. Children could link colors and emotions perceiving a color as positive or negative effect on their emotions [11]. Park et al. [12] conducted a study to investigate the value of color as a component of a healing environment for pediatric patient room. Color plays an imperative role in a child's life. In our Unit the floor is chromatically characterized from the combination hot-cold colors, using yellow, orange, blue and green tiles [Fig.5].



Fig.5. The floor chromatically characterized by the combination hot-cold colors, using yellow, orange, blue and green tiles.

Even the leather parts of the dental chairs are of different colored with pastel shades, in harmony with the colors introduced into the environment. In this way the dental chair assumes a role in the treatment setting, because it connotes the location. Overall the yellow-blue combination of the walls leads to the tranquility and optimism, as demonstrated by studies of various authors color [1,11-13]. About the importance of dental team attire there are different opinions. Some studies revealed no significant preference between young patients [14, 15], other research showed as a large number of children reacted unfavorably to the sight of a white coat [16].

Probably the difference is in the previous medical experiences of the child. If traumatized he can extend his fear even to dental environment, due to the common white uniform. In our pediatric dentistry unit, depending on their function, the dental staff wear white

or blue uniform with fabric strips decorated with small bears appearing also on the head-cap [Fig.6].



Fig.6 dental staff wearing blue uniform and head-cap decorated with small bears.

Minor changes made in the waiting room design can have a major effect on the way any child perceives the upcoming dental experience. Studies have shown that the quality of waiting environment influences the perception of quality of care, report positive interaction with staff, and reduce patient anxiety [17]. A majority of the children preferred walls with pictures or artworks compared to bare walls. Introducing distractions that children prefer in the dental waiting area, such as books, music, aquarium, TV, can help relax them and can reduce anxiety related to the upcoming dental visit [18].

In our Unit there is a Television that is a good way to distract children who are too young to read or where the waiting area is too small for playful activities [Fig.7].



Fig.7. The waiting room equipped with Television and different playful activities.

A majority of the children preferred to read books followed by drawings in the waiting area [18]. Charnock et al showed that books and magazines in waiting rooms can be contaminated with potentially pathogenic bacteria [19]. So dental teams should change books and magazines after regular intervals, to minimize chances of

contamination as well as to introduce recent material. A good way to educate parents and caregivers about oral health of children is the use of brochures or posters on the walls that are generally useful to increase information available to children and their families [20]. For this reason our Unit has information materials in the form of comics for children and brochures for parents in the waiting room and at the entrance [Fig.8].



Fig.8. The Unit equipped with information materials about oral hygiene in the form of comics for children and brochures for parents in the waiting room and at the entrance.

At the entrance of the unit it is also posted a bulletin board with drawings of the young patients; so the child accessing to the unit for the first time, may find that other children of same age or younger have successfully passed the same experience, as the drawings witness.

Once reassured by fears, the child can deal more calmly with the new environment and all dental team. Drawing is also a useful tool for understanding the way of living dental experience, and identifying issues linked to greater apprehension [19]. Drawing diminishes the anxiety state, functioning as a disruptive stimulus, and a significant motivational reinforcement. Playing and movement are basic needs of children. In front of the Unit a playing area for children has been equipped in the garden, including several plastic toys for children and wooden benches for parents, in order to allow children to get distracted during waiting time for treatment and to regenerate after treatment; to reassure parents not forced to entertain their children; to support the social interaction among children and parents; to replace the waiting room functions during warmer seasons. The games were selected for pre-school children because, they are subject to greater anxiety experience, and the most part of older children bring their own games such as video-games. The most of children prefer natural light in the waiting area. Benedetti et al. [21] suggested that artificial light, in the absence of natural light, can lead to fatigue, depression, and elevated systolic blood pressure.

Conversely, exposure to natural sunlight is associated with improvement in mood and sleep, as well as decreased use of pain medication and possibly even shorter lengths of hospital stay for some patients.

However a review of literature did not reveal any studies related to the effect of light on dental patients . Our Unit is very bright thanks to a system of mixed lighting through natural light entering by the different windows and artificial light produced by fluorescent-tube lamps crossing the ceiling. The fourteen windows interrupting the continuity of the walls have white aluminum frames, which does not border the light, and corrugated opaque glass, which have the dual function of diffusing light, reducing glaring, and ensuring the privacy of patients and operators. Light appears white, without appearing cold, just for the contribution of natural light filtered by the windows, the presence of white plastic panels covering the lamps, and the influence of the chromatic shades of the walls.

Conclusions

Healthcare facility management requires the optimisation of quality services offered [22].

The environment and the child's best compliance facilitate diagnostic and clinical procedures such as orthodontic, surgical and caries preventive ones [23-27].

The analysis of environmental design strategies and features applied in Pediatric Dentistry Unit, Department of Oral and Maxillo-facial sciences, Sapienza University of Rome, highlighted special attention to the aspects supporting:

- sensory conditions (colors, light, spatial organization);
- reassurance strategies (decorations, dental team attire, drawings);
- anxiety control strategies (playing area, TV, comics, toys);
- behavioral management strategies (positive reinforcement, modeling);
- information (brochures, posters).

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