

## Sensory stimuli that support a child's recovery in the therapeutic environment

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### *Abstract*

*Caring for and treating a child's health is an important need to achieve optimal health? It is a concept that reaches beyond mere recovery from illness. It's achieved by balancing the different aspects of the child, including physical, psychological, mental, and spiritual aspects.*

*A sick child needs therapeutic environments that provide medical care in a way that accelerates the recovery process. The therapeutic environment for the child prefers to be positive and conscious with its incentives that enhance the child's ability to receive treatment, reduce their fear and anxiety and distract them from the disease, which provokes positive feelings and helps them to recover quickly.*

*Here comes the great role that pediatric hospitals play through their design style, which addresses dimensions related to the concepts of therapeutic indoor spaces and their financial and psychological impact on the child and thus their impact on the healing process*

*Keywords: sensory stimuli, recovery, therapeutic environment, Interior Design - Fine Arts.*

### **Introduction**

Facilities specially designed and equipped for children's health care by a specialized team of doctors using specialized tools and devices called pediatric hospitals. In their spaces, they include activities that help to receive, inspect, diagnose and treat sick children in every way. Children's hospitals are setting up shelters to help them get back to normal health. And Florence Nightingale says (The therapeutic environment must not make patients worse off than they are) The therapeutic environment is part of society and similar to any other natural environment that helps and supports patients psychologically and physiologically, For the therapeutic process to proceed on its proper path toward the recovery of the child without any psychological damage affecting him in the future due to the

inadequate internal spaces of the space function and the nature of its users, it leads to a negative reaction in the child as a result of the development of this environment. The therapeutic environment must be a catalyst for recovery, hence the problem of seeking to answer the following question:

(What is the ability to use sensory stimuli in the pediatric hospital waiting area?)

Objective of the work

1-1 The importance and need of research

First: Research enriches the libraries of the Faculty of Fine Arts and its corresponding colleges with a scientific cognitive theme (sensory stimuli and their use in therapeutic inner spaces (

Secondly, the research presents theoretical data to enrich researchers in the field of sensory stimulation and its use in therapeutic spaces.

1-2 Research Objective

Reveal the condition of the internal waiting space in the pediatric hospital and its healing design style.

1-3 Search Limits

Objective Limit: Sensory stimuli that help the child recover in a therapeutic setting.

Spatial limit: indoor waiting space for pediatric hospitals in India for three cities (New Delhi, Hyderabad, Mumbai)

Time limit: Indoor waiting area for pediatric hospitals in India established in time (2012-2018)

1-4 Definition of terminology

First: Sensory stimuli are the effects that stimulate the recipient's five senses (hearing, sight, taste, and touch) in proportion to each purpose and effects of their own (Mason, Samar, Sahar, 2019, p. 911)

Procedural definition: A set of design vocabulary employed within waiting spaces for pediatric hospitals, serves as a catalytic environment that helps attract and increase the focus of the space user (child) and distract him from the disease to speed up his recovery process.

Second: Recovery: A state of hospitalization that includes the basic wellness concepts responsible for nutrition, fitness, health care, preventive care, emotional health, and other aspects of health. The most important thing is the individual as an integral being (Afaf Issa, Dr. T, p. 3)(Procedural definition: Feeling good at the physical and

psychological health level by creating the right environment by designing waiting spaces for pediatric hospitals according to a stimulating design that helps the child recover from health symptoms by taking into account the integrity of the three concepts (body, mind, spirit)(Third: Therapeutic Environment: Where Individuals Receive Some Care and Treatment to Help Them Return to their Normal State of Health (Ihtafa, 1993, p. 15)

Procedural definition: These are specialized indoor spaces offering a therapeutic function aimed at human health and providing physical and psychological comfort

### **Literature review**

Theoretical framework

The Indoor Environment Stimulating Recovery

The idea of designing a recovery-inducing interior environment demonstrates the evolution of interior design thinking to improve the quality of interior spaces to rich interior designs that give enrichment and depth in meaning and motivate the user (the child) to taste and enjoy various details by arranging their elements in a manner appropriate to their requirements and psychological needs (Sadad Hisham, 2020, p. 110), since the design concept that takes into account only the foundations and design criteria, has been transcended into a comprehensive and integrated concept that emphasizes interior design as an important component of the therapeutic environment, taking into account the psychological and cultural dimension, as well as the type and age of the patient (Malkin, 1992, p. 41).

The interior designer is keen to design the interior spaces of this therapeutic environment and organize their elements according to the transformation of intellectual insights into practical applications that create an emotional, spiritual interaction between the user (sick child) and the internal space to prepare an internal environment that meets the child's functional and aesthetic requirements (Salah, Sadad, 2022, p. 276)

The concept of a stimulating environment depends on the possibility of stimulating what is known as self-healing to reduce stress and psychological stress on the patient by treating him in a clean, homogeneous environment in which physical, psychological, and spiritual factors interact and provide an opportunity for psychological support that helps the patient to overcome his illness (Izzat Merghani, 2013, d. p)

The design process is currently subject to many variables that emphasize the existence of new concepts to design a catalytic environment that contributes to the treatment and enhances the patient's psychology and sense of security, through its functional and psychological role

Functional design :- Designing indoor spaces realized for their function as a stimulating health environment is one of the most difficult design processes that the designer is currently dealing with. The difficulty is to adapt the interior spaces to the accelerated development of diagnostic and treatment methods, which must be accompanied by a similar development in the planning, design and, management of healthy environment to be adapted to help the patient and motivate him to recover and meet his needs. (Al Awda Medal, 2016, p. 58). The medical environment as a design establishment is a specific building with a therapeutic function motivating its users with the multiplicity of indoor spaces and the diversity of activities within it. Yet in a health framework compatible with the function of the place and the provision of health services to its users. The design process for recovery-inducing environments are functionally integrated and consistent with the nature and needs of the place (Mohammed Khulusi, 1999, p. 7).

Psychological Design :- A design that stimulates a user's healthy behavior by attracting attention and creating a comfortable and motivated atmosphere that aims to reduce anxiety and distract from the pain and illnesses experienced by an individual and to promote positive psychological changes, with attention to a variety of psychosocial factors underlying the quality of the physical environment, which has a significant impact on therapeutic stages (dilani, 2009, p.56) When going to any therapeutic environment accompanied by feelings of fear, dread, many psychological stresses, confusion, mistrust and anxiety, This feeling not only exists in the patient, but in the patient's escort as well. Pediatric hospitals are important design spaces that require psychological consideration when designing them. Despite the sense of fear and fear in the patient is also the sanctuary and refuge in which he hopes to heal and welfare (Nobi Mohammed, 2013, d. p)

Therefore, the use of design requirements that give the patient a sense of security and comfort within the space comes through the use of several design methods that act as sensory stimuli for the sick child that help in his treatment and stimulate his recovery (Izzat Merghani, 2013, d. r), and this is which we are going to address in the second research of the theoretical framework.

## Sensory Perception of Stimuli in the Indoor Spaces of Pediatric Hospitals

### 2-1 perceptual

Cognition is a physiological and psychological response to a combination of sensory alerts, derived from the effects of the surrounding environment. An individual does not respond to the environment as it actually is, but as he perceives it, and as it seems to him, as it gives it meaning, value and significance (Rand Agha, 2010, p. 32) (The child's perception of and sense of internal space results from the full assimilation of the five senses combined or individually depending on the situation (Marwa Mohammed, 2019, p. 99), as well as the nature of the child's sensory system and how his sensory organs receive information in two ways:

1- Remote sensory organs associated with remote testing of objects, such as eye, ear and nose, include a sense of the basic and complementary design elements of colors and lighting as well as graffiti as well as aromas emanating from space indicating the nature of the activities practiced within space

2- Direct sensory organs that use direct testing around them, this is happens by touching any sensor through the skin, which can be felt through the diversity of the contacts employed from either different design elements or the variety of terminators (Referral, 1993, p. 7)

### 2-2 sensory stimuli and their role in designing pediatric hospital spaces supportive of recovery

Sensory stimuli within pediatric therapeutic spaces are essential for a child's recovery. A child is attracted to designs with variations, heterogeneity, surprise, or ambiguity. These triggers provide high sources of nervous system alerts for the child to explore to satisfy cognitive curiosity. (Alia, Sadad, 2020, p. 344) and the formation of positive feelings that create a good mood that is supportive and motivating to resist the disease and thus recover from it, Sensory stimuli are classified within recovery-inducing spaces into visual stimuli ", tactile stimuli, audio stimuli, olfactory stimuli, and the characteristics of staffed interior design elements such as color, light, termination materials ,texture, size, and shape, as well as interrelationships between them, the process of perception of these stimuli is carried out (Assam , 2017, p.19)

#### 2-2-1 Optical stimuli

A sense of sight is important in the realization of space as the first sense in which a child collects information on his environment. Visual perception is an important element of a child's mental development in their role of improving their ability to observe, Perceive, and

distinguish between their forms, sizes, colors, and names and recognize them in their surroundings. (Huda Kanawi, 1995, p. 252), and by analyzing optical sensor systems, some specifically identify and shape optical stimuli:

A. Lighting: the Light is a form of visual stimulation in pediatric hospitals and its different types and levels ensure arousal and motivation when taking charge of their best use in spaces. The lighting design of every space in children's hospitals is important to match the nature of the events that take place in the space. (Wadian Al-Khaldi, 2008, p. 70). Choosing the right lighting is not easy. First, you must know the work, the location, and the space to light in the spaces of the pediatric hospital. On this basis, the right kind of lighting is selected, and a suitable recruitment method is to provide comfort to the user. (The sick child) and meet his psychological and physiological needs and thus be an important supporter of the recovery process (Huda, Lubna, 2002, p. 88), as noted in the figure below.

Figure (2-1) shows waiting space in a children's hospital



Source: <http://destyy.com/efINIQ>

B. Color : Color is a powerful tool for addressing the sensory perceptions of the sick child, Particularly the visual stimulus, because of its impact on the psychology of the child and its close association with the physiological aspect The American Research Institute confirmed that there is a direct effect of color on the body's fabric, where electromagnetic energy stimulates the color of a specific gland in the brain that in turn regulates endocrine action and thus controls the core functions of the body and psychological responses, Each visible color has a special effect in stimulating certain sensory centers in the brain (Amani, Nihal, 2018, p. 151).

C. Furniture: It is an important ingredient in interior design and rich space. It is the intermediary between the interior space and its users. In children's therapeutic spaces, it is necessary to employ furniture suitable for the space function as a therapeutic space and in line with the nature of the events that practice its inclusion as a motivating event for the sick child on the speed of recovery (Nimir al-Bayati, 2005, p. 202), and the organization and employment of furniture for its usage or aesthetic decorative purposes is based on the location of the object and its importance within the spaces of the pediatric hospital, so that they have a close relationship with the psychological feeling derived from the instinct of the human psyche that serves utilitarian and usage functions (Rajah Saadi, 2011, p. 192), thus complementing its role with lighting and colors as a visual stimulus that pushes the sick child's behavior towards positivity and is supportive of it to complete its treatment and speed of recovery as shown in the figure below

Figure (2- 2) shows the use of furniture with colors in children's hospital spaces



Source: <http://destyy.com/efIN8p>

#### 2-2-2 tactile stimuli

The texture is the distinctive characteristic of surfaces, which is the feel and feel of appearance of the surface. Contacts and termination materials are closely linked to each other in the inner space and lead, on an equal and balanced basis with the rest of the elements, to a balanced relationship between the user and the inner space (Sadad Hisham, 2011, p. 586), when selecting a particular substance and employing it in pediatric hospitals necessarily means having a feel and distinguishing it from another substance and thus giving a different effect to the child, This makes it more difficult for a child's therapeutic spaces designer to choose the right finish material to communicate the desired psychological effect of the child positive impact if employed in

a well-thought-out design style and vice versa (redemption, Khulood, 2010, p. 77)

#### 2-2-3 Audio stimuli

The psychological sensation of humans in general and the sick child in the therapeutic environment, in particular, responds to the levels of sounds present in the environment that significantly affect his physiological response. Hearing noisy and unthinkable sounds classified as noise within spaces causes hormonal imbalances and increases anxiety, stress, and discomfort in a sick child. Unlike hearing joyous and calm voices that create a sense of pleasure and well-being in a child and reduce his fear and feeling isolated (Swathi, 2012, p.1076).

#### 2-2-4 of olfactory stimuli

The olfactory elements within the pediatric hospital spaces are important in addition, influential to the behavior of space users. The importance of this sense and its impact on individuals' recovery is through studies and research that have shown that olfactory messages reach the brain faster than audiovisual ones. And commended its positive role in stimulating the completion of treatment, Adorable aromas leave a beautiful effect on the same individuals and make them want to be in the same place and for many times (Wadian al-Khalidi, 2008, p. 67)

#### 2-2-5 Theoretical framework indicators

Based on the foregoing in the theoretical framework, a set of indicators was achieved as follows:

1. The design of a therapeutic environment that contributes to recovery and enhances the psychology and security of the sick child lies in the success of the design process and the integration and harmonization of its functional and psychological roles with the function of the internal space of pediatric hospitals and the nature of users.
2. The design of children's therapeutic interior spaces in a design style rich in various sensory stimuli (visual, tactile, auditory, olfactory) makes a profound impact on the sick child and confirms his response to the therapeutic process until the recovery phase.
3. The appropriate recruitment of visual cognitive design elements, including varied lighting levels with colors within the pediatric hospital spaces, ensures the success of the therapeutic process by meeting the patient's physiological and psychological needs.



### Procedures and Methodology

#### 3-1 Research curriculum


The research relied on the descriptive approach to model analysis to reach the research objective. The indicators derived from the theoretical framework were also adopted as the basis for the researcher's building of the analysis form as a research tool. This form included the following axes:



- 1- Interior design of waiting space in pediatric hospital as a recovery-inducing functional design
- 2- Sensory stimuli employed in the internal waiting space of the pediatric hospital

#### 3-2 Research Community and Its Appointment

The research community consists of three internal waiting spaces for pediatric hospitals in India and three cities. Due to the geographical distancing of the research community and the research community's keenness to show its specificity, the samples were selected according to the objective of the current research and achieve its objectives.

- 1- Difference in design style of selected internal waiting spaces
- 2- The fact that the samples of the research community have not been studied previously
- 3- The need to research and to meet the requirements of analysis and intentionally to highlight the design of the waiting space for pediatric hospitals and its design characteristics that serve the research requirements as shown in the table below.

Hospital Name	Location	Year of Foundation	Photo
Medicover	Hyderabad- india	2012	

Narayana SRCC	Mumbai-india	2015	
Madhukar Rainbow	New delhi -india	2018	

### 3-3 Search Tools

1. Tool construction: Preparation of the analysis axes form based on theoretical framework indicators, which included multiple axes with precise details that meet the research requirements and contribute to the achievement of its objective

2. Sources: Books, letters and dissertations as well as websites on the International Information Network

### 3-4 Sample Description and Analysis

#### Model 1: Internal waiting space for Medcover Pediatric Hospital

##### First: Description

The model is located in the city of HITEC in the State of India. The hospital was established in 2012 and is a leading healthcare facility specializing in neonatal medicine, pediatrics and pediatric surgery as well as subspecialties of obstetrics and gynecology.

##### Second: Analysis

1-Interior design of waiting space in pediatric hospital as a recovery-inducing functional design

The design of the waiting space in this model is characterized by poor functional performance that is commensurate with the nature of the user (sick child) and the nature of the activities within it as a motivational waiting space to attract the child and distract him from the disease.

2-Sensory stimuli staff in the internal waiting space of the pediatric hospital

The dearth of sensory stimuli in waiting space for this model has made it similar to any waiting space in any specialized hospital with the

exception of existing gaming units that are non-static but can be moved from one place to another, olfactory stimulus units with small plant pots and no flowers As for the optical stimulation modules of light with colors and furniture pieces, they were not stimulating and attractive to attention, The lighting was generally distributed throughout the space within a non-structural roof, as well as within the columns. The colors were simple, calm and non-striking, as were the furniture units for adults, and no furniture parts were observed within the child's body scale. In addition, the tactile stimuli were glazed and free of any protrusions.

Form (3-1) clarifies the internal waiting space at Medicover Hospital



Source: <http://destyy.com/efOPps>

Model II: Indoor waiting space at Narayana SRC Children's Hospital

First: Description

The hospital is headquartered in the city of Mumbai in the State of India, the hospital was established in 2015, characterized by providing quality and affordable child health care services to the general population, its primary value is represented by icare acronym, which includes innovation and efficiency, compassionate care, accountability, respect for all and excellence as a culture.

Second: Analysis

1- Interior design of waiting space in pediatric hospital as a recovery-inducing functional design

The interior designer in this model was able to offer a fairly functional design reading, being limited to the upper optical extension that gave an indication of the nature of the users of this internal environment,

so that the waiting space has an acceptable motivational performance for the user (sick child).

Sensory stimuli employed in the internal waiting space of the pediatric hospital

The sensory interaction between the user and the internal waiting environment of the Narayana Hospital observes its presence in the upper horizontal determination through its design according to the simulation method of nature as a body and colors, represented by the sky and stars, as well as the general lighting distributed among them, which together constitutes a sensory stimulation for the space user (The sick child) while sitting and attracting his eyesight towards the ceiling for being the second specific after the walls reaches the recipient's eye For furniture, no furniture has been observed for the children's category, There are also no natural olfactory stimuli of plants, although they are important in such spaces. In this environment, the terminations used are polished and do not contain attractive protrusions of the child, as illustrated in the photo below:

Form (3-2) clarifies waiting space at Narayana SRC Hospital



Source: <https://tinyurl.com/2gnpo69f>

Model III: Indoor waiting space for Madhukar RainbowChildren's Hospital

First: Description

Founded in 2018, Madhukar Rainbow Children's Hospital is accredited by the National Hospital Accreditation Board, awarded the best children's hospital in the country by Indian health care lombard.

## Second Analysis

### 1-Interior design of waiting space in pediatric hospital as a recovery-inducing functional design

The design process of this model is of outstanding functional performance and successful in defining the nature of the user of space and the nature of its effectiveness, as well as its motivational performance for the user (sick child) as an attractive and attention-grabbing element, which has demonstrated the interior designer's ability to create an aesthetic catalytic unit between the user and his surroundings within the resulting image in internal space.

Forms (3-3, 4) show waiting space at Madhukar Rainbow Children's Hospital



Source: <http://destyy.com/efAiCM>

### 2- sensory stimuli staff in the indoor waiting space of the pediatric hospital

The current model provided a design dialogue that reflected the interior designer's creative thought By employing powerful vocabulary that secures sensory connotations consistent with the design's primary purpose as a recovery-inducing interior environment, The waiting space of the third model is the most commonly used space for sensory stimuli consisting in the consistency of its optical stimuli, which include the exact use of lighting providing welcoming indoor spaces, Comfortable, attractive and nice atmosphere associated with improved mood and lift attention for the patient child, Also reduce stress, anxiety and fatigue, also the consistency of colors used in the waiting space and the use of children's drawings on walls in a distinctive way that harms the eye as well as the coordination and arrangement of furniture within the space allowing the child and the family to communicate with other families, There is also a

comprehensive quality in addressing the formal transformations of nature's topics as graffiti, but it is devoid of the quality of olfactory stimulation. s cartoons ", the tactile stimuli were expressed by the tailor with the sweetheart cartoon wall terminations.

### **Results:**

1. The achievement of recovery-inducing functionality at the internal design level of waiting space was found to be weak in the first and second models, while the functionality was successful in the third model.
2. Optical stimuli did not appear clearly in the first model of lighting, colors and furniture units, while optical stimulation of color and light was observed in the second model, and the third model realizes the presence of all the attractive optical stimuli of the child and its attention, to deliver a message with a distinct visual discourse that enhances the sense of the value of space and its importance in stimulating recovery.
3. The difference in contact is one of the tactile stimuli of a child who we have not seen in waiting spaces for the first and second models In the third model, its existence is achieved through the stereotyping of the graffiti employed on the walls, And its importance in exploiting the nature of the curiosity of the child to explore the space of the environment in which he is located away from the idea of fear and panic that accompanies him when mentioning the doctor and the hospital as well as reducing the burden on the parents.
4. Integrating indoor natural scenes such as green plants expressed by olfactory stimulation as natural organisms into the first model reduces the anxiety and fear of the child and leads to positive therapeutic outcomes for them, while not being achieved in waiting spaces for the second and third models.

### **Conclusion**

1. Designing the internal environment of children's hospitals according to the appropriate performance of the function of spaces and the nature of the user, has a positive catalytic effect on the completion of the treatment process to the speed of recovery.
2. Attention to the distribution of lighting and colors in accordance with the concept of visual stimulation of the child in waiting spaces has contributed to his acceptance of the therapeutic environment and his handling of all effects and translates them into sensory behaviour that helps him to forget his feelings.

3. The use of furniture with a thoughtful design appropriate to the nature of the child would affect the child's physical and psychological well-being and behaviour within the waiting spaces of the children's hospital.

4. Natural olfactory stimuli such as indoor green spaces of different shapes and colors play an essential role in any therapeutic environment to promote the physical and mental health of the sick child.

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