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Alleviating Anxiety in Pediatrics Through Kid-friendly Themed Environments

ABSTRACT

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Focuses on techniques for alleviating medical based anxiety, fear, and phobias through positive interior support design and environmental distractions.

Reports of medical anxiety in up to 74% of children and adolescents imply that anxiety is a major concern in medical offices. Pediatric environmental theming vastly improves patient experience by relieving anxiety, fear, and phobias from a young age. It is also possible to have a significant positive impact on the duration of a patient's life, as well as future generations by halting the cycle of medical avoidance through office theming.

Highlights several support design techniques and delves into the reasons why theming in medical environments is so crucial to patient wellbeing.

Anxiety, Fear, and Phobias

Anxiety, by definition, is a "state of apprehension resulting from the anticipation of a threatening event or situation" (American Heritage Science Dictionary). Anxiety is differentiated from fear, as fear occurs in the presence of an observed threat, while anxiety requires no tangible manifestation. Anxiety may develop into a phobia; which is defined as a "persistent, abnormal, and irrational fear of a specific thing or situation that compels one to avoid it, despite the awareness and reassurance that it is not dangerous" (American Heritage Science Dictionary). The impact of environmental factors can be long lasting and affect subsequent adult perceptions of healthcare provision (Ekraet al 2012). Fear, anxiety, and phobias negatively affect patient care and can develop from an early age, and are corroborated the longer a child remains in the medical environment.

According to Bandura's theory of reciprocal determinism, interactions between our thoughts, the environment and our behavior constantly change the way we think and feel (Allen and Gordon 2011). By utilizing child-centered design thinking and implementation in the pediatric environment, medical practices are able to alter a child's state of mind to positively influence the long term health outcome. It is important to use the environment as a means of positively engaging and empowering people, as the traditional role of the hospital as the focal point of

healthcare delivery changes (European Healthcare Design 2015).

A comprehensive systematic review covering 20 studies undertaken by Norton-Westwood (2012) concluded that there is a clear relationship between the design of the healthcare environment and subsequent anxiety felt by patients, due to feelings that are generated by unknown faces, unfamiliar sounds, smells, and sights (Norton Westwood 2012). A cross-sectional study of 100 patients from the Pediatric Dentistry Clinic of the Federal University of Parana found that 74% of children and adolescents experienced some form of dental anxiety based on the responses that were measured with the Corah's Dental Anxiety Scale (DAS) and the Trait Anxiety Scale (TAS). This can be seen in figure 1 (Assunção et al., 31:175). Comparison studies such as the one carried out by Bedi, Sutcliffe, and Donnan; showed that the prevalence of severe dental anxiety in 6-7 year old children is higher than any other age group (Bedi, 2:17-24).

Anxiety Assessment	Children N (%)	Adolescent N (%)	Parent N=%
Trait Anxiety			
Low	8(11)	5(19)	28
Medium	54(74)	20(74)	56
High	11(15)	2(7)	16
Total	73(100)	27(100)	100
Dental Anxiety			
Not Anxious	6(8)	2(7)	20
Min Anxious	39(53)	15(56)	50
Med Anxious	26(36)	10(37)	26
High Anxious	2(3)	0(0)	4
Total	73(100)	27(100)	100

figure 1

Anxiety, fear, and phobias have been shown to persist into adulthood and can potentially lead to medical avoidance in patients. A study at Jimma University Specialized Hospital showed that children with anxiety were found to have avoidance of treatment (Bezabih et al., 115-21).

Avoidance is not strictly a childhood affliction. One study suggests that, in the US, more than 80% of the population fear treatment, and 20% avoid medical practitioners such as the dentist due to severe fear (Milgrom et al., 116: 641-7). When narrowed down specifically to adult patients, a study on the prevalence of medical fear and avoidance found that approximately 10% to 20% of the adult population in the western industrialized world report high medical anxiety; most also report this reaction as having developed in childhood (Gatchel, 118: 591-3).

Parents who experience anxiety are likely to pass on these traits to their children, regardless of if they intend to or not. A cross sectional study of patients at the Pediatric Dentistry Clinic of the Federal University of Panama found that anxiety scores were correlated among the adults and children, and associations were found between children's trait anxiety and trait anxiety of their parents (Losso et al., 175). It is exceptionally important to treat anxiety in the childhood stages of development not only for the sake of the child's mental health but for the healing process as well. Healing is a holistic process and a common effect of healing is a reduction in stress and anxiety,

both of which can be 'manipulated' by the environment (Norton – Westwood 2012). Adverse physiological responses to the environment lead to higher blood pressure, heart rate, and muscle tension (Kreitzer 2013a, Bird 2007), all of which impede the healing process; a key measureable of patient health in medical environments.

How Theming Alleviates Anxiety

So how does kid-centric theming alleviate childhood anxiety and promote long-term healing? According to NHS Estates (2004b) the design of the environment is a key element that contributes to children's 'understanding' of, and ability to 'navigate' within their surroundings, and a high quality environment can 'raise the morale of patients, their parents and families, but also the morale of staff who work in the hospital' (Alder Hey Children's NHS Foundation Trust 2012, p.20). The development of a child-centric environment can benefit from the values and opinions of children themselves; obtained through surveys or in-person interviews that help to guide the medical design process. For example, making environments 'less scary' and as a result more child-friendly, is cited as a priority by children when asked about their experience of healthcare (Patient Experience Network 2013).

Georgia Houston, a graduate of industrial design at the University of Calgary's Faculty of Environmental Design, completed a master's degree that focused on the significance of using design alternatives

to promote a positive medical experience, as well as improve long-term health. "Design won't eliminate procedures that are uncomfortable, but it can shape young patients' perception of an experience which is paramount," says Houston. "Through design we can help reduce anxiety before, during and after the visit, while increasing the child's sense of choice and control over the experience" (Obad).

Young people state the environment plays a crucial role in achieving a positive healthcare experience. For some young people, the environment is the most important factor when in hospital (Livesley and Long 2013). All children want child-friendly environments that promote and support their welfare (Ford 2011). Research shows that environments that demonstrate age appropriate design help children psychologically, impacting on children's physical health, emotional well-being and mental wellness (Norton-Westwood 2012). Engaging environments can also help to alleviate the perception of boredom (Lambert et al 2013, Gibson et al 2010, Said 2007) and children suggest that as they get older this becomes more significant in terms of their overall experience (Festini et al 2008).

The focus of many of these investigations and studies is what is known as 'supportive design'. The term supportive refers to "environmental characteristics that support or facilitate coping and restoration with respect to the stress that accompanies illness and hospitalization" (Ulrich).

An engaging environment with activities.

Supportive design can come in many forms. From the color of paint on the walls to the texture of the flooring, every small aspect of a design plays a role in impacting the psychological state of the patient. Supportive design has become a key feature in medical construction and renovation. Design elements and design principles provide identifiable features that can be manipulated to produce differing effects within the environment. These features are significant within the initial design of a facility or during refurbishment. However, for preexisting facilities, there are simple alterations that can be made to enhance the environment. These design elements and principals are utilized in medical office theming. Theming refers specifically to "the use of an overarching theme in order to create a holistic and integrated spatial organization of a consumer venue" (Lukas). A prime example of medical theming would be a ward designed to look like a playful jungle or a calming underwater scene.

Children state that they do not want a hospital to look like a hospital (Bishop 2012) and this becomes increasingly significant the longer the child has to stay (Bishop 2012). A full supportive design environment often includes illustrated wall murals, fully three-dimensional sculpted characters, and interactive elements that match the overarching concept. There is an increasing demand for creative solutions to positively impact the mental and physical well being of patients and staff in medical environments.

figure 2

The physical environment provides the first impression of a healthcare setting and has a significant impact on the patients' 'perception of care and overall experience (Kreitzer 2012). In his journal on the Effects of Healthcare Environmental Design on Medical Outcomes, Roger Ulrich discusses the notion that humans react positively and pay attention to the following types of features or environmental-social content: comedy or laughter, caring or smiling human faces, music, companion animals, and nature such as trees, flowers, and water. An example of this would be a jungle theme in which an illustrated wall mural is filled with friendly animals in humorous situations such as a giraffe stealing a tourist's camera while the background highlights rounded plants and rolling landscapes such as the office designed by Imagination Design Studios (figure 2).

Kennedy (2010) advocated the need for environments to be welcoming and the entrance to a healthcare facility can often set the scene for what is to follow (Lambert et al 2014).

Kid centric environment theming is also a key component of 'positive distractions'. Positive distractions refer to a "subset of environmental-social conditions marked by a capacity to improve mood and effectively promote restoration from stress" (Ulrich). Traditionally, positive distraction has come in the form of asking a child to imagine a positive situation in their mind, count ceiling tiles, or even calculate arithmetic in their heads. Though all of these tactics help

distract children to a degree, they only help if the child is able to concentrate, and they do not further support the environmental characteristics that make this form of design so successful. The display of visual art as a form of positive distraction is associated with shorter stays in hospital, increased pain tolerance, and a reduction in anxiety (Langston et al 2010).

Calming underwater murals.

Offering a tangible distraction can positively impact the medical experience, which is where medical theming plays a crucial role. Imagination Design Studios creates 'I Spy Murals' that encourage children to find characters and items throughout a large illustrated art piece. Giving a child a task such as searching through a wall mural to find hidden treasures can shift the focus away from the procedure at hand, while also supplying the aforementioned natural fauna and flora that human beings find comfort in. A large wall mural also provides positive distraction through bright colors

that can improve mood through colour theory. A study on the positive influence of art in hospital environments found that the majority of patients reported positive emotional reactions to art depicting natural environments having scattered trees and/or non-turbulent water features (Carpman et al.).

In his journal Stress Recovery during Exposure to Natural and Urban Environments, Ulrich notes that these particular nature scenes are quick to produce mood improvement and elicits beneficial physiological changes such as lower blood pressure and reduced heart rate (Ulrich, 201-230).

The therapeutic benefits of art have been linked with healthcare settings for centuries, going back as far as the Ancient Greeks who used statues and mosaics to aid the healing process (Paintings in Hospitals 2015b). A modern day example of kid centric environmental theming can be found at the Children's Hospital of Pittsburgh where they pioneered 'distraction rooms'. They included wall murals and characters to distract children from the action of taking a CT scan in order to lower fear and anxiety that caused many children to require sedation during treatment. The results of the distraction rooms led to a 97% reduction in sedation rates. After such an overwhelmingly positive change in patient mindset, the hospital has since constructed 28 more distraction rooms (Hilton). Offices that have created supportive design themes have found similar results.

Dr. Michael Lateiner's office.

Dr. Michael Lateiner explains that in creating a themed environment for pediatric children, both patients and their parents are immediately comfortable and put at ease; therefore reducing their anxiety and improving medical outcomes.

Dr. Djuana Cartillar, who wished to bring the feel of Disneyland to her patients, reported that they expanded their practice after seeing the joy that supportive design brought to young patients (Mitchell, 43-44).

Dr. Barbara Sheller, DDR, MDS, the Chief of Pediatric Dentistry at Seattle Children's Hospital explains that it is critical for a pediatric environment to provide warm, welcoming signals to reinforce patients and parents that they have come to the right place. The most important signals to soothe and satisfy social-emotional connections that influence childhood anxiety include: bright, upbeat colors, kid-targeted activities in the waiting room, and a sincerity of staff

Dr. Djuana Cartillar's office.

at the practice (Sheller). "Patient experience is a fundamental component of how we should think about the quality of healthcare" (Patient Experience Network 2013, p.7). A recent example which has been flagged up as 'existing best practice' is the new Children's Unit at Salisbury District Hospital (Patient Experience Network 2013). The design approach was inclusive, involving children, families, and staff, resulting in a high quality environment that reduces patient and parent anxiety and promotes healing (Patient Experience Network 2013).

CONCLUSION

In conclusion, anxiety, fear, and phobia have longstanding effects on children, however these negative experiences can be altered through supportive design, conscious choices in office décor, and positive distractions. These design considerations counteract anxiety on a broad scale to provide a positive experience through environmental theming.

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