



Towards Enhanced Interior and Exterior Design of Children Hospitals in Egypt

Aya El-sayed ¹, Sherein El-Shahat ^{2*}

^{1,2} Department of Architecture Engineering, Nile Higher Institute for Engineering & Technology, Mansoura, Egypt

* sherein.shahat@nilehi.edu.eg

Abstract

The psychological and biological aspects that accompanied to the child development in his different age stages are mainly related to his spatial dimensions. This relationship could be translated to his architectural existence. Various sciences about the upbringing and growth of the child have developed, while architecture in that field has not been able to keep pace with this rapid development. Until now, when people look closely outside the buildings that have been created for young children, they just find a form and content of an ordinary architecture. It is differing from child architecture that should be sourcing from the Children world and becoming a part of him, while he explores the world and shapes himself. The problem facing children's hospitals in Egypt needs to an urgent improvement of their interior designs to be suitable for the personality and tendencies of the child and his perception. This greatly enhances the positive role of interior design, which reflects on raising the morale of the child, achieving comfort and stability during his treatment period, and increasing the chances of recovery and improvement. There is still a chance to reach the level of interior design in children's hospitals that is compatible with the human and psychological needs of the child. If the interior design of children's hospitals developed by the psychological and physical needs of the child, it will speed up its recovery and give him the feeling that he cures in a recreational center more than a health center.

Key words: Children's hospital, Enhanced interior design, enhanced exterior design.

1. Introduction

The child is the most asset of any society. He is its core, because it represents its future. There is a direct correlation between a country's progress and its ability to meet the basic needs of children, which providing them with care and accomplishments. In developed societies, children are the driving force of development. For instance, scientists in Russia have proclaimed that while their country no longer has emperors or tsars, the child remains the one who enjoys all privileges and appreciation. Failure to establish proper conditions for children or to provide them with basic needs could disrupt the societal system.

Therefore, it is important to address their health needs. Good health care has a positive impact on both the child and society and is a crucial component of wealth. Children's hospitals play a significant role in providing suitable environments that facilitate the healing process.

Symbols and signs (figure 4): To attract the attention of the child before entering the hospital, trees around the hospital were shaped like animals, and there is also a water fountain containing statues, which reduces the feeling of fear and intimidation of the place for the child.

Use of colors: Red appears in the chimneys, orange in the lower part of the facade, light colors in the rest of the facade, and green in the green areas surrounding the hospital as shown in the figure (5).

Diversity (texture): Sufficient windows have been provided on the architectural facade with sand-colored gypsum tiles, and warm-colored metal surfaces as shown in the figure (6).

3-1-2- The Entrance :

Reception counter: The entrance is located in the first-floor lobby, which has a circular reception counter with a stainless-steel finish that does not rust. In addition to the shiny plastic that appears in the form of a drum and the light colors in the space between orange and red in the entrance area as shown in the figure(7). The philosophy behind this place is that happy children could heal better and faster.

Gift shop and cafeteria: The first floor contains a gift shop and a colorful children's café, where many colors such as yellow, red, and blue are used in its design, which is appealing to the child. It can also be used for celebrations, and it is illuminated with dazzling neon lights as shown in the figure (8).

Atrium space: The entrance area contains an atrium space with suspended shapes to attract children's attention, and the rooms overlook it. In addition, there is a suspended bridge that passes through the atrium space to reach the hospital's spaces, to arouse the child's curiosity when passing through it shown in the figure (9).



Figure (4): The symbol and signs at St. Diego's Children's Hospital



Figure (5): The colors used in St. Diego's Children's Hospital.



Figure (6): The texture at St. Diego's Children's Hospital.



Figure (7): The reception counter at St. Diego's Children's Hospital.



Figure (8): The Gift shop and cafeteria at St. Diego's Children's Hospital



Figure (9): The Atrium space at St. Diego's Children's Hospital

3-1-3- Outpatient clinic:

Reception Counter: The first floor includes the outpatient clinics, and the reception counter that designed with children scale, featuring the child-friendly red and white colors and using multiple lighting units to grab the child's attention. Geometric shapes with orange colors were used on the floor leading to the examination rooms to create a welcoming atmosphere as shown in the figure (10).



Figure (10): The Reception Counter (Outpatient clinic) at St. Diego's Children's Hospital

Examination Rooms: Designed to be aesthetically pleasing and appealing to children. It encourages exploration and curiosity, removing the fear of examinations. The rooms give the child a sense of entering a forest full of trees, encouraging exploration and imagination as shown in the figure (11).



Figure (11): Examination Rooms at St. Diego's Children's Hospital.

3-1-4- Residence Rooms:

Interior design: It gives the impression of a family atmosphere in the house using light colors, and each door has a different color to facilitate recognition as shown in the figure (12). The oxygen supply areas and other services appear in the form of an ice cream cone.



Figure (12): Interior design (Residence Rooms) at St. Diego's Children's Hospital.

Play areas: The second floor includes open playgrounds that give children a place to play outdoor games.



Figure (13): Interior design (Play areas) at St. Diego's Children's Hospital.

The lamp lighting: provides a quiet moonlight for each floor in the ceiling, and these adjacent shapes help hide the building mass and ensure natural lighting throughout the place as shown in the figure (13).

The rooms: contain places for parents to rest and do their office work, as well as personal lockers and workbenches in stunning geometric shapes as shown in the figure (14).



Figure (14): Interior design (Waiting places for parents) at St. Diego's Children's Hospital.



3-2. St. Louis Children's Hospital

St. Louis Children's Hospital has been made as one of the best hospitals in the United States of America in the field of pediatrics. Through its institutions at the Washington University School of Medicine, it has met the needs of children and their families for over a century. The hospital, which includes more than 235 beds and more than 625 staff members in various medical fields including dentistry, provides a wide range of services in pediatric specialties. It attracts patients from all over the United States of America. Figures (15-16-17) illustrate the general location of the hospital and its horizontal sections.

Analysis of the St. Louis Children's Hospital

3-2-1. General Facade Formation:

Masses: The hospital's exterior appears in simple shapes with different heights, and there is no shaping that draws the child's attention to the building as shown in figure (18).

Symbols and signs: The hospital's design resembles public hospitals that focus more on functional aspects than aesthetic ones.

Use of colors: The hospital's facade appears in only one color, which is light beige, and there is no diversity in the use of colors.

Diversity (texture): Adequate windows have been provided on the architectural facade, and the rest of the facade has the same color.

3-2-2. Entrance:

Reception counter: It takes a circular shape with a height that is proportional to the child. There is an overlap between shades of blue in its shaping and between light colors in the floor of the corridor around it as shown in the figure (19).



Figure (15): The layout of St. Louis Children's Hospital.



Figure (16): The horizontal section of the first floor of St. Louis Children's Hospital.



Figure (17): The horizontal section of the second floor of St. Louis Children's Hospital.



Figure (18): General facade formation of St. Louis Children's Hospital.



Figure (19): Entrance (reception counter) of St. Louis children's Hospital.

Atrium space: It achieves many elements, as it contains a large and suspended balloon to attract the child's attention, as well as, plants and fountains that create a comfortable atmosphere and a beautiful view. Additionally, the atrium space contains a cafeteria located at the heart of the atrium. At night, the colored lighting adds beauty to the atrium space, giving the child a feeling of being in an entertainment center rather than a health center as shown in the figure (20).

3-2-3. Outpatient clinic

Reception counter: The first floor houses the external clinics, and the reception counter, which appears curved and overlapped between blue and light brown colors. The same overlap appears in the surrounding floor. As for the ceiling, it contains curved formations of blue color, which draws attention and arouses curiosity to explore the place as shown in the figure (21).

Examination rooms: They appear aesthetically pleasing and proportional to the child's size, which arouses his desire to explore, draw his attention, and remove his fear (as children's drawings appear on the entire walls). In addition to, the use of three-dimensional cartoon characters, which distracts the child to do not feel pain as shown in the figure (22).

Waiting areas: The same design idea is followed in terms of geometric shapes in the floors. Also it used geometric shapes suspended from the ceiling that attract the child's attention, and the diversity of the hanging lighting with cone shapes. As for the furniture used, it gives a sense of home and warmth as shown in the figure (23).



Figure (20): Atrium space of St. Louis Children's Hospital.



Figure (21): Reception counter (Outpatient clinic) of St. Louis Children's Hospital.



Figure (22): Examination rooms of St. Louis Children's Hospital.



Figure (23): Waiting areas of St. Louis Children's Hospital.

3-2-4. Residence Rooms

Nursing station: The upper floors include patient bedrooms divided into groups, each group belonging to a nursing station, which takes a circular geometric shape. Geometric shapes and curtains are used on the walls, besides suspended lighting, as shown in the figure (24).

Interior design: It gives an impression of a family atmosphere using light colors inside the room. There is also another design for the attached areas within the patient rooms, which contain colorful chairs that are appealing to children, and under these chairs are boxes for toys. Geometric shapes are used in the columns and hanging drawings on the entire wall. The hanging lighting takes a conical shape as shown in figure (25, 26).

The rooms contain places for parents to rest and do their office work, as well as personal lockers and workbenches in stunning geometric shapes.

Waiting areas: for children's chairs around patient rooms give a sense of home and contain special dolls for children to play with as shown in figure (27).

Corridor in front of rooms: It is characterized by the multiplicity of used normal and colored lighting in cheerful light colors (yellow, blue, orange), in addition to the circular shaping in the hollow ceiling, which is equipped with the same lighting units as shown in figure (28).



Figure (24): Nursing station (Residence Rooms) of St. Louis Children's Hospital.



Figure (25): Interior design (Residence Rooms) of St. Louis Children's Hospital.



Figure (26): Play areas (Residence Rooms) of St. Louis Children's Hospital.



Figure (27): Waiting areas (Residence Rooms) of St. Louis Children's Hospital.



Figure (28): Corridor in front of rooms of St. Louis Children's Hospital.



3-3. Children's Cancer Hospital in Egypt

Location: The new location of the hospital is considered an outstanding location in terms of its proximity to various means of transportation, as most patients come from outside Cairo and the suburbs. Also, the hospital's location is considered close to other hospitals that are related to the type of treatment provided, such as Abu El Reesh Children's Hospital and the National Cancer Institute. Additionally, since it will be a teaching hospital, its location must be close to Cairo University.

-The hospital is built on 20,000 square meters of land, consisting of a 7-story building on an area of 10,000 square meters, with the remaining 10,000 square meters forming the natural view of trees that the patient can see both inside and outside the building, giving them hope and optimism.

-The hospital's design is not just aesthetic, as some may think, but it follows the latest medical architectural systems in the world, called "building for function" which means that the building's design helps facilitate the work of doctors, nurses, and improve their performance to provide the best possible service to the patient and rapid access to him anywhere in the hospital.

-Sandstone was used on the hospital's facade instead of marble, and Figures (29-30-31) illustrate the horizontal sections of the hospital.



Figure (29): The horizontal projection of the ground floor of the Children's Cancer Hospital in Egypt

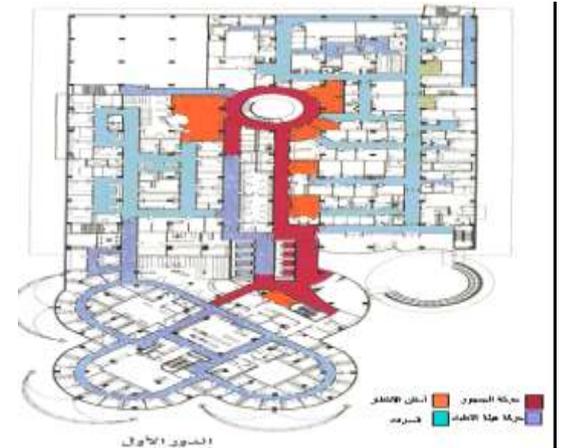


Figure (30): Horizontal view of the first floor of the Children's Cancer Hospital in Egypt



Figure (31) Horizontal view of the sixth floor of the Children's Cancer Hospital in Egypt

3-3-1. General Facade Formation:

Masses: The outer shape of the hospital appears as a sailboat of hope, and there is an overlap between the circular, cylindrical, and rectangular blocks of the hospital as shown in figure (32).

Symbols and signs: The building is designed to attract the attention of the child before entering the hospital by using different lighting for the block that attracts the child's attention, reducing the feeling of fear and terror in the child as shown in figure (33).

Use of colors: The hospital's facade appears in only one color, which is light beige, and there is no diversity in the use of colors as shown in figure (34).



Figure (34): The color used of the Children's Cancer Hospital in Egypt

Diversity (texture): Sandstone was used on the facade of the hospital and glass in the external building as shown in figure (35).

3-3-2. Entrance:

Reception counter: The entrance is in the glass sphere, which contains the circular reception desk with stainless steel finishes that do not rust, and around it is a circular formation on the floor with multiple colors as shown in the figure (36).

Atrium space: It contains the circular reception counter made of shiny steel, as well as the multiple uses of colored glass that catches the child's attention and attracts them as shown in the figure (37).



Figure (32): Masses of the Children's Cancer Hospital in Egypt



Figure (33): Symbols and signs of the Children's Cancer Hospital in Egypt



Figure (35): Texture of the Children's Cancer Hospital in Egypt



Figure (36): Reception counter of the Children's Cancer Hospital in Egypt



Figure (37): Atrium space of the Children's Cancer Hospital in Egypt

3-3-3. Outpatient clinic

Reception counter: The first floor includes outpatient clinics, and the reception counter is designed to be child-friendly with a circular steel shape surrounded by floors of various geometric shapes and colors. The ceiling features circular formations that are all tailored to the child's imagination as shown in the figure (38).

Examination rooms: They contain multiple specialized clinics such as pain treatment, dental care, heart disease, and eczema. The examination rooms have a regular appearance similar to those of public hospital examination rooms, without any special touches or effects to avoid distracting the child. Each outpatient clinic has its own color and the signals used have beloved colors for the child (yellow-green-red-orange) as shown in the figure (39).

Waiting areas: They take on a circular shape that is tailored to the child's scale and contains reflective glass windows. There is also a play corner for the child to play until it is their turn as shown in the figure (40).

3-3-4. Patient Rooms:

Nursing station: It takes on a circular shape and is in the center of the patient rooms for easy observation. The same colorful circular formation appears in the surrounding floor of the nursing station as shown in figure (41).

Interior design: It came to be a friend of the child and for his psychological comfort. The patient units were designed in a circular shape, as it was proven to be the most effective way to observe patients. Several points were considered in the design:

- The paint colors were chosen to inspire hope and a sense of optimism and to lift the morale.



Figure (38): Reception counter (of the Children's Cancer Hospital in Egypt)



Figure (39): Examination rooms of the Children's Cancer Hospital in Egypt



Figure (40): Waiting areas of the Children's Cancer Hospital in Egypt



Figure (41): Nursing station (Patient Rooms) of the Children's Cancer Hospital in Egypt



- The colors of each floor were designed so that each person, even those who are illiterate, could know the direction they want to go as shown in the figure (42).

- The patient rooms were designed to be effective in observation and identifying infections, with each room having one or two beds to fight infection.

Play areas: Each corner of the hospital contains play areas. The floors were designed with terrazzo, which is characterized by no joints to prevent the accumulation of dust and germs, and ease of cleaning. They also feature color blends and aesthetic formations as shown in the figure (43). The bathrooms were designed to fit the child's scale, and the walls were painted yellow as a cheerful color for children.



Figure (42): Colors in the Children's Cancer Hospital in Egypt



Figure (43): Play area of the Children's Cancer Hospital in Egypt



4. Results (table 1)

Table (1): Results of the analytical study of global and local experiments.

criteria	1- Children's Hospital San Diego.	2- St. Louis Children's Hospital.	3- Children's cancer hospital in Egypt.
The exterior design	The hospital is characterized by its buildings that attract the attention of the child and raise their awareness and encourage them to explore and design in a homogeneous way that achieves harmony and balance.	The hospital resembles general hospitals in the design of the exterior form, which is more concerned with the functional aspect than the aesthetic aspect. It appears in simple shapes and different heights, also there is no shaping that attracts the child's attention to the building.	The successful local experience puts the child in focus, which is evident in both the exterior and interior design of the hospital. The exterior design is characterized by grabbing the child's attention and awareness & encouraging exploration
interior design	There are many elements in the environment surrounding the child inside the hospital that are suitable for the child in terms of (child's scale, child-friendly colors, safety elements, attraction elements for the child, walls and ceilings to suit the child).	The interior design provides many elements that achieve the goals of the study in terms of (child's scale, child-friendly colors, safety elements, attraction elements for the child, walls and ceilings to suit the child)	The interior design includes many study elements that are suitable for the child, appearing simply, not prominently, especially in the examination and accommodation rooms compared to the St. Jude Children's Hospital. However, it is considered an effective and positive experience compared to other hospitals in Egypt.
Analytical Results	Therefore, this hospital is a successful example that achieves the goals of the study, where the philosophy on which the place is to make happy children and heal better and faster.	Therefore, this hospital is a successful example of its interior design. As for the external shaping of the facades, it does not achieve the goals of the study due to a large extent, and the children's hospital in St. Louis is classified as one of the best hospitals in the United States of America in the field of pediatrics.	It is considered an effective positive experience compared to other hospitals in Egypt.



5. Conclusion

The design of internal hospitals is an important factor in improving child health care. It is important that hospitals should be designed to meet the psychological and physical needs of children, to do their roles in developing children by medical publicity, and to provide elements of surprise and pleasure. The pleasure will not take the place of parents, but making painful steps of treatment is fun by those who can help them to alleviate anxiety and to create a more supportive environment for recovery. It is found from the study to provide this environment, the design of children's hospitals should have two main sections to be considered in such hospitals:

- The psychological aspects of treatment achieved by giving the sick child a sense of warmth inside the building, as well as, warmth in the surrounding environment in a safe manner and without restrictions on his movement and freedom.
- The design aspects should consider the child standard, the use of his beloved colors, and the provision of special areas to play with. Also to ensure that there are attractive elements for the child that draw his attention and remove a sense of boredom while waiting to enter the screening room.

6. Recommendations

Some recommendations should be considered that can help in developing the interior design of children's hospitals to meet the psychological needs of the child and help in their speedy recovery:

- 1- Adopting the recommendations of the International Union of Architects to develop the interior design of children's hospitals and to develop the design based on children's hospital standards.
- 2- Interest in the study of child architecture in colleges & architectural institutes, and providing university libraries with modern references on child architecture to activate the principle of obstacle-free design.
- 3- Guiding the architect to the importance of his role, which is not a low important person than the treating physician for this category.
- 4- Developing the interior design of hospitals to be suitable for the child as a user that meet his psychological and aesthetic needs, so it give him a sense of being in a more recreational than healthy center.
- 5- Paying attention to the psychological and aesthetic needs of the child in the external design of children's hospitals.



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