



# RETHINKING

## New Spaces For Pediatric Oncology Units In Istanbul

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# **Rethinking New Spaces for Pediatric Oncology Units in Istanbul**

## **Final Thesis**

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Master in Architecture Construction City

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*To all the little angels who lost their battle  
against cancer, who fights bravely with it,  
and to their loving and supportive parents...*

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**ABSTRACT**



Healthcare designs have given priority to important terms for the physical health of patients such as functionality, hygiene, and efficiency since the past. Although “human-centered” designs which give importance also to the emotional and mental health of the patient, this important topic have been left in the background, even though they have started nowadays to gain more importance.

This thesis tries to re-think the healing spaces to make architecture become a part of the healing process of the children with cancer who are hospitalized in an isolated section away from their homes, trapped in the indoors.

Being under chemotherapy treatment, these children become vulnerable to any type of infection and disease. In some cases, therefore, it is important for them to remain indoors in order to avoid exposure to viruses of any kind. Since their stays in the hospitals are often longterm, staying at the hospital all day long can be very difficult and stressing for them, might affect their emotional health in a negative way, therefore it's not good for their healing process. These periods of isolation can take several weeks up to months, which is a long time for children of any age to be away from their homes, families, friends, fun activities, and nature.

Children have a lot to tell. But the voices of children are often not adequately represented, or represented by adults. The purpose of this thesis is to give the opportunity to the children to be their own voice for them to share their perspectives on what is their ideal physical design features for their healing environment, and let them express themselves artistically by performing an experiment of a focus-group where children draw their ideal healing spaces along with the interviews where they explain their drawings and other important things that they couldn't have drawn. At the end they are the ones that are living and experiencing the space.

# INTRODUCTION

Turkey is a Mediterranean country located mainly in the Asian Continent, with a smaller portion on the European continent. The language is Turkish and the writing alphabet is in Latin, unlike most of the populations in the Middle East.

The country changed from the Ottoman Empire to the Republic of Turkey in 1923, under the leadership of Mustafa Kemal Atatürk. Since then, the socio-economic growth transformed the country into a modern one, where the public system services for the population started to be given. Among them, the topic that is going to be studied is healthcare services.

Turkey has several types of hospitals; which are the public/state-funded hospitals that are under the Ministry of Health (MOH), university hospitals, and private hospitals. State-funded hospitals suffer from overcapacity, long waiting queues, and financial shortages; while private hospital provides more quality service but not affordable for the low-class population, even though it is a more affordable healthcare service compared to Western Europe.

With this thesis, the author tries to rethink the healing spaces of children with cancer, who have to stay in poorly designed hospitals for a long period of time, and how to help them support their healing process by using the power of architecture.

The object is to restyle the existing pediatric oncology ward in a conceptual way, where children and their families can feel as if they're at home while receiving the treatment they need.

To do so, several interviews have been done with the children who are currently under chemotherapy treatment, along with their families. In addition to the interviews, a focus-group has taken place, where the author asked the children what their ideal healing environment would be, in order to understand the needs of the children and to apply it to the restyling of one of the selected case studies in Istanbul.

The results of the focus group and the interviews are analyzed under the guidance of the pedagogue Assoc. Prof. Dr. Muge Yuksel and some topics related to the hospital and the children have arisen. The result of these analyses, together with the research carried out on healing environments and color theories, contributed to the creation of ideas for conceptual restyling.

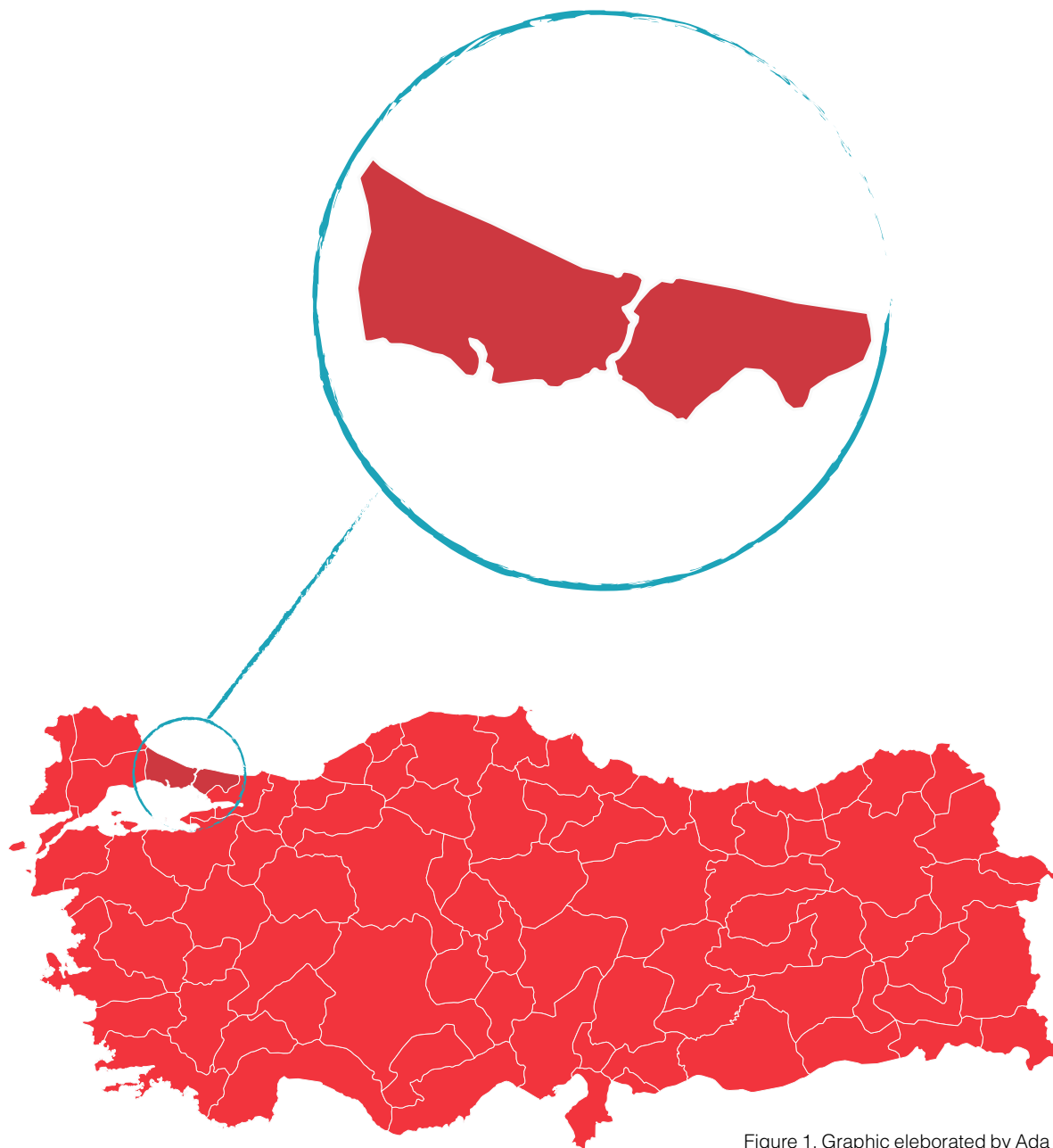


Figure 1. Graphic elaborated by Ada Erinal.

In order to be able to understand the quite different concept of the private and public hospitals in Turkey, one should see the overall quantitative distribution of the hospitals:

## TURKEY

According to the census done by Turkish Statistical Institute (TUIK) in 2017 <sup>1</sup>, there are **1,518** hospitals in total which the distribution of types as follows:



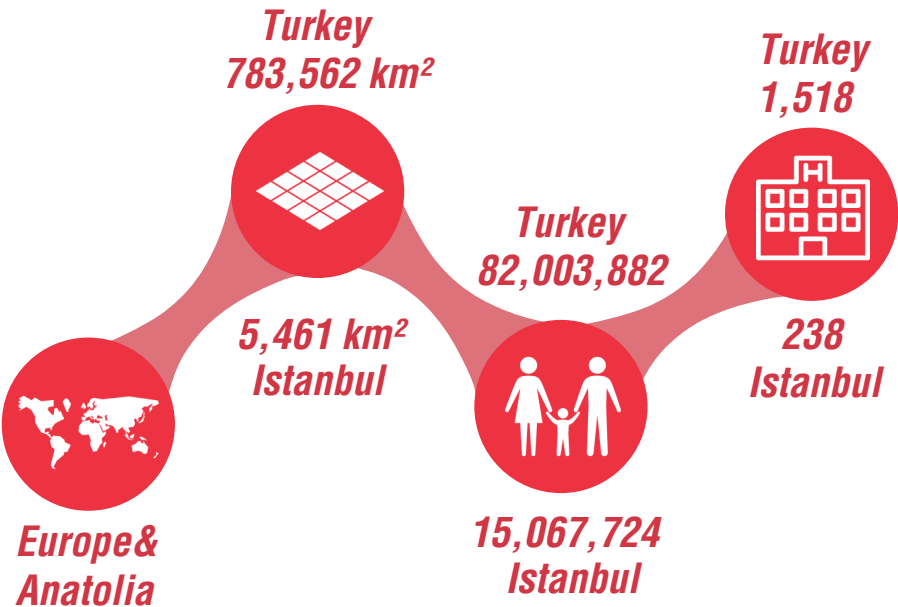
- 879** Public hospitals
- 571** Private hospitals
- 68** University hospitals

## ISTANBUL

According to the census done by Turkish Statistical Institute (TUIK) in 2017, there are **238** hospitals in total which the distribution of types as follows:



- 54** Public hospitals
- 168** Private hospitals
- 16** University hospitals



Istanbul, as the largest and the most populated city in Turkey with its citizens over 15 million<sup>2</sup>, has the most amount of hospitals among all the other cities in Turkey. It can be seen that the number of the public hospitals are more than private hospitals in Turkey, while the number of the private hospitals in Istanbul are much higher than the public hospital.

Figure 2. Graphic elaborated by Ada Erinal.

<sup>1</sup> Turkish Statistical Institute, *Number of medical institutions, total number of hospital beds and number of hospital beds per 1000 population, 1967-2017*, <http://www.turkstat.gov.tr/UstMenu.do?metod=temelist>

<sup>2</sup> Turkish Statistical Institute, *Population Estimates, 2000-2006, Address Based Population Registration System (ABPRS), 2007-2018*, <http://www.turkstat.gov.tr/UstMenu.do?metod=temelist>

**A. ANA**

ALYSIS

# **1A. STATE OF THE ART:**



# HEALING ARCHITECTURE

# **1A.1. Problematic of the Healing Environments: Why Architecture for Healing?**

While designing spaces for people, the primary issue that designers and architects should consider and study is **“people”** who are living in that space, and experiencing it. Especially when it comes to designing a healing environment, since the past, architects have given priority to important terms for the physical health of patients such as functionality, hygiene, and efficiency. But instead, another important issue should be considered: the human needs, emotional situations and the status quo of the people. Even though these issues have started to gain more importance nowadays, have been left in the background until the recent history. The influence of the surrounding buildings on people, on the health, on the emotions, should not be underestimated and should be given more importance on how to design them in a better way, always thinking the soul and spirit of a body.

Going to hospitals is generally viewed as an unpleasant event both for the patients and their families, especially if there is a concern for health. Since the patients are already under great stress, there is no need for other external factors to cause further pressure; such as a scary new environment that they have to spend some time in, away from their homes. Architects and designers should think ways to minimize these environment-related external factors as much as possible, by understanding human needs and searching for ways to design more **“human-centered”**.

Christopher Day says *“Illness can be seen to be healing, but as it can be painful, traumatic, crippling and fatal, we, rightly, try to cure it. This is what medicine is about. But to heal, what lies at the root of any illness requires more than a pharmaceutical cure. It needs the release of disharmonies. Also that all four levels of being are re-balanced and re-invigorated. And, in particular, we need to find a new relationship with the external circumstance that’s no longer stress-building. We need, in other words, to grow inwardly. Beyond healing from illness, this is healing through it.”*<sup>3</sup> The meaning that can be deducted from his words is, along with the physical healing, there must be spiritual healing, and the environment of a patient must contribute to this healing, in order to achieve total recovery.

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<sup>3</sup> Day, Christopher. Spirit & place: healing our environment, healing environment. Oxford ; Auckland ; Boston: Architectural press, 2002, pg.232

Institutions such as hospitals, generally have a demoralizing effect on people because they nurture dependency, therefore they depress. To understand an institutionalized hospital, there are several aspects that one can look; such as the the uncomfortable feeling that one have as soon as entering to the building, straight corridors with sharp angles, lack of natural lighting and a standardized experience of stay without considering the morale of the patient, which makes most of the hospitals as a “human container”.

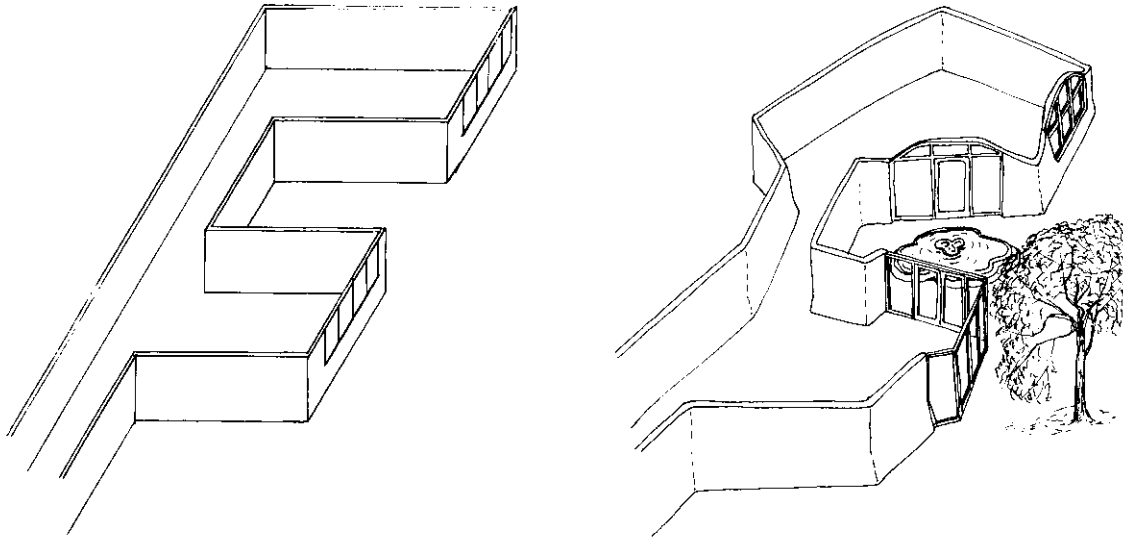


Figure 3. Source: Day, Christopher. Spirit & place: healing our environment, healing environment. Oxford ; Auckland ; Boston: Architectural press, 2002, pg.232

To start with; one of the most important things is the patients' first impression after they enter the hospital. Even though the hospitals are frightening places for most people; the entrance and lobby can break this down by its cozy, colorful and illuminated design, for instance. Interior space should have a welcoming feeling rather than being scary, the corridors should be less straight and curvier or with softer angles rather than sharp angles; bigger window openings should be designed for more natural daylight change the atmosphere inside, and also more use of colors or natural materials rather than frozen white to give more sterile look. <sup>4</sup>

<sup>4</sup> Day, Christopher. Spirit & place: healing our environment, healing environment. Oxford ; Auckland ; Boston: Architectural press, 2002, pg.230-235

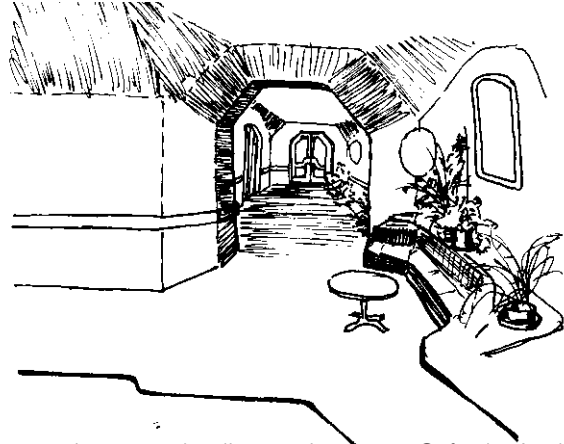
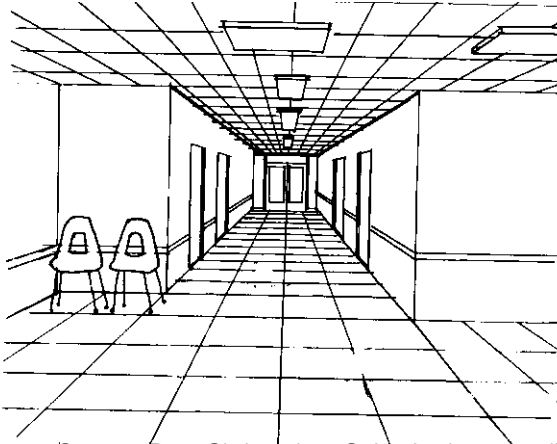


Figure 4. Source: Day, Christopher. Spirit & place: healing our environment, healing environment. Oxford ; Auckland ; Boston: Architectural press, 2002, pg.232

To give the lobby a residential character would be improper, because patients go to the hospital due to the fact that they have problems that cannot be taken care of at home. Christopher Day believes that hospitals are important places and should give patients the feeling that they have put themselves in the hands of an association that has the knowledge, practice, and competence to take care of them. The hospital should create a sense of friendliness and concern but also capability and efficiency.<sup>5</sup>

As C. M. Daisy believes that even though there are plenty of available resources on new technologies, economy, healthcare; there have been many studies on how the environment affects human behaviors, although there is still not enough resource to be read and used by designers in order to create spaces which fits naturally with the human behavior.<sup>6</sup>

*She says "If designers were able to work with a clear understanding of the relationship between behavior and environment, they could create communities where these effects are positive and beneficial. Without such an understanding, the behavioral effects of design are haphazard at best and disastrous at worst."*<sup>7</sup>

<sup>5</sup> Day, Christopher. Spirit & place: healing our environment, healing environment. Oxford ; Auckland ; Boston: Architectural press, 2002, pg.230-235

<sup>6</sup> Deasy, C. M. Designing Places for People: "A Handbook on Human Behavior for Architects, Designers and Facility Managers". New York : Whitney, 1985, pg. 9

<sup>7</sup> ibid.

# **1A.2. Investigation to Improve Healthcare Environment In Terms Of Architectural Design**

Regardless of the duration of the patients' stay, designers should know that there are some aspects to make the patients' stay more comfortable by designing their room more "homey" which contributes to the recovery and their ability to adjust to potential issues.

One of the most difficult aspects of healthcare is the fact that many people all of a sudden start sharing their bedroom with one or more strangers. Furthermore, these strangers may be extremely ill, under the effect of powerful medications that cause unusual behavior, suffering from nausea and severe tension and inability to control the toilet. Even a good morale person who has to spend the night before surgery with a roommate like this can wake up depressed in the morning.<sup>8</sup>

Hospital rooms serve as a home for a certain period of time for patients, therefore, patients need to personalize their living space while they're there. Especially those who stay in the shared rooms may have to deal with their roommates and their way of coping with their illness and problems. In such a case, there should be a territorial design that gives the privacy and needed space to all the patients in the room, therefore, the patient's level of stress would not increase. There are some other needs that should be considered as a design requirement regarding the need of having a private space.

**Having a private room for own** would solve most of the problems than one may have with a shared room. Patients staying in hospitals that offer more private room service will prefer to stay in a private room to the extent that their economic situation allows.<sup>9</sup>

According to researches done by Roger S. Ulrich, single bedrooms are more beneficial than shared bedrooms, besides the fact that they're quieter, they're also more private for patients to get social support from their families and friends throughout the day without a fixed visiting hour, and also without having the pressure that the other roommate can be disturbed. Single bedrooms are also more spacious, therefore they allow more space for furniture for possible visitors who wants to accompany patients during the night. Some medical professionals believe that staying in a shared bedroom can reduce the stress with the support coming from the roommate, but that has been contradicted by evidence that having another roommate is a stressor rather than being a stress-reducer.<sup>10</sup>

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<sup>8</sup> Sternberg, Esther M. Healing spaces : the science of place and well-being. Cambridge (Massachusetts) ; London: the Belknap press : Harvard University, 2009 pg.1-25

<sup>9</sup> ibid.

<sup>10</sup> Ulrich, Roger S. "Evidence-based health-care architecture." The Lancet, December 2006: 538-539.

**Better room separators** should be used for the shared bedrooms to separate the spaces to provide more privacy, not only visually but also acoustically, in a way without blocking the nurses and doctors in case of emergency.

Instead of the classic layout of common hospital rooms where one bed is closer to the window and the other closer to the door, **placing all the beds close to the window** to distribute the natural light and air in the room evenly.<sup>11</sup>

In addition to the ones mentioned, each patient should be allowed **to personalize his/her own living space** regardless of the type of room in which he/she is staying, in order to get rid of the feeling of the stressful hospital environment.

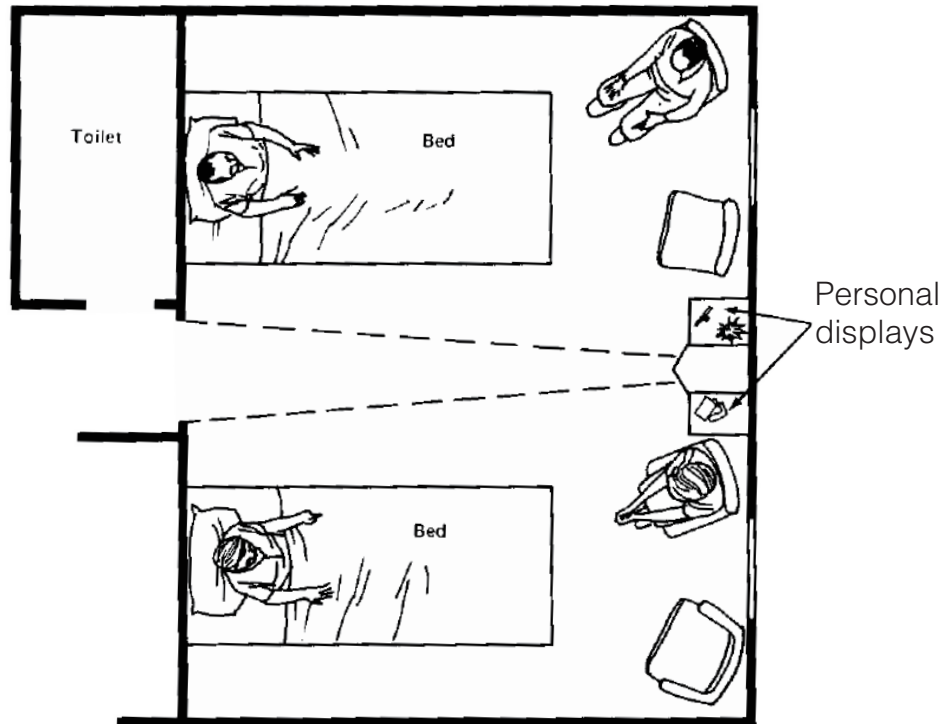


Figure 5. Source: Deasy, C. M. Designing Places for People: "A Handbook on Human Behavior for Architects, Designers and Facility Managers". New York : Whitney, 1985, pg. 117

<sup>11</sup> Deasy, C. M. Designing Places for People: "A Handbook on Human Behavior for Architects, Designers and Facility Managers". New York : Whitney, 1985, pg. 116



**Equip the room for the physically disabled.** This is an obvious requirement because many patients are physically weakened because of the medications and treatments. Handrails should be placed on the walls so that patients can help themselves move to the toilet or closet.<sup>12</sup>

Researches that have been done for the healthcare spaces show that having windows with a view of an outdoor, especially of nature, supports the recovery and reduces the possibility of the depression.<sup>13</sup>

During the period between 1972-1981 in a suburban Pennsylvania hospital, Roger Ulrich, director of research at the American Institute of Architects (AIA), had examined forty-six patients who have just undergone surgery. He placed the beds of twenty-three of them next to the window facing with nature, while the beds of the other twenty-three of them were placed next to a window facing a brick wall. He had recorded the process and found out that patients whose beds were placed next to the window with a view of nature, healed faster or needed less medication than the ones which faced with a view of a brick wall.

All the research that Roger Ulrich had carried out created a field called “evidence-based design”. Evidence-based design is a patient-centered design approach that combines psychology of the patient such as their mood, stress level or/and satisfaction, with treatment regarding issues such as the length of the stay, the number of medications that they’re taking, etc.<sup>14</sup>

As Esther M. Sternberg discussed, *“Perhaps the most important thing a window does is provide a portal- an escape from the frightening, painful reality of disease, or a way of accessing memories of a better time and space. Maybe windows exert their effect by allowing a patient to step into a space of meditation- a reverie that brings not just distraction, but relief. And relief could bring healing...”*<sup>15</sup>

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<sup>12</sup> Deasy, C. M. Designing Places for People: “A Handbook on Human Behavior for Architects, Designers and Facility Managers”. New York : Whitney, 1985, pg. 117

<sup>13</sup> Ulrich, Roger S. “View Through a Window May Influence Recovery from Surgery.” Science 224(4647), May 1984: 420-421.

<sup>14</sup> Sternberg, Esther M. Healing spaces : the science of place and well-being. Cambridge (Massachusetts) ; London: the Belknap press : Harvard University, 2009, pg. 3

<sup>15</sup> ibid. pg. 9

The therapeutic effect of gardens, trees, plants are known for centuries. The feeling and the sound of nature are strong anxiety reducers. The sound of water or the sound of the wind going through the leaves of trees can change the ambiance with a positive effect on people and also can block the sound of the chaos outside of the hospital environment, creating a social bond between indoor and outdoor.

The use of color is essential, but designers should be very careful; Christopher Day discusses that colors can change the mood in either a positive or negative way, having a thin line in between. For patients who are emotionally unstable, the use of one color can be relaxing for a period but normally people need to be able to move or at least look, from one color to another to change their mood, just like doing different things or going different places throughout the day.<sup>16</sup>

When people go to the hospital for a long treatment, they leave their social lives behind. That's why social activities should be brought back indoor, in order to increase morale and to create a social environment. The healing spaces should have activities that match the emotional well-being.

Christian Day says *"Sooner or later we leave one activity and state-of-being and enter into another. This requires a physical journey – going to another room. Also an inner journey – a preparatory journey. Corridors, lobbies, stairs, handrails, everyday elements of every sort, are the vocabulary of these journeys."*<sup>17</sup>

One of the things that hospitals shouldn't have considered as they should've is the patient's relatives and friends as well as the patient, due to the fact they're one of the most influential factors in the patient's morale and healing process. They're part of the recovery of the patients. That's why the designers should also consider the comfort of the visitors to keep their environment-related psychological situation as good as possible. The seats in the waiting area, for example, should be comfortable since waiting hours can be very long. The waiting area should be designed keeping in mind that there might be several families waiting at the same time with different kinds of worries.

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<sup>16</sup> Day, Christopher. Spirit & place: healing our environment, healing environment. Oxford ; Auckland ; Boston: Architectural press, 2002, pg.233-235

<sup>17</sup> ibid. pg.235

*“I am inclined to think that the majority of cheerful cases is to be found among those who are not confined to one room, whatever they are suffering, and that the majority of depressed cases will be seen among those subjected to a long monotony of objects around them. A nervous frame really suffers as much from this as the digestive organs suffer from long monotony of diet. The effect on sickness of beautiful objects, on variety of objects and especially brilliancy of colours, is hardly to be appreciated. Such cravings are usually called the “fancies” of patients but these “fancies” are the most valuable indication of that which is necessary for their recovery. People say that the effect is only on the mind. It is no such thing. The effect is on the body too. Little as we know about the way in which we are affected by form and colour and light, we do know this: that they have an actual and physical effect. Variety of form and brilliance of colour in the objects presented to patients are an actual means of recovery”<sup>18</sup>*

**- Florence Nightingale**

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<sup>18</sup> Dalke, Hilary, Littlefair, Paul J, Loe, David L, Camgoz, Nilgun. Lighting and Colour for Hospital Design: A Report on an NHS Estates Funded Research Project. Report, London: TSO, 2004.

# **2A.1. Color as a Therapeutic**

**"Adjuvant"**  
**Color**

## **2A.1. Starting Point:**

### ***Policroma by Anna Marotta***

"Chromatic thinking" goes back to ancient times, originating from the historical Greek and Roman period, and reaches to this day through key moments from the Renaissance to Mannerism, and through the Bauhaus movement, which still has its influence today. It is clear from these assumptions that color, which understood both as an item of analysis and in its design values, must be systematically addressed. For example, the same systematic essence must be recognized both in the more technical aspects and in the interdisciplinary aspects. In the multitude of possible records of color reading as a complex system, the orientation of selective criteria is not immediate.<sup>19</sup>

In the past, color models have been an indispensable tool for intellectual processing, critical verification, and design-use to represent, visualize, and symbolize the theories of the great thinkers, continuing to form a fundamental framework for a conscious and specialist approach to chromatic culture. From the same reconnection, the variety of configurations that separate the different models in relation to the respective theories is evident, as well as the multiplicity of schemes and chromatic representations for each individual author within each theory.<sup>20</sup>

It has been known for a long time that color can affect mood <sup>21</sup>; and even though curing cannot be done by the only color itself, well-thought color use can create a therapeutic environment that contributes the healing process of the patients. Thinking only "using the perfect color" would be wrong, because even the rotation of the building can change how the person perceives or feels the color because of the changing lighting. Hence, also the lighting is another important element which cannot be thought separately from the color. <sup>22</sup>

Research among color theories has therefore been carried out with the help of *Policroma* by Anna Marotta, in order to select the colors that will be used in the project, further in the thesis. As a result, the theories of Johann Wolfgang von Goethe, Johannes Itten, and Josef Albers were selected to be studied.

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<sup>19</sup> Marotta, Anna. *Policroma, Dalle teorie comparate al progetto del colore*. Torino: CELID, 1999. pg.9

<sup>20</sup> Ibid. pg.10

<sup>21</sup> Birren, Faber. *Color & Human Response: Aspects of Light and Color Bearing on the Reactions of Living Things and the Welfare of Human Beings*. New York: Van Nostrand Reinhold Co., 1978.

<sup>22</sup> Dalke, Hilary, Little, Jenny, Niemann, Elga, Camgoz, Nilgun, Steadman, Guillaume, Hill, Sarah and Stott, Laura. *Colour and lighting in hospital design*. Article, London: Elsevier Ltd, 2005.

## **2A.2. Selected Color Theories**



**“There should be a resourceful and dynamic use of colour in the environment itself – for proper mental and emotional balance. Color in built space serves two highly important purposes. In the realm of vision it can remove glare from the field of view. If the colour is warm and cheerful, it can be also direct attention outward and make a person alert to what is going on around him. If the colour is cool and a little muted, the environment will be less distracting and the person will be better able to concentrate on visual and mental tasks. In the realm of emotion, colour can introduce sensory stimulation, break up monotony, establish an interesting change of pace. It is not just that one colour is better than another, or that red is exciting, green tranquil and blue subduing. What has been learned from research is that variety is, or itself, psychologically beneficial.”<sup>23</sup>**

**- Faber Birren**

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<sup>23</sup> Birren, Faber. “The need for color and light in future man-made spaces.” In *Colour for Architecture*, by Tom Porter and Byron Mikellides, London: Studio Vista, 1976, pg.8

## Johann Wolfgang Von Goethe and The Color Theory “Zur Farbenlehre”

Johann Wolfgang von Goethe was a German poet, writer and a scholar born in the mid-1700s. One of the most important works of his is known as “Color Theory”, where he suggested that the perception of color is a unique experience for every single being, and said that color perception was subjective because the colors belong to the mind, not to nature; opposing Newton's theory which implies that the color is dependent on light. Goethe has stated that the experience of color is depending on the viewers' physical and psychological status quo.

Against Newton's 7 colors, the pure colors for Goethe were blue and yellow; blue is darkened by light, while yellow is a light shaded by darkness. All other colors were degrees of these colors. Therefore, Goethe has created a color circle created with these six colors which are placed in front of its complementary color.<sup>24</sup>

The colors that trigger the eye can be assumed as a desire to universality through a particular sentiment. In order to achieve this totality, the eye seeks to satisfy itself, next to each colored space, a colorless space on which to produce the color that is called the simultaneous contrast. The harmony for him can be realized when the two colors on the opposite side of the color circle are used together with the totality.<sup>25</sup>

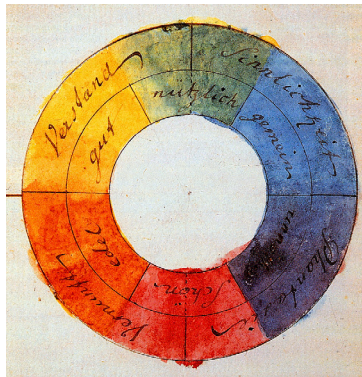


Figure 6. Source: <https://fineartamerica.com/featured/color-wheel-johann-wolfgang-von-goethe.html>

<sup>24</sup> "Johann Wolfgang von Goethe." Colorsystem, Colour order systems in art and science. n.d. [https://www.colorsystem.com/?page\\_id=766&lang=en](https://www.colorsystem.com/?page_id=766&lang=en).

<sup>25</sup> Marotta, Anna. Lesson: Vedere non a caso: l'infinito universo della visione, Il colore come Bene Culturale: una dimensione trasversale. n.d.

**Light and darkness.** For Goethe, darkness wasn't a lack of light, it was rather opposite to light, which interacts with it; and as a result of the interaction, the color appears. The color needs light and darkness, or light and dark in order to come out. Any color can be pushed to its extremes, and as a result, it either vanishes in the white, or black.<sup>26</sup>



Figure 7. Graphic elaboration by Ada Erinal

**Simultaneous contrast.** He suggests that the colors put one next to another, effects each other in a way that the chromatically weaker color is masked with a sparkle of the stronger one. For example, if the same gray strip is placed on a yellow-green and on a violet-red, it looks darken on the first one and lighter on the second one, because of the fact that violet-red is a chromatically stronger color than yellow-green.<sup>27</sup>



Figure 8. Graphic re-elaboration by Ada Erinal

Another example of the simultaneous contrast could be the following scheme: with the division of a black frame, the green square is lighter and tends to be yellow when it's placed on a blue background, but when the same square is placed on an orange background, it looks darker. The same happens when the violet square is placed on a blue background, it looks reddish, while it looks darker on an orange background. This reveals that every color shows opposite characteristics depending on the background they're placed.<sup>28</sup>

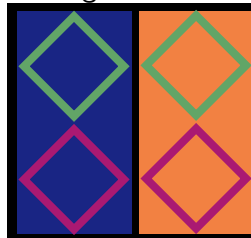


Figure 9. Graphic re-elaboration by Ada Erinal

<sup>26</sup> Marotta, Anna. Lesson: Vedere non a caso: l'infinito universo della visione, Il colore come Bene Culturale: una dimensione trasversale. n.d.

<sup>27</sup> ibid.

<sup>28</sup> ibid.

**Next contrast.** The visual effect which continues for a few more seconds after the termination of the visual stimulus, is called the next contrast. The complementary colors appear later when the eye is pulled away after is fixed to a certain color. In this way, the complement of a given color can always be found out correctly. If one is looking at the yellow, its opposite color is violet-blue in Goethe's color circle. When one's eye turns to dark red from yellow, opposite color of yellow spreads on the red surface, resulting a purple sparkle.<sup>29</sup>



Figure 10. Graphic re-elaboration by Ada Erinal

**Double contrast.** It's created both with the simultaneous contrast and the next contrast. It occurs when two colors are perceived simultaneously and successively, resulting in the appearance of the complementary colors of both of these colors.<sup>30</sup>

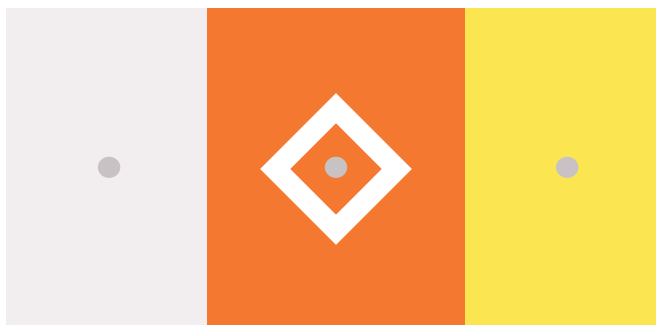


Figure 11. Graphic re-elaboration by Ada Erinal

<sup>29</sup> Marotta, Anna. Lesson: Vedere non a caso: l'infinito universo della visione, Il colore come Bene Culturale: una dimensione trasversale. n.d.

<sup>30</sup> ibid.

**The energetic and mild effect.** The energetic effect (the diagram on the left) occurs from the diffusiveness of the active colors, which are the warm colors such as red-yellow, yellow with great quantity usage, while the quantity of the cold colors such as violet-blue and green should be used with a minimum amount. Instead, the mild effect (the diagram on the right) occurs from the diffusiveness of the passive colors, which are cold colors such as blue, and purple. In this case, the use of cold colors should be balanced with a minimum amount of three warm colors.<sup>31</sup>

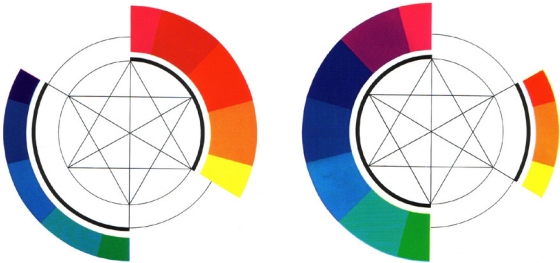


Figure 12. Source: Goethe, Johann Wolfgang von. Theory of Colours. London: M.I.T. Press, 1840 .

**The harmony law.** In order to achieve harmony, the eye seeks to satisfy itself in the visual system where the two colors on the opposite side of the color circle are used together. The complementary colors, in this case, define an objective harmony law regardless of what might be the subjective harmony taste.<sup>32</sup>

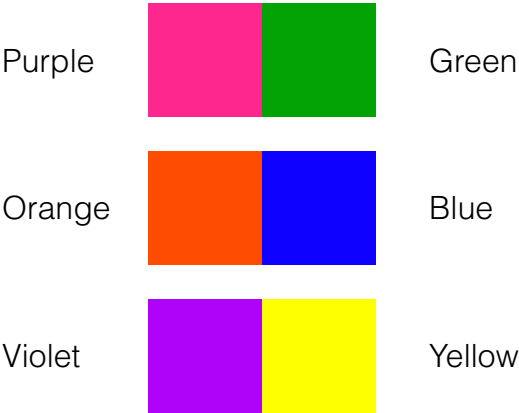


Figure 13. Graphic re-elaboration by Ada Erinal

<sup>31</sup> Marotta, Anna. Lesson: Vedere non a caso: l'infinito universo della visione, Il colore come Bene Culturale: una dimensione trasversale. n.d.

<sup>32</sup> Calissano, Martina. Percorsi. Il colore come strumento di riqualificazione urbana. Thesis, Politecnico di Torino, 2019. pg.136

## Johannes Itten and The Elements of Color

Johannes Itten, a Swiss painter of the late 1800s, was one of the most important art professors at the Bauhaus and one of the first people who defined methods of different use and combination of colors. Through his research he came up with seven contrast theory by arranging colors using the hue's contrasting features.

*These seven contrast theories are:*

1. The contrast of hue
2. Light-dark contrast
3. Cold-warm contrast
4. Complementary contrast
5. Simultaneous contrast
6. The contrast of saturation
7. The contrast of extension

Itten's study is on the color harmony, suggests that the two colors are harmonious if their mixture creates neutral grey. He constructed the Color Circle in 1961, placing the complementary colors giving neutral grey when mixing, on the opposite side of each other. This way, he could show the primary colors which are in the center, secondary colors which are the mixture of the primary colors and tertiary colors on the outside circle altogether.<sup>33</sup>



Figure 14. Source: <https://franceschetti.it/de/how-to-match-colors/>

<sup>33</sup> Itten, Johannes, Birren, Faber. The elements of color : a treatise on the color system of Johannes Itten based on his book The art of color / ed. and with a foreword and evaluation by Faber Birren. New York: New York : Van Nostrand Reinhold, 1970.

**The contrast of hue.** It's the simplest contrast among the rest of them. It's formed by positioning different hues next to each other. The combinations are red/yellow/blue, red/blue/green, blue/yellow/violet, yellow/green/violet/red, violet/green/blue/orange/black. The more the colors are distant on a color wheel, the better the contrast.<sup>34</sup>



Figure 15. Graphic re-elaboration by Ada Erinal

**Light-dark contrast.** It's formed by positioning light and dark values next to each other, such as black and white, the gray tones and all the chromatic colors between them.<sup>35</sup>

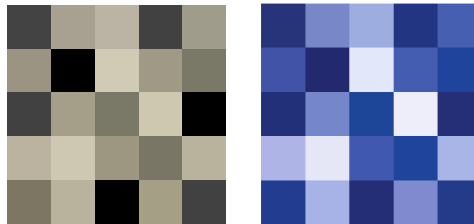


Figure 16. Graphic re-elaboration by Ada Erinal

**Cold-warm contrast.** It's formed by positioning the hues known as 'warm' and 'cold' next to each other. Usually, the colors yellow, orange, yellow-orange, red, red-orange, and red-violet are considered as warm, while green, yellow-green, blue-green, blue-violet and violet are considered as cold.<sup>36</sup>

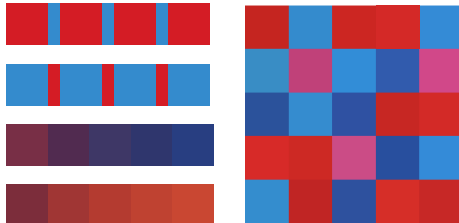


Figure 17. Graphic re-elaboration by Ada Erinal

<sup>34</sup> Itten, Johannes, Birren, Faber. The elements of color : a treatise on the color system of Johannes Itten based on his book The art of color / ed. and with a foreword and evaluation by Faber Birren. New York: New York : Van Nostrand Reinhold, 1970. pg.33-36

<sup>35</sup> Ibid. pg.37-44

<sup>36</sup> Ibid. pg.45-48

**Complementary contrast.** The complementary contrasts is when two colors are mixed together and create a neutral gray-black. These two colors are opposite and when they are put together side by side they bring out each others' vividness. Such yellow-violet, blue-orange, red-green.<sup>37</sup>

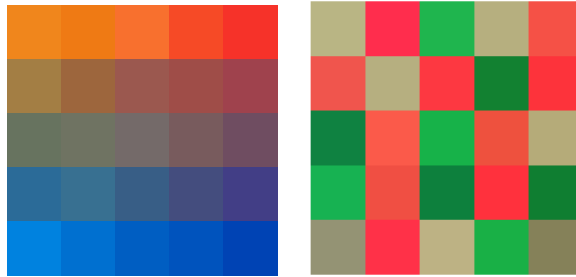


Figure 18. Graphic re-elaboration by Ada Erinal

**Simultaneous contrast.** It's the way in which two different colors affect each other by changing the perception of the tone and hue of each other when they're placed side by side, or one inside another. The color that comes out simultaneously, exists only in the chromatic perception, which doesn't really exists in reality. The effects of simultaneity are stronger and brighter the more the observation of the dominant color lasts.<sup>38</sup>

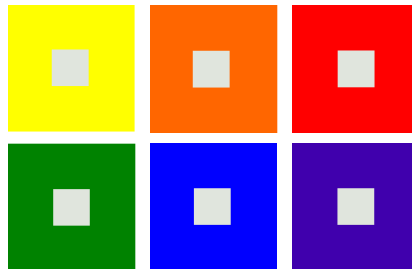


Figure 19. Graphic re-elaboration by Ada Erinal

<sup>37</sup> Itten, Johannes, Birren, Faber. The elements of color : a treatise on the color system of Johannes Itten based on his book The art of color / ed. and with a foreword and evaluation by Faber Birren. New York: New York : Van Nostrand Reinhold, 1970. pg.49-51

<sup>38</sup> Ibid. pg.52-54



**The contrast of saturation.** It's formed when the colors with different light and dark values and their relative saturation are placed side by side.

To achieve a combination with quality contrast, it is necessary to mix each light tone with the respective dark tone. To make a pure color colder, should be mixed with white, to make it less bright, the colors should be mixed with black. Instead, to achieve grey, the color needs to be mixed with its complementary color.<sup>39</sup>

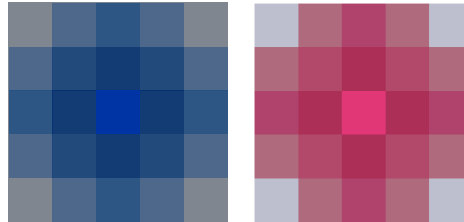


Figure 20. Graphic re-elaboration by Ada Erinal

**The contrast of extension.** It's the contrast of quantities and proportions. The quantitative proportion between colors used should be in balance. The quantity ratios are determined on a scale of brightness values by numbers which were set up by Goethe. If colors are not used at maximum brightness, proportions of each color also vary between them to achieve harmony.

The approximate numerical representation of Goethe's lights values are as follows:  
yellow: 9, orange: 8, red: 6, violet: 3, blue: 4, and green: 6.

To achieve harmony, the brighter ones, such as yellow which is three times stronger than violet, should be used according to proportion.<sup>40</sup>

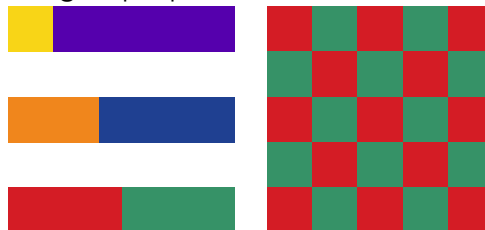


Figure 21. Graphic re-elaboration by Ada Erinal

<sup>39</sup> Itten, Johannes, Birren, Faber. The elements of color : a treatise on the color system of Johannes Itten based on his book The art of color / ed. and with a foreword and evaluation by Faber Birren. New York: New York : Van Nostrand Reinhold, 1970. pg.55-58

<sup>40</sup> Ibid. pg.59-63

## Josef Albers and Interaction of Color

Josef Albers, a German artist and teacher, has published his famous book *Interaction of Color*, which influenced art, science, psychology, practical application and the knowledge of color in his time, but the effects of the book still exist today. Moreover, it's still an important guide to train the human eye to understand the relationship between colors.

The interaction of color is not a simple theory of the effects of color, but an application of an experiment on color analysis and teaching. Albers has chosen to perform these experiments using colored paper, which means that the mixture of colors must take place in an imaginary way. Depending on whether one color is perceived above or below another, the illusion of space emerges.

The results obtained are as follows.

- The combination of the more distant and maybe even personally disliked pairs of colors with strong oppositions are the most comfortable to view.
- He gave importance to the effect of space and the form on color. Because, where a mixed color which is a mixture of two different colors, placed together with both colors, it creates the perception of proximity and distance with smoothing and sharpening effects.
- The behaviors of color and musical notes are similar in some ways. In both cases, there are complementary and semi-complementary tones, triads, tetrads and octaves. They are both defined by a wavelength and the result of the combination of several basic units. For example, the borders of the combination of the blue squares in the middle of the red squares (or/and vice versa) are less visible than when they're left alone.<sup>41</sup>

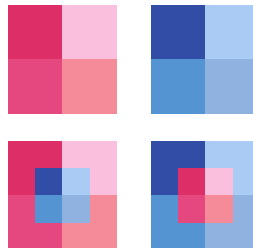


Figure 22. Graphic re-elaboration by Ada Erinal

<sup>41</sup> Albers, Josef. *Interaction of Colors*. New Haven ; London: Yale University Press, 1963.

- The effect of the optical mix consists of colors with good strokes and sufficient gaps that are perceived simultaneously, or blend into a single color. As an example, when the red bricks constructed with white mortar seems much clear and bright compared to the same bricks constructed with black mortar.<sup>42</sup>

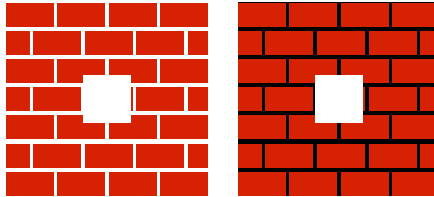


Figure 23. Graphic re-elaboration by Ada Erinal

**The Relativity of Color.** The same color can appear to the human eye as two different values depending on the juxtaposition with other colors with different brightness.<sup>43</sup>



Figure 24. Graphic re-elaboration by Ada Erinal

**The Afterimage Effect.** Albers emphasize especially the illusions of color. This effect happens after looking to a specific color - such as yellow - for half a minute then looking to a white background, instead of seeing yellow again, the colors which will be seen would be its' opposite color - blue.<sup>44</sup>

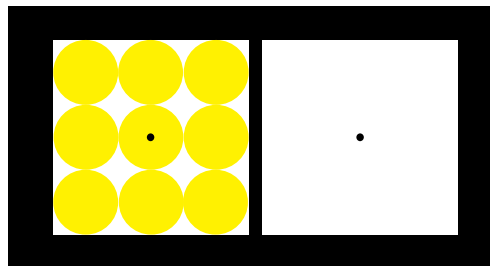


Figure 25. Graphic re-elaboration by Ada Erinal

<sup>42</sup> Marotta, Anna. Lesson: Josef Albers e le interazioni del colore. n.d.

<sup>43</sup> Popova, Maria. The Magic and Logic of Color: How Josef Albers Revolutionized Visual Culture and the Art of Seeing. n.d. <https://www.brainpickings.org/2013/08/16/interaction-of-color-josef-albers-50th-anniversary/>.

<sup>44</sup> Ibid.

- Another important point is the Weber-Fechner logarithmic scale, which is physically measurable and concerns transparent fluids: for example, even if the color of coffee is the same it looks darker in a cup and lighter in a teaspoon. It's called the volume color. Such as the watercolors of Paul Klee, when adding repeatedly new layers of watercolor on a color, the thickness and the intensity of the color increases.<sup>45</sup>



Figure 26. Graphic re-elaboration by Ada Erinal

- The same color placed on different backgrounds may appear as two different colors and different colors may look alike on different backgrounds. It's to say that the human eye doesn't see colors without its relationship with others.<sup>46</sup>

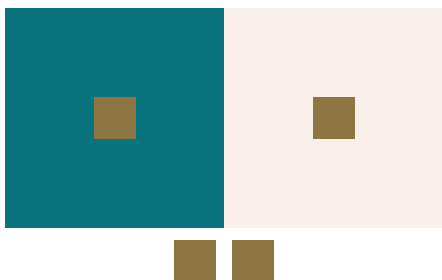


Figure 27. Graphic re-elaboration by Ada Erinal

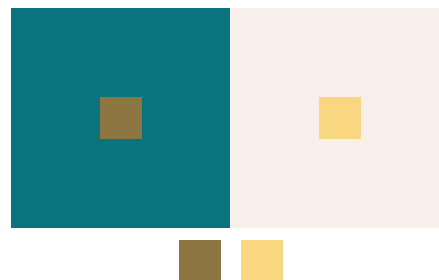


Figure 28. Graphic re-elaboration by Ada Erinal

<sup>45</sup> Albers, Josef. Interaction of Colors. New Haven ; London: Yale University Press, 1963.

<sup>46</sup> Marotta, Anna. Lesson: Josef Albers e le interazioni del colore. n.d.

**“To let the eye stray over a palette, splashed with many colours, produces a dual result. In the first place one receives a purely physical impression, one of pleasure and contentment at the varied and beautiful colours. The eye is either warmed or else soothed and cooled. But these physical sensations can only be of short duration. They are merely superficial and leave no lasting impression, for the soul is unaffected. But although the effect of the colours is forgotten when the eye is turned away, the superficial impression of varied colour may be the starting point of a whole chain of related sensations.”<sup>47</sup>**

**- Wassily Kandinsky**

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<sup>47</sup> Kandinsky, Wassily. Concerning the Spiritual in Art. Massachusetts: Courier Corporation, 1977

# **3A. Healing Spaces in Turkey:**

# Case Study Analysis

# **3A.1. Development of Pediatric Oncology in Turkey**



Childhood cancers are a group of diseases that occur between birth and 15 years of age. It takes place when the body cells multiply uncontrolled, which can happen in different areas and spread to different parts of the body through circulation, resulting in disruption of health and can be life-threatening. It is one of the most common causes of death in children.

In Turkey, each year around 3000 children are diagnosed with cancer. Leukemia is the most common childhood cancer which is around 30% in Turkey and in the world.<sup>48</sup> Worldwide, more than 175,000 children have cancer each year, and unfortunately, 96,000 of these children do not survive.<sup>49</sup>

Back in the 70s, pediatric oncology in Turkey started to gain recognition and got accepted as a subspeciality in 1983.

The survival percentage of children with cancer has increased in recent years. In Turkey, each year approximately 2000 new children with cancer cases are reported according to the Turkish Pediatric Oncology Group and Turkish Society of Pediatric Hematology.

The Turkish Society of Pediatric Hematology was founded in 1999 with the aim of improving diagnostic tools and treatment practices in pediatric oncology and hematology centers in Turkey, they support researches and publications in the field, and organize scientific meetings, seminars, and courses for pediatric hematologists.

There are many non-profit foundations in Turkey to support children with cancer during their treatment and also to help their families economically. Two of the largest and most well-known charities are chosen to be introduced here, which touches many children's lives, supports them in their wellbeing, education, and plans activities to entertain them while they are staying at the hospital.

The selected non-profit foundations are The Foundation for Children with Leukemia (LOSEV) and The Hope Foundation for Children with Cancer (KACUV).

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<sup>48</sup> KACUV, *Cancer in Children*, <https://kacuv.org/en/bilgi-bankasi/cancer-in-children/>

<sup>49</sup> Childhood Cancer 2012, *About childhood cancer*, <http://www.childhoodcancer2012.org.uk/childhoodcancer.asp>

## The Foundation for Children with Leukemia (LOSEV)

LOSEV is founded in 1998 because of the lack of foundation to help and support children with cancer. Before the foundation was formed, children were treated at the Social Security Government Hospital (SSK), but even a simple request to put a TV in the oncology ward couldn't be provided, and as a result, LOSEV is established to provide the shortcomings, as a non-profit organization. Their aim is to provide educational and emotional support, financial assistance and health services for children with cancer and their families.<sup>50</sup>

LOSEV tries to find solutions for any kind of health-related problems of the children with Leukemia. For example, if a child needs blood, LOSEV search for volunteers to donate their blood, either through the healing centers/hospitals or they use the social media to find the most suitable blood for children on need.

LOSEV's treatment for Leukemia is free for children, they help also to supply some expensive medicine for the ones who cannot afford it economically. Aside from all these, they also provide psychological support for children with cancer and their families to overcome this tough period with minimal damage.<sup>51</sup>

At first, it was difficult to meet the needs of children, but when the foundation began to be recognized, Turkish citizens began to donate and so the organization grew. Thanks to donations, they built an oncology hospital for children with cancer called LOSANTE Children's and Adult Hospital in Ankara, the capital city of Turkey, where they treat children for free. They also set up a "child oncology village" where children have accommodation possibilities for their families, especially for the families coming from different parts of Turkey. There are courses for the families in the complex of the village, where there are activities such as knitting, tailoring, baking, etc. With these activities, LOSEV aims to contribute to the families' vocational therapy. At the same time, the families make and sell hand-made toys, in order to donate the revenue gained from the selling to the foundation.<sup>52</sup>

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<sup>50</sup> LOSEV, *Aim*, <https://www.losev.org.tr/v2/en/content.asp?ctID=497>

<sup>51</sup> LOSEV, *Health*, <https://www.losev.org.tr/v2/en/content.asp?ctID=502>

<sup>52</sup> LOSEV, *Village for Children with Leukemia*, <https://www.losev.org.tr/v2/en/content.asp?ctID=607#>

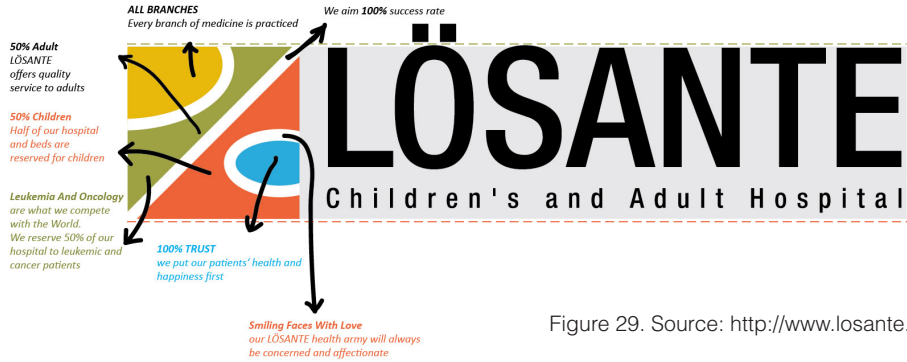


Figure 29. Source: <http://www.losante.com.tr/Home/Vizyon>



Figure 31. Relaxing Area, LOSANTE Hospital  
(Source: <http://www.losante.com.tr/Hastane/GorselTur>)



Figure 32. Corridor, LOSANTE Hospital  
(Source: <http://www.losante.com.tr/Hastane/GorselTur>)



Figure 33. Chemotherapy Area, LOSANTE Hospital  
(Source: <http://www.losante.com.tr/Hastane/GorselTur>)



Figure 34. Private Room, LOSANTE Hospital  
(Source: <http://www.losante.com.tr/Hastane/GorselTur>)

## The Hope Foundation for Children with Cancer (KACUV)

The Hope Foundation for Children with Cancer (KACUV) was founded in 2000 in Istanbul, by the doctors of the Istanbul University Cerrahpasa Medical School Pediatric Hematology/Oncology Service and the parents of the children patients who were being treated there. Their aim is to support the children throughout their journey of recovery, in case of need financially, psychologically, and help them to readjust into society.

KACUV has an 18-bed facility at the Cerrahpasa Medical School Pediatric Clinic where the children until 17 years old are receiving treatment. They have created a multifunctional space called the “Family House”, which is a hospital, home, and social service model put all together.<sup>53</sup> Family House is opened in March 2012 with the donations of the Turkish Citizens and Istanbul Governorship. It's a center with 14 bedrooms for the treatment of children who come to Istanbul from outside the city, providing free accommodation for financially disadvantaged families.<sup>54</sup>

They voluntarily built playrooms in the hospitals for children where the playrooms are not enough, old, or non-existing at all.



Figure 35. KACUV Family House Playroom (Source: KACUV,2019 )

<sup>53</sup> KACUV, *Establishment and the Purposes*, <https://kacuv.org/en/establishment-and-the-purposes/>

<sup>54</sup> KACUV, *Family Home*, <https://kacuv.org/en/family-home/>

Because of the reason that the playrooms are not enough in most of the childrens hospitals in Turkey, KACUV started to do renovations on existing playrooms in public hospitals. They have created colorful playing environments for children. Two examples of their work are selected to be shown here:

### **Renovation n.1**

#### **Before Renovation**



Figure 36. The existing situation of the playroom of the pediatric oncology ward in a public hospital that called Marmara University Hospital in Istanbul. It can be seen that there was no particular attention to create an adequate playroom for children. (Source: KACUV, 2019)



## Renovation n.1

### After Renovation



Figure 37. The new playroom of the same oncology ward became a colorful environment, colored mostly in blue and the walls were painted with figures representing nature. (Source: KACUV, 2019)

## Renovation n.2

### Before Renovation



Figure 38. The existing situation of the playroom of the pediatric oncology ward in a public hospital that called Dr. Behcet Uz Hospital. It can be seen that there is nothing particular for children to play, nor any attention to use of colors. (Source: KACUV, 2019)

## Renovation n.2

### After Renovation



Figure 39. The new playroom of the same oncology ward became a colorful environment, colored mostly in blue and the walls were painted with figures representing nature. (Source: KACUV, 2019)



## **3A.2. Comparing The Concept of Public and Private Hospitals in Turkey**

Historically, the development of the health services in Turkey is divided into two; before the Republic of Turkey which is the period of the Seljuks & the Ottoman Empire, and after the foundation of the Republic of Turkey. Health services were given by foundations during the time of the Seljuk Empire and continued until the Ottoman Empire's early years. All the features of the monarchy were expressed in health policies and practices in the later periods of the empire. Because the administrative structure was palace-centered and military-oriented, only the palace and army benefited from the health services provided by the empire. Instead, for the public, there were private doctors who offered health care to those who could afford it. People with good financial status were treated and cared for at home. At the end of the 19th century, when health services began to be seen as the primary duty of the state, the first steps were taken to enlarge the health services to the citizens.<sup>55</sup>

Gulhane Military Hospital, which was opened in 1898 in Istanbul, was the first modern hospital which has been established and organized regularly. For Turkish medicine, in particular, medical education provided here under the leadership of German teachers is of great importance. However, in terms of equipment and knowledge, the Gulhane Military Hospital was far behind its time compared to the western hospitals of the period.<sup>56</sup>

Health became one of the primary issues with the establishment of the Republic of Turkey, and therefore the Ministry of Health became one of the first ministries to be established. Health care services were socialized in 1960 the objective was to provide continuous, comprehensive and integrated health services to meet the needs of the public. Turkey's attempts to cure childhood cancer began in the 1960s.<sup>57</sup>

The first modern pediatric oncology unit was set up in Ankara at the Hacettepe Faculty of Medicine in January 1972. Child cancers began to be treated in different parts in Turkey, such as Dokuz Eylul Hospital in Izmir, Cukurova Hospital in Adana, Gazi Hospital in Ankara, Gulhane Military Medical Academy, and the Istanbul Oncology Institute during the period 1980-1990.<sup>58</sup> Between 1990-2000, in particular in Ankara Oncology Hospital in Ankara, Sami Ulus Children's Hospital in Izmir, Okmeydanı Hospital, and Kartal State Hospitals in Istanbul, pediatric oncology units were established.<sup>59</sup>

<sup>55</sup> Cavmak, Seyda, and Dogancan Cavmak. "Turkiye'de Saglik Hizmetlerinin Tarihsel Gelismesi Ve Saglikta Donusum Programi." *Saglik Yonetimi Dergisi*, 2017: 48 - 57.

<sup>56</sup> Basustaoglu, Ahmet. *Bir Nefes Sihat – Tevfik Saglam'ın Yasami*. Istanbul: Is Bankasi Yayinlari, 2016.

<sup>57</sup> Cavmak, Seyda, and Dogancan Cavmak. "Turkiye'de Saglik Hizmetlerinin Tarihsel Gelismesi Ve Saglikta Donusum Programi." *Saglik Yonetimi Dergisi*, 2017: 48 - 57.

<sup>58</sup> Ibid.

<sup>59</sup> Turk Pediatrik Onkoloji Grubu, *Tarihçe*, <http://www.tpog.org.tr/tarihce>

Researches that have been done to analyze the differences between public and private hospitals in Turkey, shows that Turkish people are not fully satisfied with their health care system, especially the care provided by public hospitals.<sup>60</sup> In 2003, the Health Transformation Plan was a major shift in health awareness, as well as taking the country's health system to a completely different position. The private sector was encouraged to invest in healthcare and, as a result, the largest increase to date has been seen in private hospitals.<sup>61</sup>

Today, in Turkey there are several types of hospitals; which are the public/state-funded hospitals that are under the Ministry of Health (MOH), university hospitals, and private hospitals. State-funded hospitals suffer from overcapacity, long waiting queues, and financial shortage; while private hospital gives more quality service but not affordable for the low-class population, even though it is a more affordable healthcare service in comparison to Western Europe.

A survey has been done among 200 outpatients to compare the service quality of public and private hospitals. As a result, private hospitals were evaluated better at hospital hotel services, medical and non-medical physical environment, better hospital design, more peaceful and quiet hospital environment, cleaner and more hygienic rooms and bathrooms, appearance and behavior of the nurses and doctors, up-to-date technology and more flexible visiting hours. While public/state-funded hospitals were evaluated as more affordable, patients think that they get more accurate medical/expense reports and that public hospitals have more experienced doctors.<sup>62</sup>

As a result, it could be understood that the patients are more satisfied with the quality of service of private hospitals than the public/state-funded hospitals. This shows that public/state-funded hospitals should renew themselves in every way to increase the level of customer satisfaction.

Two case studies were selected for the next chapter, one of which is an oncology ward of a private hospital, while the other is an oncology department of a state-funded/public hospital. The next chapter analyzes and compares these hospitals with photographs and aims to identify similarities and differences between them.

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<sup>60</sup> Tengilimoglu, Dilaver, Adnan Kisa, and Sophia F Dziegielewska. Patient satisfaction in Turkey: differences between public and private hospitals. *Journal of Community Health*, Vol. 24, No. 1, 1999.

<sup>61</sup> Cavmak, Seyda, and Dogancan Cavmak. "Turkiye'de Saglik Hizmetlerinin Tarihsel Gelismesi Ve Saglikta Donusum Programi." *Saglik Yonetimi Dergisi*, 2017: 48 - 57.

<sup>62</sup> Taner, Tolga, Antony, Jiju. Comparing public and private hospital care service quality in Turkey. *Leadership in Health Services*, 2006.

**3A.3. THE TWO**

# CASE STUDIES

# **3A.3.1. Public: Okmeydani Training and Research Hospital**

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<b>Architects</b>	Nishan Yaubyan, Guntekin Aydogan and Osep Sarafoglu
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<b>Location</b>	Istanbul, Turkey
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<b>Completion date</b>	1971
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<b>Use</b>	Public Hospital
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Okmeydanı Training and Research Hospital, formerly known as Beyoglu Hospital is a public hospital located in the European side of Istanbul in Sisli district and connected to the Ministry of Health (MOH). It was established in 1971. It is a teaching hospital that provides healthcare services. In addition to being one of the most important health complexes on the European side of Istanbul, it is one of the first hospitals in which the pediatric oncology department is opened.

The entire floor of this hospital is devoted to pediatric oncology and hematology. The oncology ward and the hematology ward are separated by a gate and no one is allowed to enter the hematology department except for physicians, nurses and patients' relatives in order to better protect the children under treatment.

There are double and triple rooms in the ward. There's no private room in this hospital for children. In addition to the rooms, there is a kitchen, a playroom, and a nurse's room. While, the chemotherapy unit is located on a separate floor of the cancer hospital.

At the moment, there is an on-going construction for the renovation of the hospital for it to become earthquake resistant with some private hospital features, such as more private rooms or shared rooms with no more than two beds. It's expected to be operational in the first half of 2020.

## Entrance



Figure 40. Source: Ada Erinal. This photo was taken on 05.08.2019 at the Okmeydanı Training and Research Hospital with the authorization of the head nurse.

The entrance is painted for a warm welcome to children, primarily the colors of nature used; such as yellow, green, brown and blue, and decorated with animal figures. The way it is painted is in contrast to the almost colorless interior. The painted colors and the figures correspond to each other and give a positive impact to the entrance, particularly to the children who enter here for the first time. This can be a starting point, an improved version of his type of application can be done at the entrances of the pediatric oncology wards to reduce the stress of patients.



## Hallway/Corridor



Figure 41. Source: Ada Erinal. This photo was taken on 05.08.2019 at the Okmeydanı Training and Research Hospital with the authorization of the head nurse.

The colors used on the walls, which are mainly white, with shades of beige with an orange stripe on the floor. The corridors are dark because of the lack of natural and also artificial light.

## Double Room



Figure 42. Source: Ada Erinal. This photo was taken on 05.08.2019 at the Okmeydanı Training and Research Hospital with the authorization of the head nurse.

The shared room is very small for two people and the beds are very close to each other. The walls are painted in beige and a different shade of beige is used for flooring. The windows are relatively small in size. There is not enough space to open both of the sofa-beds and still have extra space to walk.

## Sofa-bed for the companion



Figure 43. Source: Ada Erinal. This photo was taken on 05.08.2019 at the Okmeydanı Training and Research Hospital with the authorization of the head nurse.

The sofa beds for the children's companions are narrow and black.

## Triple Room



Figure 44. Source: Ada Erinal. This photo was taken on 05.08.2019 at the Okmeydanı Training and Research Hospital with the authorization of the head nurse.

The shared room for three person is very small and the beds are very close to each other. The walls are painted in beige, while the ceiling is painted in white and a different shade of beige is used for flooring. The windows are relatively small in size.



## Triple Room



Figure 45. Source: Ada Erinal. This photo was taken on 05.08.2019 at the Okmeydanı Training and Research Hospital with the authorization of the head nurse.

The sofa beds for the children's companions are narrow and black.

## Double Room



Figure 46. Source: Ada Erinal. This photo was taken on 05.08.2019 at the Okmeydanı Training and Research Hospital with the authorization of the head nurse.

The shared room is very small for two people and the beds are very close to each other. The walls are painted in beige and a different shade of beige is used for flooring.

## Bathroom



Figure 47. Source: Ada Erinal. This photo was taken on 05.08.2019 at the Okmeydanı Training and Research Hospital with the authorization of the head nurse.

The bathroom is big enough but there are no handrails for the physically disabled. The idea of using colored tiles instead of white tiles hasn't been taken into consideration.

## Wardrobe



Figure 48. Source: Ada Erinal. This photo was taken on 05.08.2019 at the Okmeydanı Training and Research Hospital with the authorization of the head nurse.

The only wardrobe provided for the shared rooms is not enough for the patients and their companions which share the same room.



## Kitchen for the patients and their families



Figure 49. Source: Ada Erinal. This photo was taken on 05.08.2019 at the Okmeydanı Training and Research Hospital with the authorization of the head nurse.

The kitchen is straight and narrow. It's not suitable for more than 4 people to use the kitchen at the same time. Also here the idea of using colored tiles instead of white tiles hasn't been taken into consideration.

## Playroom



Figure 50. Source: Ada Erinal. This photo was taken on 05.08.2019 at the Okmeydanı Training and Research Hospital with the authorization of the head nurse.

The playroom designed for children patients is small. The idea of coloring the walls hasn't been taken into consideration. The table and the chairs are not well thought for children of any age. The playroom looks also like a small claustrophobic box with no windows.

## Analysis

One of the first impressions is that the pediatric oncology ward of this hospital is very small in size. The corridors are narrow, as well as the rooms.

In this pediatric oncology ward, the rooms are quite small for two people and their companions. The beds are very close to each other and can only be accessed from one side because they are leaning against the wall; whereas, according to Neufert, one of the general criteria for bed placement should be that the bed must be accessible from three sides in case of an emergency.<sup>63</sup>

There are no private rooms.

This hospital provides curtain divisors in its shared rooms for privacy which is not enough, there are non-sufficient sofa-beds for the companions of the patients.

There is a very small playroom and a narrow corridor due to a lack of space. The walls of the playroom were painted beige, with a white ceiling, the same as the rooms. There hasn't been any intention to give a colorful look to this space where children go to spend their energies or do an activity out of their rooms.

The bathrooms in this oncology ward are not built to be physically disabled-friendly, as the bathroom has no handrails.

There is a kitchen, but it's narrow and small and in case that the oncology ward is full with patients and their families, it's not efficient and well-equipped.

There is no living room, or any other room where families gather and spend time together, considering that only mothers can stay in the ward with their children.

The entrance is colorful and warm, painted with animal figures, but may not yet be sufficient to distract the children from the first impression of an oncology ward.

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<sup>63</sup> Neufert, Ernst, Neufert, Peter, *Neufert Architects' Data*. Istanbul: Beta Basim Yayin Dagitim A.S., 2013. pg. 539

## **3A.3.2. Private: BAU Medicalpark Goztepe Hospital**

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**Architects**

Tasyapi

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**Location**

Istanbul, Turkey

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**Completion date**

2008

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**Use**

Private Hospital

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Bahcesehir University (BAU) Medical Park Goztepe Hospital is located on the Anatolian side of Istanbul in the Goztepe district. Its cancer hospital within its context is considered to be the first private cancer hospital in Turkey.

The complex has a Cancer Hospital dedicated exclusively to cancer treatments such as medical oncology, radiation oncology, etc. In addition, if any further diagnosis and treatment of patients is needed, they can be obtained from the General Hospital next door. The chemotherapy unit with a capacity of 58 patients is located on a separate floor of the cancer hospital.

The pediatric oncology ward is located on the second and the third floor, in the middle of the floors that are dedicated to adult cancer patients and the chemotherapy unit. In the pediatric oncology ward, all the rooms are shared rooms with two beds, except some private rooms that are reserved for children with very bad conditions.

The two floors are connected with the elevator which is open for all, both children and adult patients, and visitors. There is no playroom in the ward, but there is a corner in the hallway where all the toys are located.

## Entrance



Figure 51. Source: Ada Erinal. This photo was taken on 20.08.2019 at the BAU Medical Park Göztepe Hospital with the authorization of the oncology department chief physician.

The cold and colorless entrance to the pediatric oncology ward, shows that the importance of the first impression of the children is ignored.



## Hallway/Corridor



Figure 52. Source: Arzu Yuksel. This photo was taken on 20.08.2019 at the BAU Medical Park Goztepe Hospital with the authorization of the oncology department chief physician.

The hallway is big enough to host some other functions for children such as playroom which is missing in this hospital. The colors chosen are beige for the walls, white for the ceiling, tones of brown for the flooring, and yellow for the door frames.

## Hallway/Corridor



Figure 53. Source: Arzu Yüksel. This photo was taken on 20.08.2019 at the BAU Medical Park Goztepe Hospital with the authorization of the oncology department chief physician.

The hallway is big enough to host some other functions for children such as playroom which is missing in this hospital.



## Hallway / Corridor



Figure 54. Source: Arzu Yuksel. This photo was taken on 20.08.2019 at the BAU Medical Park Goztepe Hospital with the authorization of the oncology department chief physician.

The entrance is very dark and can have a negative impact on the children. The colors chosen are beige for the walls, white for the ceiling, tones of brown for the flooring, and yellow for the door frames. There are no doors to close this floor of the oncology ward, therefore, any person who goes out of the elevator can enter easily. This may lead to a lack of privacy for children who are being treated on this floor.

## Hallway/Corridor



Figure 55. Source: Arzu Yuksel. This photo was taken on 20.08.2019 at the BAU Medical Park Goztepe Hospital with the authorization of the oncology department chief physician.

The hallway is big and empty, there is one wardrobe where all the toys are stored, and a library. There are some tables for children. The hallway is well lit during the day only with the use of natural light.

## Double Room



Figure 56. Source: Arzu Yuksel. This photo was taken on 20.08.2019 at the BAU Medical Park Goztepe Hospital with the authorization of the oncology department chief physician.

The shared room is for 2 patients and their companions, sofa-beds are placed next to beds and there is still some space left to walk in the room. The windows are wide, yet facing the General Hospital building which blocks the direct natural light. The colors used are beige for the walls, white, grey and yellow for the headboard.



## Single Room



Figure 57. Source: Arzu Yuksel. This photo was taken on 20.08.2019 at the BAU Medical Park Goztepe Hospital with the authorization of the oncology department chief physician.

The private room is bigger than the shared room but poorly designed, causing the feeling of emptiness. The room is well-lit because of the windows on both sides. The colors used are beige for the walls, white, grey and yellow for the headboard.

## Bathroom



Figure 58. Source: Arzu Yuksel. This photo was taken on 20.08.2019 at the BAU Medical Park Goztepe Hospital with the authorization of the oncology department chief physician.

The bathroom is spacious and there are handrails for the physically disabled. Blue mosaics are used behind the toilet, along with white tiles, giving another feeling to the space.

## Wardrobe



Figure 59. Source: Arzu Yuksel. This photo was taken on 20.08.2019 at the BAU Medical Park Goztepe Hospital with the authorization of the oncology department chief physician.

The wardrobes are built-in the wall so they don't occupy space in the room.

## Analysis

One of the first impressions is that the pediatric oncology ward of this hospital is big in size but its empty. The hallway is wide, open and well-lit, except the entrance which is dark.

In this pediatric oncology ward, the rooms are spacious for two people and their companions. The beds are distant from each other and are accessible from three sides; which complies with the general criteria for bed placement of Neufert.<sup>64</sup>

There are private rooms, but can be used only in the presence of a child with very bad condition.

This hospital provides curtain divisors in its shared rooms for privacy which is not enough, there are sofa-beds for the companions of the patients and a chair for an extra person.

There is not a playroom, even though there is a large empty space in the hallway. Toys and books are kept in a closet which is placed in the corner of the hallway. There is one small table for small children, and a big table in case of events, such as drawing or workshops. There is not a place where children go to spend their energies or do an activity out of their rooms.

The bathrooms in this oncology ward are built physically disabled-friendly, as the bathroom has some handrails, even though the amount of handrails should be increased to make the bathroom safer for children.

There is no kitchen, nor a living room or a separate room for families to spend time together.

The entrance is cold and colorless which shows that the importance of the first impression of the children is ignored. The entrance should be improved by using some colors or objects to ensure a warmer welcome for children.

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<sup>64</sup> Neufert, Ernst, Neufert, Peter, *Neufert Architects' Data*. Istanbul: Beta Basim Yayin Dagitim A.S., 2013. pg. 539


# Comparing the case studies


## Public Hospital

- Narrow corridors
- Lack of space
- Small rooms
- Small playroom
- Shared double and triple rooms
- Beds are too close to each other
- Beds are small
- Beds are not reachable from three sides
- Non-sufficient wardrobe
- Non-sufficient sofa-beds
- Small kitchen
- Colorful entrance with animal figures
- Colored mostly in beige and white

## Private Hospital

- Large hallway with open space
- Bigger rooms
- There is no playroom
- Shared double rooms and one private room
- Beds are further from each other
- Bigger beds
- Beds are reachable from three sides
- Sufficient wardrobes
- Non-sufficient sofa-beds
- There is no kitchen
- Cold and colorless entrance
- Colored mostly in beige and white

 **Positive**

 **Negative**

According to the previous chapter, private hospitals are chosen because they're more beautiful, modern and new; while the public hospitals should improve themselves architecturally, because they're old and neglected. After the visit to the above-mentioned hospitals, it can be understood that, although the private hospital is more modern and new than the public hospital, there are still many things that can be improved, such as the use of space.

Subjectively, there is a feeling of emptiness in the private hospital. It's better lit than the public hospital because the corridors get natural light from large windows, and is wider with the open space; but because of the chosen architectural design, the oncology ward looks empty and far from a homey feeling.



The space provided for the public hospital pediatric oncology unit is smaller than the private hospital. Existing spaces such as shared rooms, playrooms, and kitchens are limited and not suitable for more people. In addition, there is a lack of space for other purposes, such as a separate living area, which can enhance the homely atmosphere of the ward.

In addition, there is no open space, such as a balcony or a terrace where children can go outside to breathe in the natural air, be under the natural light and sun, while still in the hospital. This is another missing part of both of these hospitals.

The therapeutic effect of the garden on children is ignored in both hospitals, there is nothing reminiscent of the "nature" in the private hospital, there are no plants or green areas where children can go and distract themselves for a while with the feeling of being in nature.

Instead, the only thing with the appearance of nature in the public hospital is the entrance decorated with animal figures and trees, but there is nothing that recalls the nature inside of the oncology ward.

As a result, both hospitals have many aspects to improve, in order to be more patient-centered and homey

# **3A.4. Verification of Selected Color Theories Applied on the Case Studies**

## Analyses of the Color Theories

It's a well-known fact that the use of color has effects on people, psychologically and sometimes even physically. The correct use of color can cheer people up and make them feel good, or in case of wrong use can make them feel sad, trapped or depressed. Because of this, the colors in the ambient, especially in the interiors, should be carefully selected. Harmony between colors needs to be achieved.

Every "harmonious" combination and taste of colors are subjective and can vary from one person to another. In order to rethink the healing spaces of the pediatric oncology ward, color schemes should not be chosen as a subjective taste, but should be supported by theories.

Therefore, the color theories mentioned above have been analyzed and confronted with the two case studies selected and studied in Turkey, in order to find the parameters that best fit the project.

While Goethe and Itten were working more on the color theories, Albers' work of the Interaction of Colors is more regarding the perception of color. Therefore, differences and similarities between the theories of Goethe and Itten and their connection to Albers will be discussed.

For Goethe, there were 6 primary colors and in his color circle, all the colors are placed in front of its complementary colors. Instead, for Itten, there were 3 primary colors that are placed in the center of his color circle, the secondary colors that are the mixture of the primary colors and tertiary colors on the outside circle.

Itten's color circle is an improved version of the one of Goethe, having more than 100 years and some more color theories from different color theorists between these two theories, makes Itten's theories more improved, recent and closer to the color system accepted nowadays; even though the core and the starting points of Itten's theories are basically the theories of Goethe.

## Johann Wolfgang van Goethe

- Light and darkness.
- Simultaneous contrast.
- Next contrast.
- Double contrast.
- The energetic and mild effect.
- The harmony law.

## Johannes Itten

- Light-dark contrast
- Simultaneous contrast
- The contrast of saturation
- The contrast of extension
- Cold-warm contrast
- The contrast of hue
- Complementary contrast

As it can be seen that there are similar theories which speak about the same thing but maybe under a different name.

Theories from both theorists can be grouped such as;

- 1.** Light and darkness & light-dark contrast can be grouped together with the contrast of saturation;
- 2.** Simultaneous contrast, which exists in both theories;
- 3.** The harmony law & complementary contrast;
- 4.** The contrast of hue;
- 5.** The energetic and mild effect & cold-warm contrast.
- 6.** The contrast of extension

In addition to these, Itten's theory of the contrast of extension is also based on Goethe's theories. Instead, Goethe's some theories such as the next contrast and double-contrast can be associated with some color perceptions of Josef Albers, such as the "after image effect" and the "relativity of color".

It can be understood that all the theories and practices on colors are more or less based on Goethe's color theories but slightly changed and improved by time.

Therefore, by combining the same or similar color theories together with these two color perception described by Josef Albers, a new list can be created after the verification with the case studies in order to base the colors that are going to be chosen for the design proposal.

The list of the theories that are going to be verified with the case studies are as follows:

1. Light-dark contrast
2. Simultaneous contrast
3. The complementary contrast
4. The contrast of hue
5. Cold-warm contrast
6. The contrast of extension
7. The after image effect
8. The relativity of color

### **Verification of the selected color theories applied on the case studies**



Figure 60. The corridor of Losante Hospital is colored mainly in white and beige, while there are some parts of the walls colored with different colors such as yellow, blue, orange and light blue. The color theories applied in here can be the complementary contrast together with the light and dark contrast. (Source: <http://www.losante.com.tr/Hastane/GorselTur>)



Figure 61. The rooms of the LOSANTE Hospital are not colored with only one neutral color, but there are also some shades of primary colors. The walls are painted with the tones of yellow and blue together with dark beige, the sofas are orange and green. Even the hemotherapy machine is colored with blue, yellow and green. Here it can be seen that the contrast of complementary colors and the constrast of hue is applied.

(Source: <http://www.losante.com.tr/Hastane/GorselTur>)



Figure 62. The entrance of the oncology ward in the Okmeydani Hospital is painted mainly in yellow, green, blue and the shades of brown. Here the theories applied are the contrast of hue. Source: Ada Erinal





Figure 63. The playroom of the oncology ward in the Okmeydani Hospital is painted in beige and white, there is no color theory applied in the walls. While the furniture is painted in green, yellow, blue, and pink. The colors chosen can be associated with the contrast of hue. Source: Ada Erinal





Figure 64. The rooms of the oncology ward in BAU Medicalpark Hospital are painted in grey, yellow, white and beige; while the armchairs are chosen in purple. In this room, it can be seen that there is the contrast of extension, the use of grey is softened by yellow, together with white; and the complementary contrast because of the use of purple and yellow together. Source: Arzu Yuksel



Figure 65. The new playroom of this public hospital in Istanbul, which is renovated by KACUV is painted mainly in blue as the prominent color, combined with other two primary colors of Johannes Itten which are red and yellow, and a secondary color which is green. Here, the main theory applied is the contrast of hue and the cold-warm contrast. (Source: KACUV, 2019)



Figure 66. The new playroom of this public hospital in Izmir, which is renovated by KACUV is also painted mainly in shades of blue as prominent colors, combined with red, green and orange. Here the theories applied are the complementary contrast and the light-dark contrast. (Source: KACUV, 2019)

These verifications are important in order to understand which theories we can see that have been applied consciously or unconsciously to these pediatric oncology wards.

After the verification, the theories which can be seen the most in these case studies, are selected in order to be used and applied in the design proposal of healing spaces.

1. Light-dark contrast
2. The complementary contrast
3. The contrast of hue
4. Cold-warm contrast
5. The contrast of extension

# **4A. BEST PRACTICES**

**ALL OVER THE  
WORLD**

## **4A.1. Paimio Sanatorium**

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**Architects**

Alvar Aalto & Aino Aalto

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**Location**

Paimino, Finland

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**Completion date**

1933

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**Use**

Used as a tuberculosis sanatorium until the 1960s

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**Key Point**

The use of color, patient-centered design

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Alvar Aalto and Aino Aalto gained an international reputation with their functionalist design for a new tuberculosis sanatorium later to be called Paimio Sanatorium. The construction has started and took place between 1929-1933.

This hospital is built over a hill in a pine forest because of the belief the “nature and fresh air can heal people”. It’s considered to be a true *“Gesamtkunstwerk”*<sup>65</sup>, because of the fact that it has been designed fully by Aalto, with all the details from the door handle to furniture. He chose all the colors used in the interior in collaboration with Eino Kauria who was a decorative artist. The colors of the corridors are combined with their different saturation values. The result does not disturb the eyes because it complies with the contrast of saturation by Itten, even though the corridors are fully colored. He chose to paint the stairs in yellow which can break the standardized hospital feeling and give warmth to the ambient.

His design focuses on what a patient sees from their bed, especially taking into account the ones that cannot stand up from their beds; the ceiling, the windows, the colors, the material, the furniture, etc.

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<sup>65</sup> Gesamtkunstwerk: A total work of art





Figure 67. Source: <https://www.finnishdesignshop.com/architecture/alvar-aalto-and-the-colors-of-the-paimio-sanatorium>



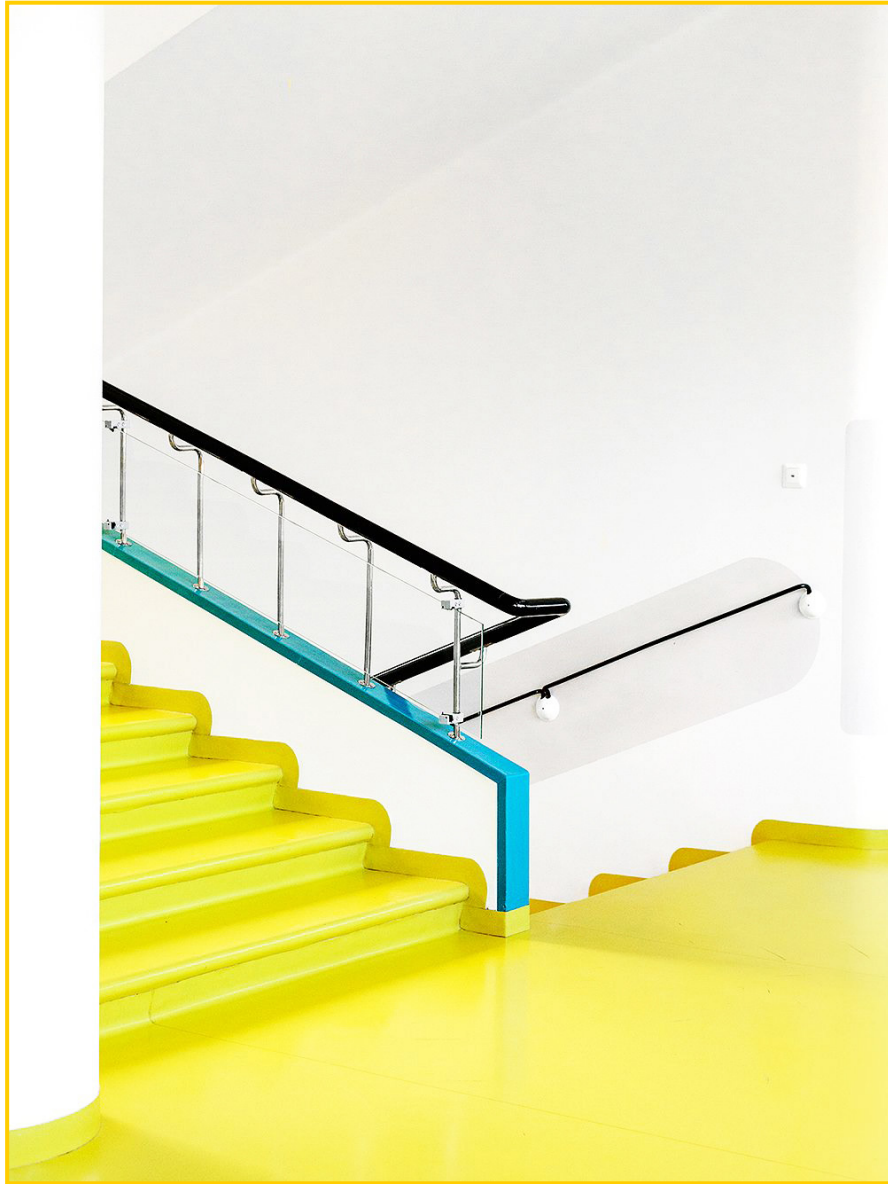


Figure 68. Source: <https://www.finnishdesignshop.com/architecture/alvar-aalto-and-the-colors-of-the-paimio-sanatorium>



Figure 69. Source: <http://www.paimiosanatorium.fi/>





## **4A.2. Princess Máxima Centre for Child Oncology**

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<b>Architects</b>	LIAG Architects
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<b>Location</b>	Utrecht, The Netherlands
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<b>Completion date</b>	2018
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<b>Use</b>	Medical Facilities
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<b>Key Point</b>	Balcony and colored glazing
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The Princess Máxima Center is known to be the biggest child oncology center in Europe. Its architecture creates a relationship between the indoor and the outdoor, between the children and the hospital. The architects' main focus was the children patient and their families, therefore they have designed a new layout of rooms where both children and their families have their own private spaces.

The center is divided for the children with the same age category to give their own space and designed according to their needs, in order to contribute their ongoing social and emotional development. In addition, there are rooms where the family and the children can cook and eat together, which creates a homey feeling. There are balconies for each room with seats and tables for patients and their companions. The balconies face with the courtyard, highlighting the importance of the fresh air and the connection with the nature through the garden in the courtyard.

The rooms are colored fully in white which is a negative aspect, but the wooden parquet gives a homey feeling. Only the cushions of the seats are colorful in the room. The passage with colored glazing gives a warm feeling and changes the ambient in a positive way.





Figure 70. Source: <https://www.liag.nl/projecten/prinses-maxima-centrum-voor-kinderoncologie>



Figure 71. Source: [https://www.archdaily.com/899421/princess-maxima-centre-for-child-oncology-liag-architects?ad\\_source=search&ad\\_medium=search\\_result\\_all](https://www.archdaily.com/899421/princess-maxima-centre-for-child-oncology-liag-architects?ad_source=search&ad_medium=search_result_all)





Figure 72. Source: [https://www.archdaily.com/899421/princess-maxima-centre-for-child-oncology-liag-architects?ad\\_source=search&ad\\_medium=search\\_result\\_all](https://www.archdaily.com/899421/princess-maxima-centre-for-child-oncology-liag-architects?ad_source=search&ad_medium=search_result_all)





## **4A.3. L'isola di Margherita**

### **“Island of Margherita”**

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<b>Architects</b>	Studio Miroglio & Lupica Architetti Associati
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<b>Location</b>	Turin, Italy
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<b>Completion date</b>	2016
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<b>Use</b>	Medical Facilities
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<b>Key Point</b>	Colorful environment, patient-centered design
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This new department has been designed and dedicated to children with rare pathologies by mixing architecture and therapy. The interior of this oncology center is designed to be an 'island', as can be understood from its name. All the walls of the corridors are decorated with figures of plants and animals living in the sea; such as fishes, sea stars, seaweed, etc.

There are six rooms in this oncology center and every room is designed with monochromatic colors, such as yellow for one room, blue, green, red, etc. All rooms are private rooms and big enough to accommodate the children patients and their families. There is a separate space in each room for the families of the patients. The private bathrooms are colored fully with the same color as the rooms.

The oncology center in general is colored in white in the background. But the white color doesn't stand out because all the colorful figures painted on it, which can be another way to use white in the hospitals.

Through the color choice, it can be seen that Johannes Itten's contrast theory of pure, complementary, warm and cold colors has been achieved.



Figure 73. Source: <https://www.compagniadisanpaolo.it/eng/Major-Projects/Torino/L-isola-di-Margherita>



Figure 74. Source: <https://compagniadisanpaolo.it/eng/Major-Projects/Torino/L-isola-di-Margherita>



Figure 75. Source: <https://www.compagniadisanpaolo.it/eng/Major-Projects/Torino/L-isola-di-Margherita>





## **4A.4. Kálida Sant Pau Center**



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<b>Architects</b>	Miralles Tagliabue EMBT
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<b>Location</b>	Barcelona, Spain
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<b>Completion date</b>	2019
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<b>Use</b>	Healthcare Center
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<b>Key Point</b>	Common & Living Space, Kitchen
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The Kálda Centre is built next to Hospital Sant Pau to support cancer patients emotionally, socially and practically with its warm and welcoming environment with its open, flexible and also some private areas.

It's designed to create a homey feeling for the patients in contrast to their hospital right next door. It is a place to relax, to meet other people, to have some tea.

There is an open kitchen with a dining area next to each other, a library and a multipurpose room that are located on the ground floor.

The relation between the dining area and the kitchen can feel as if the patients are at their homes. The arrangement of the living room is improved by the use of different types of chairs, lamps, and carpets.

The Center is well-lit and because of the fact that it's on the ground floor, well connected to nature.



Figure 75. Source: [https://www.archdaily.com/916960/kalida-sant-pau-center-miralles-tagliabue-embt?ad\\_source=search&ad\\_medium=search\\_result\\_projects](https://www.archdaily.com/916960/kalida-sant-pau-center-miralles-tagliabue-embt?ad_source=search&ad_medium=search_result_projects)



Figure 76. Source: [https://www.archdaily.com/916960/kalida-sant-pau-center-miralles-tagliabue-embt?ad\\_source=search&ad\\_medium=search\\_result\\_projects](https://www.archdaily.com/916960/kalida-sant-pau-center-miralles-tagliabue-embt?ad_source=search&ad_medium=search_result_projects)





Figure 77. Source: [https://www.archdaily.com/916960/kalida-sant-pau-center-miralles-tagliabue-embt?ad\\_source=search&ad\\_medium=search\\_result\\_projects](https://www.archdaily.com/916960/kalida-sant-pau-center-miralles-tagliabue-embt?ad_source=search&ad_medium=search_result_projects)





## **4A.5. Olivia Newton-John Cancer & Wellness Center**

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<b>Architects</b>	Johnson Architects & Smith McConnel
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<b>Location</b>	Melbourne, Australia
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<b>Completion date</b>	2012
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<b>Use</b>	Healthcare
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<b>Key Point</b>	Waiting room design
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The Olivia Newton-John Cancer and Wellness Centre has been built to lower the stress and relax the patients, their visitors and the staff with its design features, such as the natural light efficiency, the colors and natural materials used and its glazing design to bring the outside, inside.

The therapeutic effect of nature on the healing process of the patient is highlighted with the courtyard and its visual connection with the inside. The design of the courtyard nurtures healing through the natural light, fresh air and its ability to distract people.

Waiting area has an open kitchen for patients waiting for their appointments, which is an uncommon feature to be in the waiting area, but can be considered a positive aspect in the event of long waits, patients can relax even more and enjoy a cup of coffee in a comfortable environment.

Colors of the waiting area are chosen more among the neutral colors, with some touches of primary colors of Goethe, which are yellow and blue .





Figure 78. Source: [https://www.archdaily.com/326443/olivia-newton-john-cancer-and-wellness-centre-jackson-architecture-mcconnell-smith-johnson?ad\\_source=search&ad\\_medium=search\\_result\\_all](https://www.archdaily.com/326443/olivia-newton-john-cancer-and-wellness-centre-jackson-architecture-mcconnell-smith-johnson?ad_source=search&ad_medium=search_result_all)





Figure 79. Source: [https://www.archdaily.com/326443/olivia-newton-john-cancer-and-wellness-centre-jackson-architecture-mcconnell-smith-johnson?ad\\_source=search&ad\\_medium=search\\_result\\_all](https://www.archdaily.com/326443/olivia-newton-john-cancer-and-wellness-centre-jackson-architecture-mcconnell-smith-johnson?ad_source=search&ad_medium=search_result_all)



Figure 80. Source: [https://www.archdaily.com/326443/olivia-newton-john-cancer-and-wellness-centre-jackson-architecture-mcconnell-smith-johnson?ad\\_source=search&ad\\_medium=search\\_result\\_all](https://www.archdaily.com/326443/olivia-newton-john-cancer-and-wellness-centre-jackson-architecture-mcconnell-smith-johnson?ad_source=search&ad_medium=search_result_all)





## **4A.6. Hjältarnas Hus**

### **“House of Heroes”**

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<b>Architects</b>	White Arkitekter
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<b>Location</b>	Umeå, Sweden
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<b>Completion date</b>	2017
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<b>Use</b>	Healthcare Center
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<b>Key Point</b>	Common & Living Space
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“Children battling cancer are heroes; aiding their recovery is a true calling of architecture.”  
- White Arkitekter<sup>66</sup>

Hjältarnas Hus (House of Heroes) is built in the northern region of Sweden, because of a lack of places to stay while in treatment, as a temporary home for children who are suffering from long term illness and their families. It has small apartments or rooms, cooking areas, and rooms for other kinds of activities.

One of the main focus of the architects was to create an ambient where the children patients and their families can focus on their recovery and healing.

The prominent color that is used in this Center is gray and its shades, there are walpapers with some yellow, blue, and green. The importance of nature in interior design is not neglected and tiny trees and flowers are placed in the Center.

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<sup>66</sup> White Arkitekter, *Hjältarnas Hus-Hous of Heroes*, <https://whitearkitekter.com/project/hjaltarnas-hus-house-heroes/>



Figure 81. Source: <https://whitearkitekter.com/project/hjaltarnas-hus-house-heroes/>





Figure 82. Source: <https://whitearkitekter.com/project/hjaltarnas-hus-house-heroes/>



Figure 83. Source: <https://whitearkitekter.com/project/hjaltarnas-hus-house-heroes/>





## **4A.7. Spielraeume Playrooms**

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<b>Architects</b>	studio3 - Institute for Experimental Studies UIBK
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<b>Location</b>	Innsbruck, Austria
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<b>Completion date</b>	2017
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<b>Use</b>	Day Care
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<b>Key Point</b>	Playroom for children
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Spielraeume Playrooms is started as a collective bachelor thesis project of 21 students who were studying at the University of Innsbruck. It's is a timber building built by the students themselves and experts, the construction was completed in 2017 and handed over to the University.

The playrooms are suitable for children of any age category up to the age of 10, with its colorful furniture and well-thought elements and toys to play in its open and free space, which promotes the creativity of the children.

There are slides, climbing nets, playing and reading corners for children to play and relax. All the walls are in timber, which gives a natural feeling to the playrooms and colorful carpets.

It's a space where children get to spend their energy by running around, climbing while socializing with other kids; and when they're tired there is a small library corner for them to relax.



Figure 84. Source: [https://www.archdaily.com/892277/spielraeume-playrooms-studio3?ad\\_source=search&ad\\_medium=search\\_result\\_all](https://www.archdaily.com/892277/spielraeume-playrooms-studio3?ad_source=search&ad_medium=search_result_all)





Figure 85. Source: [https://www.archdaily.com/892277/spielraeume-playrooms-studio3?ad\\_source=search&ad\\_medium=search\\_result\\_all](https://www.archdaily.com/892277/spielraeume-playrooms-studio3?ad_source=search&ad_medium=search_result_all)



Figure 86. Source: [https://www.archdaily.com/892277/spielraeume-playrooms-studio3?ad\\_source=search&ad\\_medium=search\\_result\\_all](https://www.archdaily.com/892277/spielraeume-playrooms-studio3?ad_source=search&ad_medium=search_result_all)





## **4A.8. Santa Fe de Bogotá Foundation**

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<b>Architects</b>	El Equipo de Mazzanti
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<b>Location</b>	Bogotá, Colombia
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<b>Completion date</b>	2016
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<b>Use</b>	Healthcare Center
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<b>Key Point</b>	Interior Healing Garden
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This project has been chosen as a winning project of competition for an expansion of the existing Hospital Universitario and has been completed in 2016. It's a building that connects the pedestrians to the campus with its public spaces, green areas, and commercial places.

The architects created a building that is open and permeable thanks to its building material which are bricks and the way they're installed; in contrast to all the other hospitals in Bogotá which are more isolated with respectively smaller windows without consideration of human needs and their psychological situations. The facade allows more natural light inside the hospital and serves as a shading at the same time.

On the ninth floor, there is an interior garden to help to reduce the stress of patients; researches done for the hospital showed how effective it is on reduction in recovery time. The garden has a wooden pavement for patients to walk through, and benches for them to sit, relax and enjoy nature.





Figure 87. Source: <https://www.archdaily.com/876184/fundacion-santa-fe-de-bogota-el-equipo-de-mazzanti>





Figure 88. Source: <https://www.archdaily.com/876184/fundacion-santa-fe-de-bogota-el-equipo-de-mazzanti>





Figure 89. Source: <https://www.archdaily.com/876184/fundacion-santa-fe-de-bogota-el-equipo-de-mazzanti>





**B. METHO**

**ODOLOGY**

# 1B. RESEARCH FOR



**“CHILDREN  
CENTERED  
DESIGN”**

# **1B.1. Methodology Applied on Focus Group**

## Past Example of an Art-based Focus Group

Before performing the focus group with children with cancer for this thesis, researches has been conducted to see if this kind of activity with ill children has been done before. As a result, an example of an art-based focus-group was found that has been performed by Veronica Lambert, Jane Coad, Paula Hicks, and Michele Glacken among 55 children patients who;

- are between 5 to 8 years old
- have different nationalities
- have acute or chronical illnesses
- are patients in one of the three children's hospitals that selected for this focus-group in Dublin, Ireland.

Because of the conditions of the children, only 26 of them were able to draw or used arts and crafts to express themselves, while with the rest of them an individual oral interview on the bed-side has been carried out and the results were recorded.

The questions were asked to the participants as follows:

1. "Draw, color, design a perfect (ideal) hospital room. Include everything you need to make your stay in the hospital as comfortable as possible (as home-like). You draw what you think a room should look like, design a bed, create a floor plan, or draw a hospital from inside..."<sup>67</sup>
2. When the drawing is finished, children were asked:
  - a. To describe what they drew and explain the elements of the drawing.
  - b. To explain the if there are any other things that is not visible on the paper or is not understandable without an explanation.

As a result, 3 themes have emerged: physical environment, access, and personal space. Braun and Clarke's (2006) six-step guide has taken into consideration to evaluate the results.

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<sup>67</sup> Lambert, Veronica, Hicks, Paula, Coad, Jane, Glacken, Michele. *Young children's perspectives of ideal physical design features for hospital built environments*. Dublin: Journal of Child Health Care, 2014.

Regarding physical space, children asked for:

1. *Creative use of space*, such as using visual displays for the ceiling and the floor as a playground.
2. *Imaginative decoration*, children asked for colors everywhere and suggested using unisex tastes such as using green, yellow; and using materials for the furniture which is 'shiny, smooth, fluffy, woolly and soft'. The children frequently stated that they would like having pleasant accessories like soft pillows, beds, bed linens and 'comfortable chairs and sofas with lots of cushions'.
3. *Bringing the outside in*, children spoke or drew figures that belong to nature (e.g. trees, plants, grass, birds, and flowers) to decorate the walls of their hospital bedrooms and general furniture.<sup>68</sup>

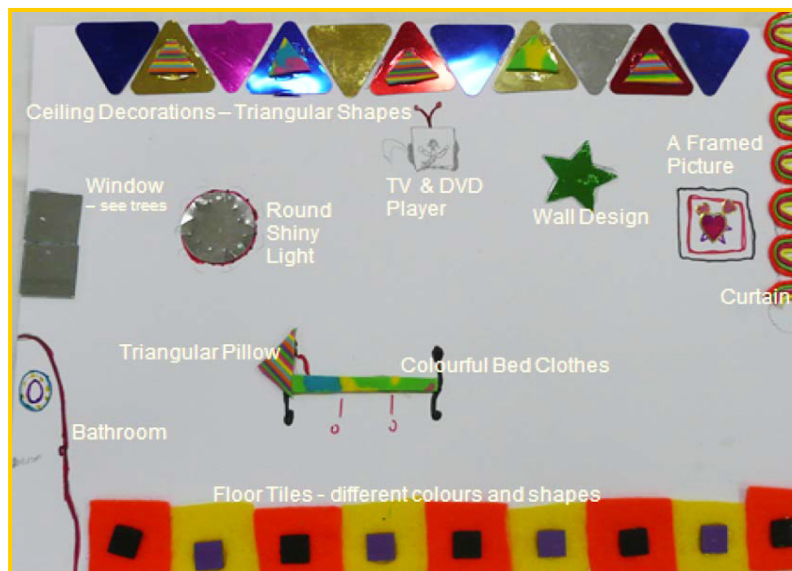


Figure 90. Ideal hospital room design by 7 years old girl.

Source: Lambert, Veronica, Hicks, Paula, Coad, Jane, Glacken, Michele. *Young children's perspectives of ideal physical design features for hospital built environments*. Dublin: Journal of Child Health Care, 2014. pg.64

<sup>68</sup> Lambert, Veronica, Hicks, Paula, Coad, Jane, Glacken, Michele. *Young children's perspectives of ideal physical design features for hospital built environments*. Dublin: Journal of Child Health Care, 2014. pg.63

Regarding access, children asked for:

1. *First impressions*, it's important to give importance to the first impression of the children when they enter the hospital or to the ward. Children spoke about the need in waiting areas for appropriate playing areas or facilities.
2. *Orientation*, children expressed that they want to have a clearer idea of the way-finding through the hospital.
3. *Movement*, children required to have open spaces to spend their energies by running, dancing, jumping, etc. Children who cannot go out of their beds asked to bring everything to the bedside.<sup>69</sup>



Figure 91. Children have designed their own private rooms and they connected the rooms to each other by corridors that meet in the middle with a playroom, as it's shown in the middle of the image. From the playroom, the path leads to the small pink circle room which is a technology room that is equipped with x-boxes, TVs, and computers. While from the other side of the playroom, there is a path made with stones that leads to the squared green areas that are garden and outdoor playing areas.

Source: Lambert, Veronica, Hicks, Paula, Coad, Jane, Glacken, Michele. *Young children's perspectives of ideal physical design features for hospital built environments*. Dublin: Journal of Child Health Care, 2014. pg. 65

<sup>69</sup> Lambert, Veronica, Hicks, Paula, Coad, Jane, Glacken, Michele. *Young children's perspectives of ideal physical design features for hospital built environments*. Dublin: Journal of Child Health Care, 2014. pg.64-65

Regarding the personal space, children asked for:

1. *Individual and family space*, children wanted to customize their individual space personalizing their beds, bringing their toys and personal belongings to feel more home-like. Children also wanted to have their families close to their beds to spend more time together.
2. *Privacy*, children stated that they want private spaces in their rooms, their own bathrooms. Children wanted to have control over the environment such as lightings in their rooms, TV channels, etc.
3. *Storage*, children specified that they need sufficient storage area, especially the ones who have to stay long-term in the hospital. They required to have wardrobes that are colorful or creatively designed.
4. *Noise*, children expressed their discomfort that the internal and external has lots of different kinds of noises such as a crying baby, machines, doctors or traffic; especially during the night.
5. *Lighting*, children stated that the interior lights of the hospital are very bright, always turned on and they're out of their control. Therefore, children drew different kinds of lighting above or next to their beds which they can control.<sup>70</sup>



The results of this research show that children require a hospital environment that is colorful, comfortable, home-like, friendly. It also shows that children need their private space where they can personalize along with the space for their families

Figure 92. Ideal hospital room design by 8 years old girl.

Source: Lambert, Veronica, Hicks, Paula, Coad, Jane, Glacken, Michele. *Young children's perspectives of ideal physical design features for hospital built environments*. Dublin: Journal of Child Health Care, 2014. pg.66

<sup>70</sup> Lambert, Veronica, Hicks, Paula, Coad, Jane, Glacken, Michele. *Young children's perspectives of ideal physical design features for hospital built environments*. Dublin: Journal of Child Health Care, 2014. pg.65-67



## Application of the Experiment

The second part of the thesis is an experiment to understand the solutions for the ideal pediatric oncology units. If further scientific research is to be performed, this information may be referred to psychologists for consultation. This part consists of four stages.

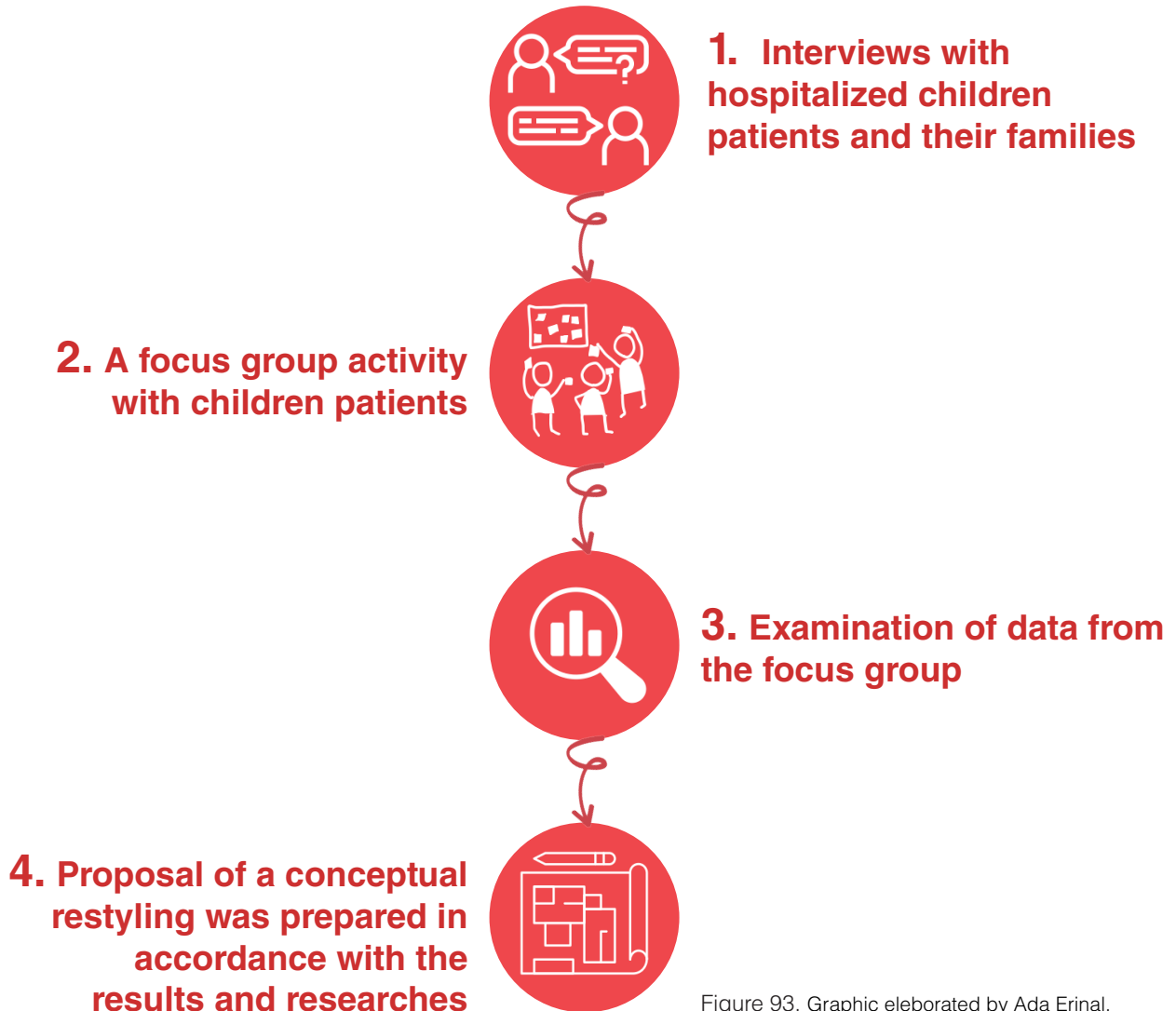


Figure 93. Graphic elaborated by Ada Erinal.

1. In the **first stage**, during the visits to the hospitals selected as case studies in Istanbul, children patients staying there were interviewed. The interview was conducted with children between 8-12 years old. The main theme of the conversation was: “If you would have the chance, how would you design this oncology ward so that the children staying here could get out of the cold hospital environment and go into the warm home environment?” The children were happy to talk to someone who was willing to listen and they have expressed themselves very well. Interviews with their families, especially with their mothers were also carried out, in order to understand their point of view regarding what needs to be done to improve these environments both for the families and their children.

2. In the **second stage**, after obtaining permission from the Head of BAU Medicalpark Hospital Oncology Department, the number of children who wanted to participate in the focus group activity was determined. On the day before the event, the number of children wishing to attend the event was ten, but only five could attend due to the deterioration of their health status on the day of the event, and only three of them had positive results.

The author of this thesis has collaborated with Arzu Yuksel who is an interior designer and a LOSEV volunteer, together with Murat Havan, who is a painter that has a lot of experience working with children. Before the event was started, children were asked: “How is this hospital environment should be for you, what is your ideal healing environment?”. Children were supplied with A3 paper together with the drawing tools such as crayons and pencils. Some of the children wanted to draw their ideal hospital room while others had ideas for the common areas and corridors. After the event, children were asked to interpret and explain their drawings, in order to understand what it is on the paper and what they really mean. The event took three hours, together with the interviews. Following the event, the authorization was given from the children to share the drawings and photographs in this thesis.

3. In the **third stage**, the explanations and comments of the children were analyzed together with the pedagogue Assoc. Prof. Dr. Muge Yukay Yuksel, using in order to fully understand the needs and a conclusion was recorded.

4. In the **fourth and the final stage**, some proposals for the restyling at the selected pediatric oncology ward were done based on the data obtained from the interviews, the focus-group and the researches.

# 1B.2. Interviews

**1B.2.1.**

**CHILDRENS'  
POINT OF VIEW:**

# EXPECTATIONS OF CHILDREN



**Name:** Child n.1

**Age:** 12

**Gender:** Female

**Hospital:** Okmeydani Training  
and Research Hospital

**Room Type:** Shared Bedroom

**Treatment Length:** 8 months

**Interview Date:** 05 August 2019



**Ada:** Hi, nice to meet you. How old are you?

**Child n.1:** I'm 12 years old.

**A:** How long have you been getting treatment here?

**C1:** For almost 8 months now.

**A:** What do you want to be in the future?

**C1:** I will either be a nurse or a doctor, I would like to be an oncologist

**A:** I hope you achieve this dream of yours... So tell me, how could this place be? Picture it... How this place that you're getting treated should be? How would you like to see your room as soon as you enter? How do you think we should design this place for these children as architects? What do you think we have to know about it?

**C1:** I would decorate the rooms beautifully to make the children feel at home. I would put seats, but the ones that are colored like the sofas in my house. These seats in these rooms are hard. I would like them to be softer. I could have made our beds a little bigger. **I'd put blue colour on our wall.** Because blue is like the color of freedom for me. Could be with some drawings on them, such as butterflies, angel wings... **I wish the children could feel peaceful and safe in their rooms.** Because here we struggle a lot; we take medications, we have a process of throwing it out from our system, and we have difficulty in this process. I would do something like that to support the children. I'd bring better toys to the playroom. **The playroom is really small** so when there is already two children playing with the video games, there is no more space left for another children. So I would make the playroom bigger. Because here there are also babies and they also deserve to spend better time with their moms here. Another important thing is that the rooms are for two people and sometimes moms are not available to come and stay with their children, so that's why their father comes. Not all, but some mothers are uncomfortable to stay with a stranger man in a small room. That's why **I would like to have a separate meeting room** where fathers and mothers can spend some time with their children together. **I would also make our playroom white.**

**A:** Why do you think it should be white?

**C1:** I think white because it seems to me the color of innocence.

**A:** Nice... What would you do after that? Do you like the beige color of the corridors?

**C1:** I actually like the color of the corridors, but **I could also cover them with beautiful pictures.**

**A:** What kind of pictures would you cover? What is it, nature, water, insects, flowers, birds ...

**C1:** **I wish it was related to nature** because we cannot go out while we are taking chemotherapy here. And I'd have the instruments used for treatment put in a nursing room. Because sometimes there are needles on them and it can be scary when children see them. I was just playing with one of the babies here, to entertain her. I took gloves but she got scared when she saw them because they're always in the corridor and reminds her the pain. So that why I could have taken them to the nurses' room. I could have camouflaged them so nobody would see them. Another thing that I would do is to **make a new room for mothers** with babies to make them even more comfortable, for example, I could put diapers in that room. Because since they can't go out from here because they have to take care of their children, I would give them diapers and baby food to supply their basic needs.

**A:** It can also be a place for mothers to talk to each other or to distract them for a while. A separate room for the mothers and a separate room for you. While you are relaxing in your room, they can have a coffee break maybe, a room where they will be more comfortable. There is not a such room here, am I right?

**C1:** No, there is not.

**A:** Would you like the windows to be bigger? To see more outside?

**C1:** Of course I would. But now that we're facing a construction of the new hospital, so we can't see much, we're just seeing the construction, so we can't get out when we're bored. When we try to get there, we can't pass if we're connected to the machines, so sometimes that is a problem.

**A:** Where is “there” you’re referring?

**C1:** There is the fire escape stairs from the kitchen, sometimes we go up the fire escape stairs to see the outside. For example, **I could make the kitchen a little bigger.** A kitchen which is like a restaurant, where moms takes their children to get some food, like a play. They can have fun that way. I would put toys there too. I would organize contests, who will make the most beautiful cake with their mothers. Maybe they will forget the place they're in for a while and this can cheer them up for a little.

**A:** Absolutely... Can you eat everything?

**C1:** No, it's restricted. Sweet and some harmful food is forbidden. But sometimes we are able to have a slight getaway. But it has to be homemade.

**A:** What is your opinion about the lights here?

**C1:** The lights are okay but the lamps in homes is a little bigger, you know? **I would make big chandeliers on both sides.** I would put the princess lamps in the children's rooms for girls.

**A:** Thank you very much, I appreciate your thoughts and I hope you get well very soon.



**Name:** Child n.2

**Age:** 12

**Gender:** Female

**Hospital:** BAU Medicalpark  
Goztepe Hospital

**Room Type:** Shared Bedroom

**Treatment Lenght:** 2 months,  
second time

**Interview Date:** 20 August 2019



Figure 94. Ideal room of the oncology ward, drawn by a 12 years old girl. The photo was taken by Arzu Yuksel, the authorization was given by the owner of the drawing.

**Ada:** Hii, it's nice to meet you, can you tell me about your drawing?

**Child n.2:** First of all, I would like my chemotherapy machine to be in the form of ice cream.

**A:** So why do you want something like that?

**C2:** I like ice creams a lot, and these machines are a bit scary and we are going around with them all the time, so having a machine with something that I like would make me feel better. My favorite color is purple, so I made a room which is more purple-oriented.

**A:** Why is there an aquarium on the floor?

**C2:** Yes, because it looks better with these kinds of drawings. These **flooring we have here in the hospital are a little boring**. I would use some colors to make it more vivid.

**A:** Do the colors you use mean anything to you?

**C2:** I use purple because I love it. The reason I use yellow and blue is that they're the colors of the team I support which is Fenerbahce.

**A:** Okay so you want your rooms to be more purple, do you want the ceiling to remain white?

**C2:** I don't want the ceiling to remain white. I'd like to see a rabbit when I wake up, or even better, lots of rabbits.

**A:** How would you like the corridors to be?

**C2:** I want **pictures on the walls of the corridor, like graffiti**. A playing area can be made here. Some varieties of toys and puzzles can be supplied for the little ones. There could be a swing for the children. I think the swing could be nice.

**A:** Is there anything you miss, or you feel lacking?

**C2:** There can be **a place with a large open space**, such as a balcony or a terrace. And I wish it had big family swings in it. It would be nice if the place had **green areas and grass**.

**A:** So you want to feel more the nature?

**C2:** Yes, and there could be some tables for families to sit and maybe to eat. **I also wish that my room was brighter**, because there is another building right next to our windows so the room doesn't get as much light as we need. I drew my windows circle to give a different feeling to the room than now. **I would want my room in the hospital to make me feel like my own room at home**, so I can do anything I want.

**A:** What do you need more to feel in that way, to feel at home?

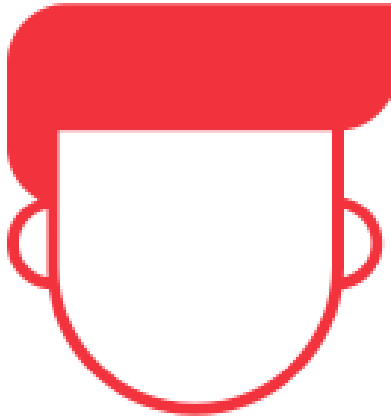


**C2:** My bed linens at home are very colorful. We can't bring them from home because we can't come and go so often and they have to be changed frequently because of hygienic reasons. So that's why we can't use our own bed linens. **I also wish I was the only one in the room, to have a private room.** It is good for hygiene and **I can act freely.** There are no private rooms here.

**A:** Do they divide you by age groups, or it's mixed?

**C2:** It's mixed generally but sometimes it can also be divided by age, but it's mostly mixed. For example, I love listening to songs and also to sing. But my roommate can be uncomfortable, even if I listen the music at a low level. Since our beds are close to each other, they can hear it anyways and may get disturbed. So I want to be alone in one room, or with someone that I can get along with but it's a bit of luck.

**A:** Thank you very much for participating this workshop and for sharing your opinions with me. I hope you get well soon.



**Name:** Child n.3

**Age:** 10

**Gender:** Male

**Hospital:** BAU Medicalpark  
Goztepe Hospital

**Room Type:** Shared Bedroom

**Treatment Length:** 6 months

**Interview Date:** 20 August 2019



Figure 95. Ideal corridor/hallway of the oncology ward, drawn by Abdullah Kadir, a 10 years old boy. The photo was taken by Arzu Yuksel, the authorization was given by the owner of the drawing.

**Ada:** Hi, it's nice to meet you, what can you tell me about your drawing?

**Child n.3:** I have drawn a small football field because I want to play football. I really like football but I can't play here. **I love going to a park, and I really miss it.** I love swinging. I'd like to have swings for swinging during the day. I love playing in the sandbox, that's why I have drawn a sandbox because I would like to put one here. I like to jump. I'd like to do all of these. For example, I have a battery-operated car at my house. I can't drive it now because I cannot bring it here in the hospital. I love to drive battery-operated cars and also to ride a bike. I would like to read my favorite books here, **we don't have a place to sit and read outside of our rooms.** So I drew these benches where we can sit, or eat something. Children can also play here, they can ride whatever they want. They can read books. They can paint, take toys and play.

**A:** Do the colors you use mean anything to you or do you use them because you like them?

**C3:** I used the colors I like.

**A:** So tell me about your room, how would you like your room to be?

**C3:** **I would like to have a spacious room, bigger and more comfortable.** I wish there was **a little playground in my room** that is soft. I like soft places. You know, I'd like to get one of those little playhouse in the outside playgrounds? I love playing with them, to get into them. I wish I could play with them also here. I'd like to add a little swing in my room.

**A:** Do you want swings both in the hallway and in your room?

**C3:** Yes, I would like to have them both. You know the small ones for children, I would like to have those ones in my room. I would like to have also a small slide. I'd like a bookshelf.

**A:** Don't you have a bookshelf in your room now?

**C3:** No, I don't have.

**A:** Would you like the room to be colorful?

**C3:** I like the colors I used here, I might have like them in my room too.

**A:** So let's say we've put all that they want in the hallway, what color would you like to get on the walls?

**C3:** Since this is a hospital the color of the wall should be decided with other children who are staying here, but if you ask me, **I would color the walls in pink, yellow, red and orange.**

**A:** These colors mean anything to you, or it's just because you like it?

**C3:** It's because I like it so I would like to see them here.

**A:** Thank you very much for all. I wish you get better soon.



**Name:** Child n.4

**Age:** 10

**Gender:** Female

**Hospital:** BAU Medicalpark  
Goztepe Hospital

**Room Type:** Shared Bedroom

**Treatment Length:** 3 months

**Interview Date:** 20 August 2019





Figure 96. Ideal room of the oncology ward, drawn by Ravza Yaren, a 10 years old girl. The photo was taken by Ada Erinal, the authorization was given by the owner of the drawing.

**Ada:** Hi, thank you for participating in this workshop today. Can you explain your drawing to me?

**Child n.4:** I have drawn my room. I would like to have a closet to put my things in, and a food locker. I would like to have a ball pit where I can slide in. I would like to have also a swing.

**A:** Do you want these in the playroom, hallway or in your own room?

**C4:** I would like them to be in my own room.

**A:** Is there any color that you would like to put on the wall for your room and the hallway?

**C4:** For my room, I would like to color purple the walls, for the hallways I would like them to be red. **I would draw birds on the walls.** Because I like birds.

**A:** Thank you very much, hope you get well soon.

**1B.2.2.**  
**PARENTS'**  
**POINT OF VIEW:**

# **EXPECTATIONS OF THE PARENTS**



## Mother 1 (38), Child n.5's (18, ex-patient) Mother

**Mother 1:** I remember that one time when my daughter was still on treatment at the hospital, it was snowing and she wanted to see snow but it was forbidden for her to go out of the hospital. So his father brought snow with plastic bags from outside and my daughter got so happy and made a snowman with it, and asked for doctors to be called. I went and called her doctor. The doctor got scared and asked if something happened. Because my daughter always called the doctor only if there was a problem. I told her that there was no problem and that Oyku has called her only to show her snowman. Her doctor gathered the whole crew and came to the room, they liked it very much. Then all the fathers started to carry snow from outside to inside. Therefore all the children could meet with snow inside the hospital. They have forgotten their illnesses quickly enough while playing with snow. **It's important for them to be understood by someone who understands their world. With great memories like this, these children can really fight with these heavy treatments.** For example, my daughter Oyku has had her first love here. One day when I entered the room, she was painting the nails of a male doctor with red nail polish.

I think it's the problem of adults, and I think they need psychological treatment to be able to pass through this heavy period. Because **the child can look at the mother's face and understand the greatness or smallness of what she's going through.** Therefore also the parents have to enjoy the place they're living in. As mothers, we sometimes gather in the kitchen and relax. There are things that trigger each other, for example, if our environment is clean, you find peace, but if the environment is dirty and gloomy, it is reflected in your outer world.

I believe that spaces have souls, when you design those spaces, if you don't catch that spirit first, it doesn't come out. For example, I learned about Gaudi in a book that I read. And I fell in love with his works. I'd really like to live in a place like that. **A world of fairy tales can be created here,** and I think fairy tales are things that erase the age.

**Ada:** In my project, I had in mind to use the concept of the “Neverland” where Peter Pan lives with the children who don't grow old. They live on the island, they have the sea, the forest, they have pirates and fairies.

**M1:** Starting from that, for example, the hospital let's say has 14 rooms and every room is not numbered, but named. Each room can have the name of a hero in children's dreams and can be designed accordingly. The children can stay in the hero's room, and even this affects children. **The atmosphere contributes to the treatment of the child.** In addition to this, children are left behind of their education because of the treatment, therefore **every hospital should have a class where children can continue their education.** Because these children are being treated for years, and this can mean being away from school for years.

**A:** Yeah that is true... Another point that I would like to ask you is that when I talked to other mothers, they told me that there are some mothers who are uncomfortable when fathers of other children entered the room or spend the night there. What is your opinion about this?

**M1:** When such a heavy treatment is started, the children's relationship with the family deteriorates slightly, because of their immunity. Because some children's immunity can go down to zero. But **the children get their powers from their families.** It may, therefore, be family rooms. Rooms where fathers, siblings or friends can come and just spend time with them. But it is impossible in rooms where two children stay together, so there may be small family rooms for this occasion. In addition to this, **there must be music rooms, sports rooms, drawing rooms...** Because each child has his/her own abilities, and these children can find or develop those abilities here in the hospital. I just don't think it's right to put only toys for children to play or to spend their energies. At the same time, I think music is a therapy, you can play music in the music rooms. Thus they have energies and goals to fight diseases.

**If a pediatric hospital is to be designed, it is necessary to look at the child's world trying to see with their own eyes.**



## Mother 2 (47), Child n. 6's (11) Mother

**Ada:** How is the education of your children, do teachers come to teach children? Does the government offer such a thing for your child?

**Mother 2:** No, **no one comes to the hospital for the education of the children**, there are only people who come from charity organizations to play games and entertain children. Sometimes they give out gifts and the children get very happy. My child could not go to school last year, he had no condition to go because of his illness, so we will demand home education from the State. But **I wish there was an education of the children also here**. In addition to that, **the rooms are very small and very narrow, the wardrobes are too small** to fit all the items we have because there is only one wardrobe for all the people who share the same room.

Each room has a mini-fridge but they're not enough. Because we, as mothers, cook the food for our children here at the hospital or at home and we bring it here and conserve it. If the food doesn't fit in the refrigerator in the room, therefore we need to put it in the kitchen but the refrigerator in the kitchen is for everyone, so sometimes the others can take the food without paying attention and you can't say anything because some mothers' children are worse than others and we need to be understanding to each other. These are some of the problems here.



## **1 B.3. Focus Group: “Draw me your ideal healing environment”**



Participant n.1:  
Child n.2, 12  
Drawn space: Room



Figure 97

## ANALYSIS OF THE ELEMENTS IN THE DRAWING\*

- 1** Not drawn, but participant has stated that she would like to see rabbits on the ceiling
- 2** Pendant light decorated with flowers and butterflies
- 3** Pink colored wall, red colored door of the room
- 4** Wardrobe colored with pink and purple
- 5** Chemotherapy machine in the shape of an ice-cream
- 6** Blue and yellow headboard in the shape of a heart
- 7** Wall painted in the form of sky
- 8** Colored bed sheats for beds, used colors: purple, pink, yellow
- 9** Floor painted as the sea
- 10** Purple pear shaped beanbag chair
- 11** Circle shaped windows with pink curtains
- 12** Colorful rug for the floor

\*All the elements of this drawing were explained by the person who made this drawing. Further analysis of these elements is in the following chapter.



Participant n.2:  
Child n.3, 10  
Drawn space: Hallway

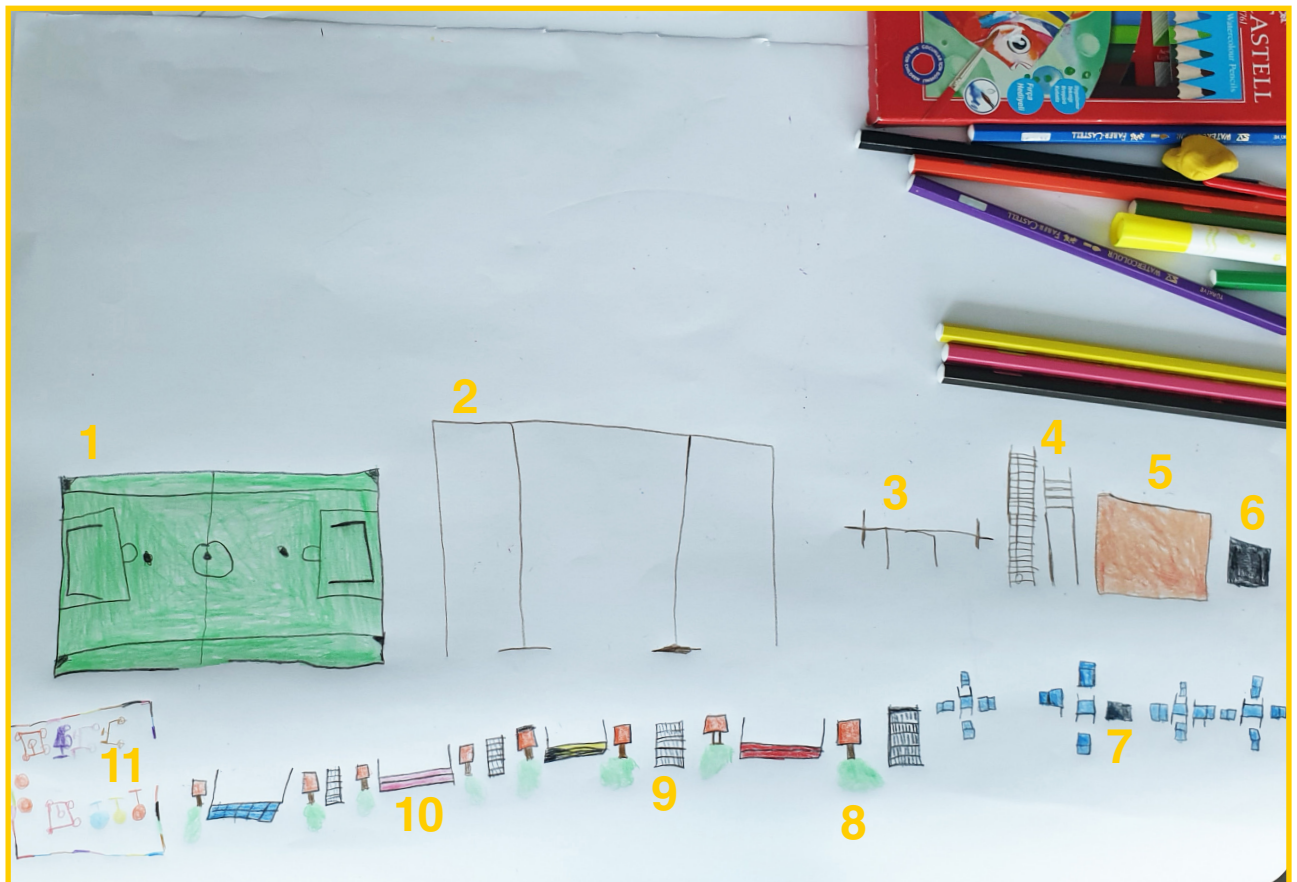


Figure 98

## ANALYSIS OF THE ELEMENTS IN THE DRAWING\*

- 1 Mini soccer field
- 2 Swings
- 3 Seesaw for kids
- 4 Playground climbers
- 5 Sandbox
- 6 Trampoline
- 7 Tables and chairs playing, resting, eating, meeting with the families
- 8 Small tress
- 9 Libraries
- 10 Benches
- 11 A corner to keep all the bicycles, battery-operated cars, hopper balls for kids

\* All the elements of this drawing were explained by the person who made this drawing. Further analysis of these elements is in the following chapter.



Participant n.3:  
Child n.4, 10  
Drawn space: Room

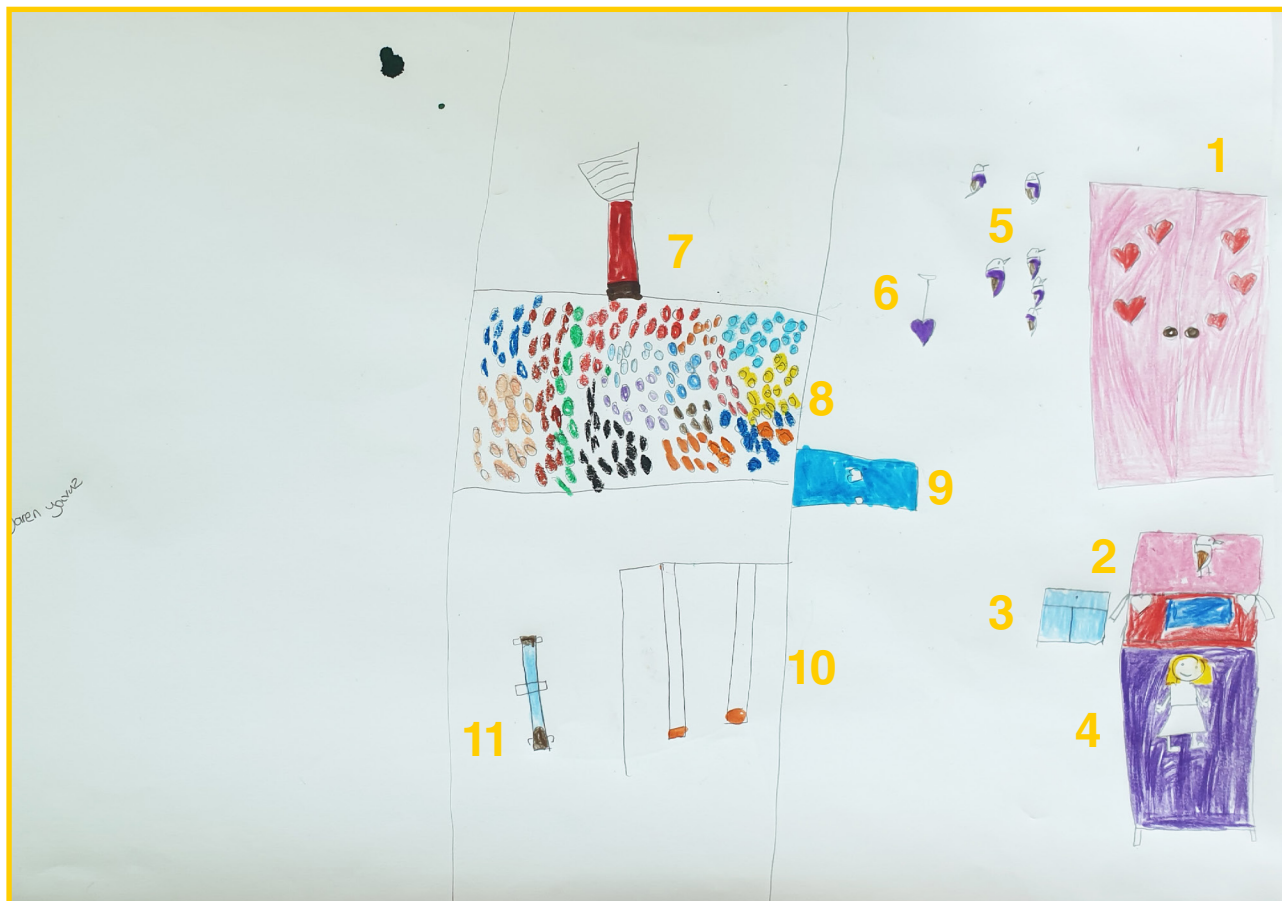


Figure 99



## ANALYSIS OF THE ELEMENTS IN THE DRAWING\*

- 1 Pink wardrobe with red heart shapes
- 2 Pink headboard with ice-cream
- 3 Blue small cabinet for personal items and snacks
- 4 Colored bed sheats for the bed, used colors: purple, red, blue with shapes of heart
- 5 Purple birds painted on the wall
- 6 Pendant lamp in a shape of heart, colored in purple
- 7 Slide to go inside to ball pit
- 8 Ball pit with colorful plastic balls
- 9 Door of the room, colored in blue with heart shapes
- 10 Swings
- 11 Seesaw for kids

\*All the elements of this drawing were explained by the person who made this drawing. Further analysis of these elements is in the following chapter.

## 1B.4. Results

## Analysis

After the workshop which has been held by the author of this book, the interviews and the drawings were taken to pedagogue Assoc. Prof. Dr. Muge Yuksel for analysis. To analyze the data, Braun and Clarke's (2006) six-step guide has taken into consideration.

1. Familiarizing with the data collected by the author herself, by means of re-reading the texts and viewing to find different meanings, sequences of different interviews and drawings.
2. After reading the collected data multiple times, identifying the repeated sequences by different interviewees or participants and highlighting important aspects to extract codes.
3. Putting together the extracted codes to create potential themes.
4. After finding out the themes, reviewing them all and selecting the ones which are connected to the extracted code and the collected data to define and concentrate on the last version of the themes to work with.
5. Defining the characteristics of each theme and naming the found themes.
6. Analyzing the results of this procedure and producing the report.

## Results

Following those steps with the guidance of pedagogue Assoc. Prof. Dr. Muge Yukay Yuksel, along with her work entitled *"An Investigation of Senior Vocational School Students' Perceptions of the Future through Their Drawings"*<sup>71</sup> and *"A Qualitative Study on the School Pictures Drawn by Children Having Difficulty in Adapting to School"*<sup>72</sup> as examples for evaluating focus-groups based on drawings. As a result, two categories and three themes related to the hospital and the children have arisen.

1. Emotional State of Children
2. Expectations of Children
  - A. Inside of the Patients' Room
  - B. Outside of the Patients' Room

<sup>71</sup> Yukay Yuksel, Muge, Aksak, Meryem, Arican, Tugce, Bakan, Muhsin. "An Investigation of Senior Vocational School Students' Perceptions of the Future through Their Drawings." Eurasian Journal of Educational Research, 2016: 265-286.

<sup>72</sup> Yukay Yuksel, Muge, Kurt, Bilge, Gulsu, Nebahat, Akdag, Ceren, Aydin, Fatma, Erdogan, Fatih. "A Qualitative Study on the School Pictures Drawn by Children Having Difficulty in Adapting to School." Mersin University Journal of the Faculty of Education, 2016: 642-658.

## 1. EMOTIONAL STATE OF CHILDREN

---

Emotions	Frequency
- Need for entertainment .....	1
- Compassion .....	1
- Need for attention .....	2
- Need for comfort .....	2
- Peace .....	1
- Trust .....	1
- Combating difficulties .....	1
- Need for feeling free .....	2
- Need for hygiene .....	1
<hr/>	
<b>Total</b>	<b>12</b>

## 2. EXPECTATIONS OF CHILDREN

---

### A. Inside of the Patients' Room

Furniture		Frequency
- Bigger wardrobe	.....	2
- Book shelves	.....	1
- Playhouse	.....	1
- Ball pit	.....	1
- Larger bed	.....	2
- Fancy bed	.....	2
- Soft sofas	.....	1
- Slide	.....	1
- Swing	.....	2
- Seesaw for kids	.....	1
- Rug	.....	1
Total		15

## 2. EXPECTATIONS OF CHILDREN

---

### A. Inside of the Patients' Room

	Frequency
<b>Walls</b>	
- Blue	2
- White	1
- Purple	2
- Red	1
- Pink	1
- Orange	1
- Animal figures	1
- Nature figures	1
<hr/>	
<b>Total</b>	<b>10</b>
<b>Lighting</b>	
- Pendant lights	2
- Princess lamp	1
<hr/>	
<b>Total</b>	<b>3</b>



## 2. EXPECTATIONS OF CHILDREN

---

### A. Inside of the Patients' Room

	Frequency
Private room .....	2
Larger room .....	1
Larger Windows .....	2
Colored flooring .....	1
Colorful bed linens.....	2
<hr/>	
Total	8

### B. Outside of the Patients' Room

	Frequency
Larger kitchen .....	1
Room for families .....	1
Larger Playroom .....	2
<hr/>	
Total	8

## 2. EXPECTATIONS OF CHILDREN

---

### B. Outside of the Patients' Room

	Frequency
<b>Hallway &amp; Common Space</b>	
- Grass	1
- Swing	2
- Tables for families	2
- Green areas	1
- Open areas	2
- Sandbox	1
- Trampoline	1
- Playground climbers	1
- Mini soccer field	1
- Seesaw for kids	1
- Bicycles	1
- Libraries	1
- Battery-operated cars	1
<hr/>	
<b>Total</b>	<b>16</b>

# Report

## **1. Emotional State of Children:**

*Need for entertainment.* Because of the fact that the children need to spend their days in the hospital, they seek for different kinds of entertainment to have fun.

*Compassion.* The common feeling that children under treatment have for each other. Considering that they're going through the same kind of difficulties, they understand each other and they try to be kind to each other.

*Need for attention.* Usually, only one companion is allowed for each patient, and this companion is usually their mother. Since one member of the family needs to stay with their child and the other one needs to work, the children don't get to see all members of the family all together so often and this creates a need for attention especially from the ones they see the less.

*Peace.* Children need to be in an environment that is peaceful, comfortable, and away from stress in order to recover faster.

*Trust.* It's one of the most important things that the children trusts their caregiver and the people that surrounds them, in order to feel more comfortable.

*Combating difficulties.* Having chemotherapy treatment is a challenging process for children. The drugs they're taking and their side effects, being left away from social life, school, family... All these are difficulties that children need to overcome after they enter the hospital.

*Need to feel free.* Children who have to spend time in the hospital for a long a period feel like they're trapped in the hospital; because they can not go home so often, they can not see their friends and family as before, and in the hospital, they share the room with a person they don't know. Therefore they feel stuck in this new strange place where the need to feel freer appears.

*Need for hygiene.* Hygiene is one of the most important things for children with cancer, because their immunity goes way lower than the immunity level of healthy children. In addition to the fact that the rooms need to be very clean; single rooms also occupy an important place in terms of hygiene. Because children who share the same room are not always the same in terms of health status; sometimes one can be worse than the other, and this can also affect the patient who is in a better condition.

## **2. Expectations of Children:**

### **A. Inside of the Patients' Room:**

*Furniture.* Children have asked for bigger wardrobes, bookshelves, playing areas with the toys that they can find only in the outside parks, larger and fancier beds with nicer and colored headboards, soft sofa-beds for their companions and soft sofas for themselves. This shows that children need to be more comfortable in their own rooms, to have toys to play inside their rooms for the times when they don't feel good enough to go out of the room. The selection of toys shows that they want to feel like they're outside of the hospital inside the room. Some of the children wanted to have a rug in the room to feel more homey. The request for the sofa and a bookshelf can mean that they would like to have a quiet corner for their own to relax and just spend time with themselves.

*Walls.* A preference for colored walls and ceiling covered with animal or nature figures was expressed by childrens. They wanted to use colors everywhere and suggested using mostly blue, pink, purple, red, and orange.

*Lighting.* Children wanted for lighting to be more home-alike to feel homier. They asked for pendant lights, preferably with colors, shapes or figures.

*Private room.* Having a private room for their own was one of the most requested subject among children. All compained about the lacking of a private room in the hospital. They expressed that they would feel happier if they had a private room where they can act freely without having in mind that they might disturb another person, and that they could decorate the room as they wish, have more quality and private time with their families.

*Larger room.* Patients who are staying in a shared room asked for a larger room because the beds don't have enough space in between, especially when both patients need to be checked at the same time. In addition to that, they required a larger room for their companions to be more comfortable with the space they have for themselves to sleep during the night.

*Larger windows.* Due to lack of natural lighting, children asked for bigger windows or wanted to relocate their rooms to the other side where the natural lighting and the view of the outside are not blocked by another building beside the hospital.

*Colored flooring.* Most of the children found the existing flooring boring and they wanted to have it with colors or decorated with animal figures.

*Colorful bed linens.* Children stated that they would like to bring their colorful bed linens but since they need to be washed so often because of the hygiene requirements, they can not. Therefore they would like them to be supplied by the hospital.

## **B. Outside of the Patients' Room:**

*Larger kitchen.* The existing kitchen in the pediatric oncology department is found small and poorly designed by the children participants. They would like to have a bigger kitchen with a different kind of design that can host some friendly competitions between the children patients and their families as a daily event to keep themselves occupied.

*Room for families.* Because there can be only one companion to the patient during the night, a separate room where families can spend some time together during the day was requested since the shared rooms are not big enough for all the families to fit inside and also not convenient for the patients to have so many people in the room.

*Larger Playroom.* Not having a playroom or having small playrooms is considered as a deficiency by the children. They required bigger playrooms where all the children can play all together without compromising themselves. They asked for either a larger playroom or a playroom spread through the hallway when there is enough space.

*Hallway & Common Space.* Children wanted the hallway to be more interactive than a normal hallway that one sees in almost every hospital. They wanted green areas with grass and small trees, benches, tables for families to eat, play, gather. Toys where children can find only in the outside park such as swings, trampoline, sandbox, seesaw, playground climbers or a mini soccer field. They stated that it would be great to have reading corners with libraries. In addition to these, a space dedicated to bicycles and battery-operated cars is asked. Open areas such as balconies or terraces where children can go out and be outside for a while without going out of the hospital were requested.

### **Expectations of the Parents:**

In addition to the requests of the children, one should take into consideration the thoughts and requests of their families. Moms stated that during the treatment, their children can not be able to participate in the normal education life with their peers, because they have to stay at the hospital. Therefore, they fall behind in their education. They think that there should be rooms for different kinds of education, because the times the children spend their lives in the hospital are the times when they develop their abilities on everything; such as music, art, sports...



## Photos from the Focus Group



Figure 100



Figure 101



Figure 102



Figure 103



Figure 104



Figure 105

These photos were taken on 20.08.2019 at the BAU Medical Park Goztepe Hospital with the authorization of the oncology department chief physician and the participants. Source: Arzu Yuksel.



Figure 106. Source: Ada Erinal, Date: 20.08.2019





# 2B. DESIGN

**PROPOSAL**

## **2B.1. Results as the Starting Point:**



## Some Quotes Selected from the Interviews

*"...I'd put blue colour on our wall. Because blue is like the color of **freedom** for me..."*

*- Child n.1, 12*

*"...I'd bring better toys to the playroom. The playroom is really small (...) So I would make the playroom bigger..."*

*- Child n.1, 12*

*"...I want pictures on the walls of the corridor, like graffiti..."*

*- Child n.2, 12*

*"... It's important for them to be understood by someone who understands their world..."*

*- Mother n.1*

*"...I would organize contests in kitchen(...) Maybe they will forget the place they're in for a while and this can cheer them up for a little..."*

*- Child n.1, 12*

*"...a place with **a large open space**, such as a balcony or a terrace. (...) It would be nice if the place had **green areas and grass...**"*

*- Child n.2, 12*

*"... I really like football but I can't play here. I love going to a park, and **I really miss it...**"*

*- Child n.3, 10*

*"... I wish there was an education of the children also here. In addition to that, the rooms are very small and very narrow..."*

*- Mother n.2*

*"...**A world of fairy tales** can be created here, and I think fairy tales are things that erase the age..."*

*-Mother n.1*

*"... I just don't think it's right to put only toys for children to play or to spend their energies. (...) there must be music rooms, sports rooms, drawing rooms..."*

*-Mother n.1*

*"...I would like to read my favorite books here, we don't have a place to sit and read outside of our rooms..."*

*- Child n.3, 10*

*"...I would want my room in the hospital to make me **feel like my own room** at home, so I can do anything I want..."*

*- Child n.2, 12*

## Ideal Functions To Be Placed In The Restyling

The following diagram shows the ideal functions to be implemented in the current pediatric oncology unit, chosen according to the wishes of the patients, together with the feasibility of these functions depending on the space available to be used.



Figure 107. Graphic elaboration by Ada Erinal

## PRIVATE

- Wardrobe
- Library
- Toys for playing area
- Sofas
- Pendant Lights
- Large bed

## COMMON

- Benches
- Green area
- Library
- Toys for playing area
- Sofas
- Tables
- Kitchen furniture
- Nurse desk
- Classroom Whiteboard

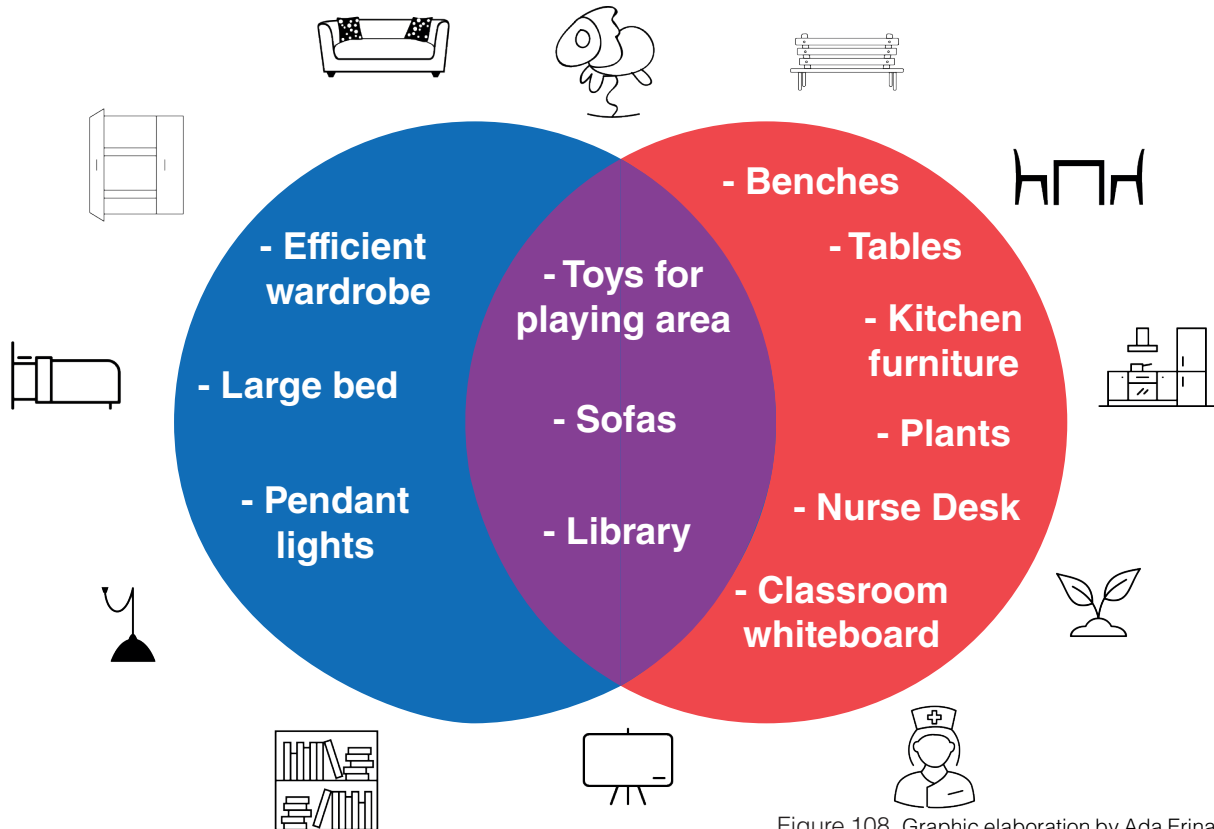


Figure 108. Graphic elaboration by Ada Erinal

## **2B.2. Re-thinking the Healing Spaces of the Pediatric Oncology Wards in Istanbul**

The colors used in the pediatric oncology ward is an important aspect for children who stay in the hospital for weeks, and therefore, they should be chosen in the appropriate way to help the recovery process with their stress-reducing characteristics and to give positive energies to cheer up children. Thus, with the help of the color theories of the great artists and thinkers, together with the results of the focus group where the children stated the colors they would like to see, the color palettes are chosen to achieve the goal of satisfying children during their stay in the hospital. Colors for these spaces are chosen primarily on the basis of nature, together with the side colors to accompany them in order to create color palettes that fit the main concept.

The architecture of the hospital environment is another factor as important as colors. Hospital design can make patients feel afraid and nervous, but it can also make them feel relaxed and comfortable. In particular, in the case of children, the design of the hospital or, in this case, the oncology ward should be designed with a theme that can make children forget about their problems; or at least make them feel better and can inspire them to fight more intensely against their illness.

From the first moment that the children step into the oncology ward until they arrive in their rooms or even in their bathrooms, the hospital environment should be designed in such a way to foster the feeling of home and the feeling of nature. Because of the facts that “home” and “nature” are both concepts that children will be left apart during their treatment period, therefore, these kinds of design aspects should be given importance.

In the following pages, some restyling proposals in the existing oncology ward of Bahcesehir University Hospital Medical Park Goztepe, where the focus-group was performed, are presented. The proposed new oncology ward for this hospital is consist of healing spaces that are listed below. They are chosen according to the wishes of children, their parents:

- 1.** The hallway
- 2.** Private Rooms
- 3.** Common Spaces: Kitchen & Dining Room, Playroom and Classroom

## Concept

Even though the idea of *“Bringing outside in”* is the starting point of this project, some stories or fairytales should be part of this process, in order to create a healing space where children don’t get bored because of their surroundings, and even think they’re part of a story.

Therefore, the idea of *“Neverland”* is thought to be the tale that is best suited to this project because of what it represents. Neverland, created by J. M. Barrie, is an imaginary island where time has frozen, and it represents everything that children can imagine; it also appeals to both boys and girls because it has everything that a child may like, natural beauties such as forests, seas, lagoons along with fairies, pirates, Indians, and animals.

*“Although Neverland is widely thought of as a place where children don’t grow up, (...) the Lost Boys eventually grew up and have to leave (...)”*<sup>73</sup>

The above quote has a connection and similarity with the pediatric oncology wards, or even children’s hospitals in general. When children check-in to the oncology ward, they leave everything about their lives outside the hospital. They freeze their schools, their social life, their friends, and they only focus on healing, in order to get better. But children have to fight their illness, because they have to grow old and live a long and healthy life. When they beat their illness and heal, the time comes for them to leave the hospital, and that’s when the clock starts ticking again.

*“The novel says the Neverlands are compact enough that adventures are never far between. It says that a map of a child’s mind would resemble a map of Neverland, with no boundaries at all.”*<sup>74</sup>

Thus, the idea of the *“Neverland”* isn’t really taken as the main concept, but more of a supporting concept in an ideal way. Where the pediatric oncology ward becomes a *“Neverland of a pediatric oncology ward”*, that is a pediatric oncology ward in a child’s imaginary world.

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<sup>73</sup> *Neverland*, <https://en.wikipedia.org/wiki/Neverland>

<sup>74</sup> Ibid.



## Objectives of the Concept

During the focus group session, the children spoke about their drawings along with their needs, and the conceptual restyling began with what they needed and what they wanted. This restyling is meant to make children feel the following while giving them the opportunity to travel with their imagination:

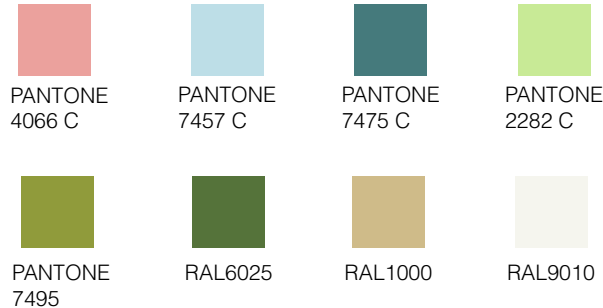
- Entertainment
- Comfort
- Peaceful and serene
- Support them to overcome difficulties by raising their emotional state.
- To feel free as much as possible

Children also required certain colors and figures on the walls that should be used in the hospital environment that were taken as consideration for the restyling, which are as follows:

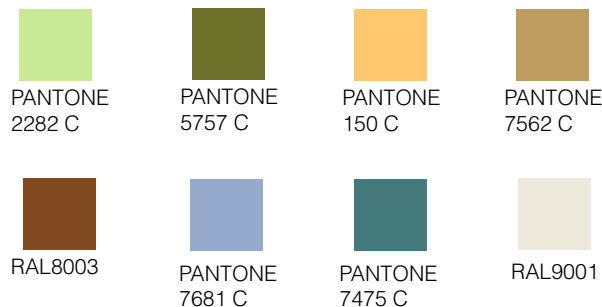


## Color Palettes

**Hallway & Nurse's Office.** Children wanted a sense of nature, so green and its tones were selected for the hallway nurse's office. Together with green, a light blue color used to represent the sky. The rest of the color palette which is created for the hallway and the nurse's office, is a composition based on the ***“the contrast of hue”*** and ***“the contrast of saturation”***.



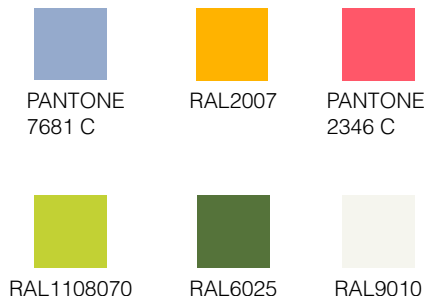
**Rooms.** The children had different color requirements when it comes to their rooms. One of the most desirable colors was blue. The main side color was chosen according to ***“the complementary contrast”***. The other colors were chosen from the nature considering ***“the contrast of saturation”***.



**Playroom & Classroom.** Since the playroom will be full of different colored toys, a palette of soft and pastel colors were chosen. Orange, for example, has the effect on children to be more collaborative, outgoing and self-confident.<sup>75</sup> The composition of color palette is based on the **“the contrast of hue”** and **“the light-dark contrast”**.



**Kitchen & Dining Room.** The color palette which is chosen for the kitchen is based on **“the complementary contrast”** achieved with blue-orange & green-pink color use, together with the **“cold-warm contrast”** to balance the cold colors to warm up the ambient.



<sup>75</sup> Orlian, Niv, Orlian, Lee, *Paint Colors for Kids' Room. Can It Affect Mood?*, <https://www.teepeejoy.com/blog/paint-colors-for-kids-room/>

## MAP OF ISTANBUL

**Location: Bahcesehir University Hospital Medical Park Goztepe**

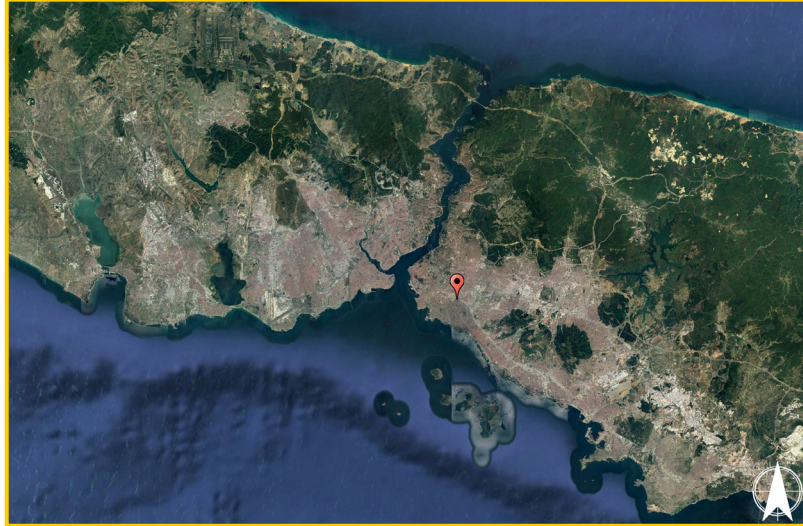


Figure 109. Source: Google Earth



Figure 110. Source: Google Earth

Hospital context of Bahcesehir University Hospital Medical Park Goztepe

## CANCER HOSPITAL

Location: Bahcesehir University Hospital Medical Park Goztepe



Figure 111. Source: Google Earth

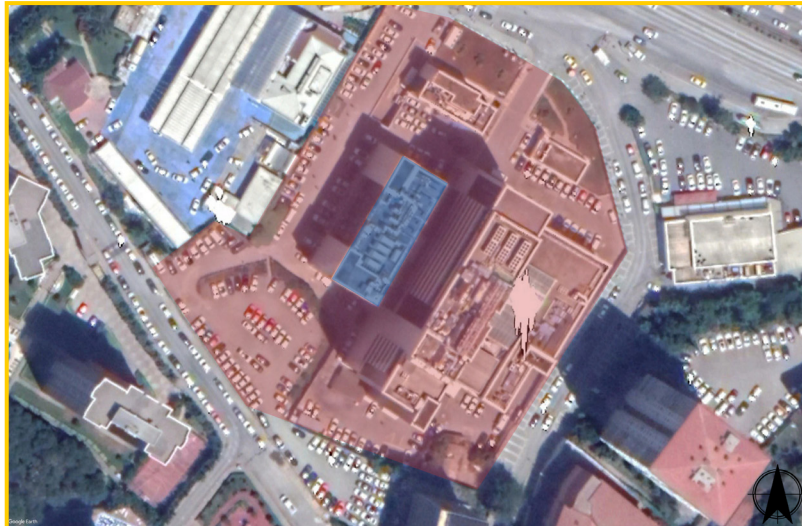




Figure 112. Source: Google Earth

 Hospital context of Bahcesehir University  
Hospital Medical Park Goztepe

 Cancer Hospital



**BEFORE**  
**EXISTING FLOOR PLAN**

**Floor plan**  
**Scale: 1:30**

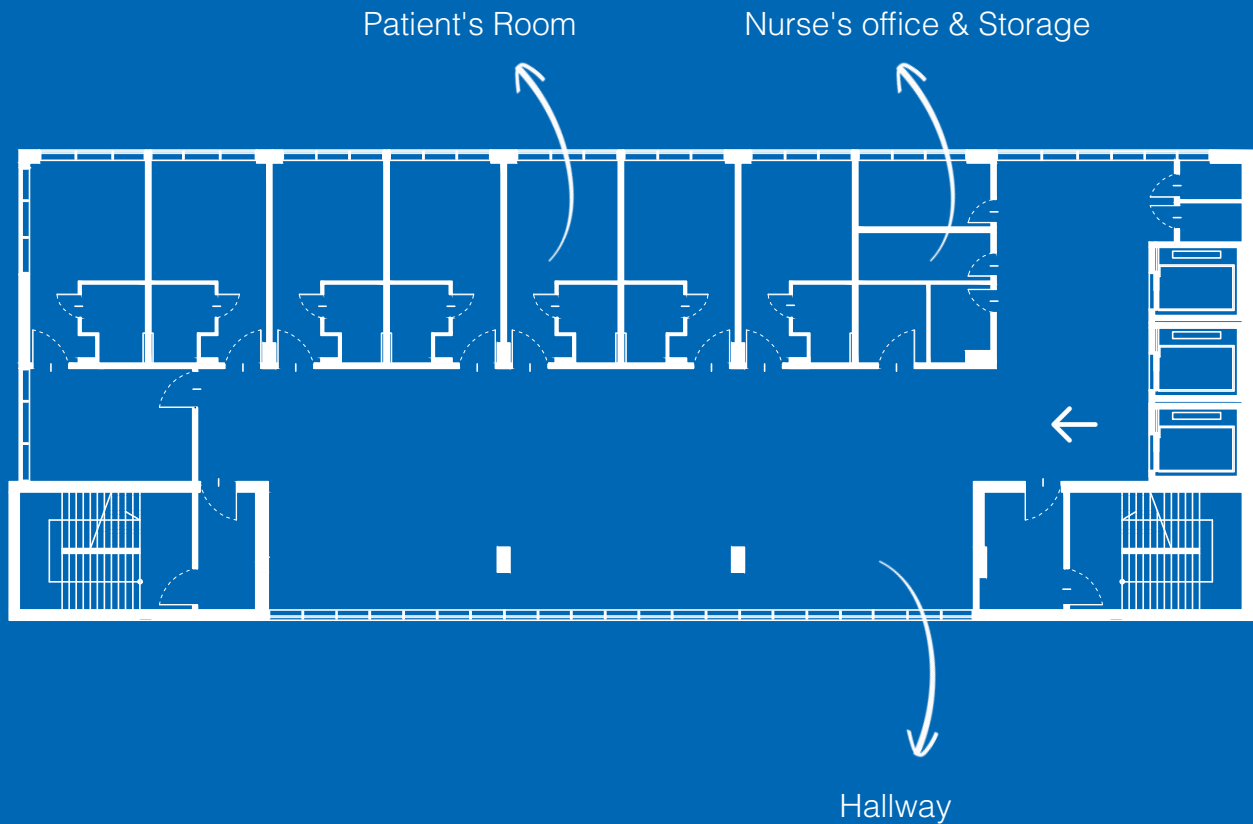


Figure 113. Floor plan with the old functions.



0 1 2 3 4m



**AFTER**  
**NEW FUNCTIONAL DISTRIBUTION OF THE SPACES FOR THE RESTYLING**

**Floor plan**  
**Scale: 1:30**

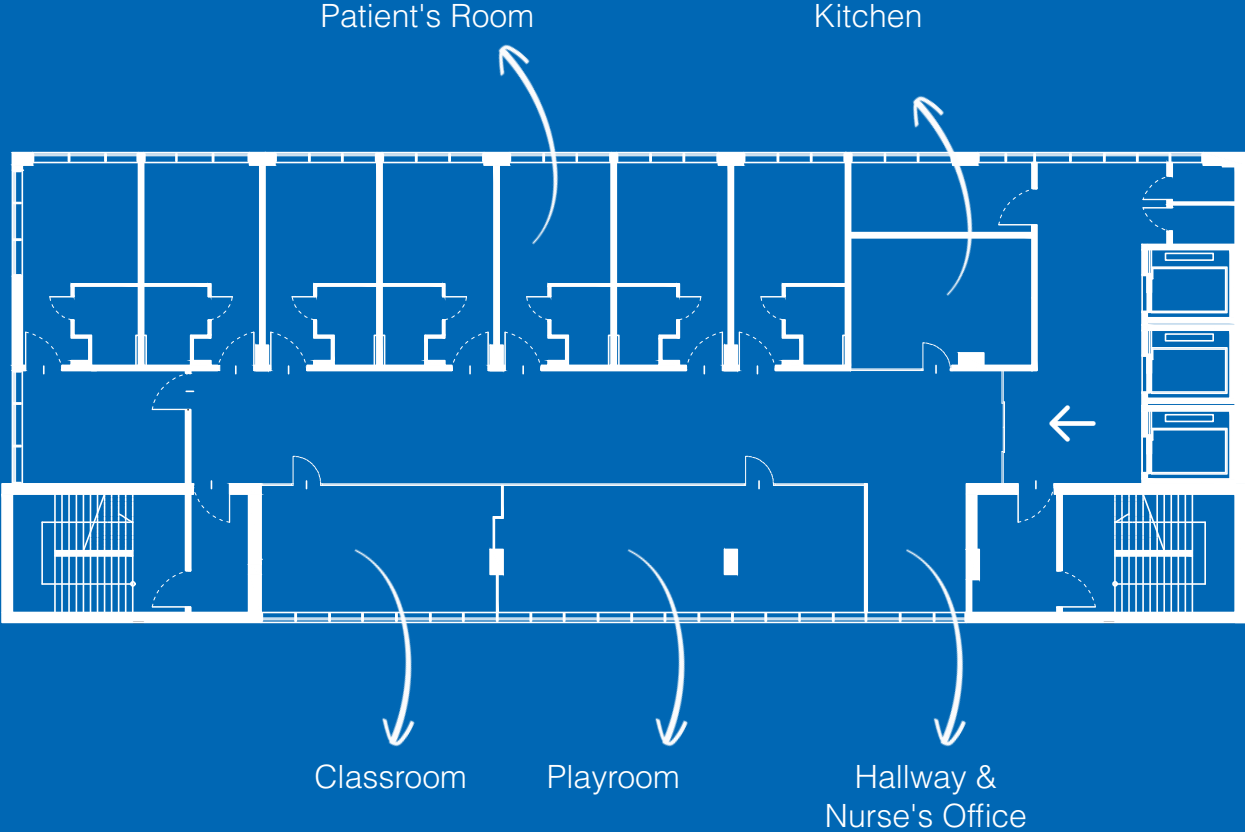
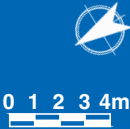


Figure 114. Floor plan with the new functions.



## NEW FUNCTIONAL DISTRIBUTION OF THE SPACES FOR THE RESTYLING



Figure 115. Floor plan.



**Before**

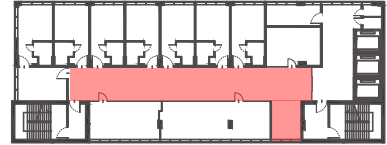


Figure 116. Source: Arzu Yuksel. This photo was taken on 20.08.2019 at the BAU Medical Park Goztepe Hospital with the authorization of the oncology department chief physician.

There are no doors to close this floor of the oncology ward, therefore, any person who goes out of the elevator can enter easily. This may lead to a lack of privacy for children who are being treated on this floor. The nurse's desk was put in the doorway along with a space for themselves in the back, but there are still medication desks in the middle of the hallway that could scare children.



After

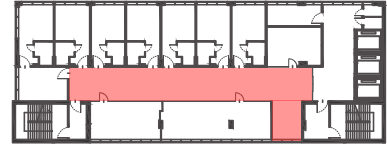


Figure 117. Entrance and the hallway.

The entrance to the oncology ward is designed in such a way that children entering the hospital will not have the impression of a cold hospital environment, but as a warm and welcoming healing space that they need to stay for a while to get better. Right after children entered to the ward, they will see an environment that recalls nature with its colors, elements. The use of green to reminds the grass, while the blue color that reminds the sky.

## HALLWAY & NURSE'S OFFICE Before

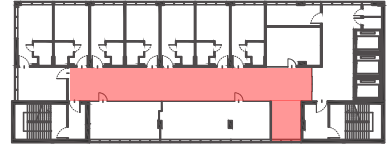


Figure 118. Source: Arzu Yuksel. This photo was taken on 20.08.2019 at the BAU Medical Park Goztepe Hospital with the authorization of the oncology department chief physician.

The hallway is big and empty, there is one wardrobe where all the toys are stored, and a library. There are some tables for children. The hallway is well lit during the day only with the use of natural light.



After

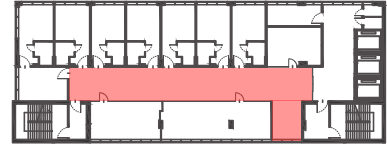


Figure 119. Entrance and the nurse's office.

The nurse's office is transferred to this place to open a space for the kitchen, and also to better connect the room with other functions in this pediatric oncology ward. The hallway is still well-lit due to the glass walls that allow natural light to pass through. The medication desks are placed in a more hidden even though they can be easily taken out in case of an emergency.

After

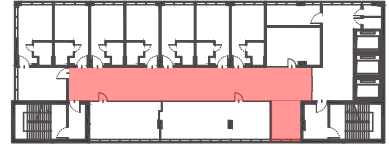


Figure 120. Entrance and the hallway.

The entrance is closed by sliding doors with frosted glass. The door frame is painted in green to follow the door frames of the rooms and the rest of the ambient. There are "Tree of Life" stickers on both sides of the entrance door, pasted on the glass. There are three dimensional trees that are fixed to the wall to add the feeling of nature to the interior.



After

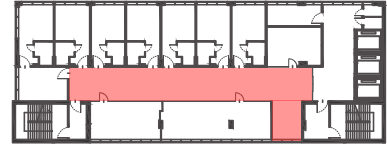


Figure 121. The hallway and the playroom.

A close-up shot in the playroom, consisting of two parts:

- Interactive wall area with beanbags and a sofa, where children can play with visual effects, watch a movie, or project whatever they want.
- The playing area where one can find a seesaw, a swing, a "river" with a boat, a palm tree, two teepees, an aquarium; along with tables for children that may want to draw something or play with some board games.

## ROOMS Before

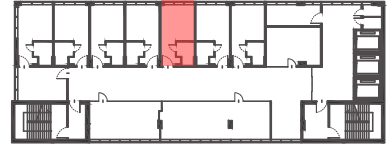


Figure 122. Source: Arzu Yuksel. This photo was taken on 20.08.2019 at the BAU Medical Park Goztepe Hospital with the authorization of the oncology department chief physician.

The shared room is for 2 patients and their companions, sofa-beds are placed next to beds and there is still some space left to walk in the room. The windows are wide, yet facing the General Hospital building which blocks direct the natural light. The colors used are beige for the walls, white, grey and yellow for the headboard.

**TOP VIEW  
OF THE ROOM  
After**

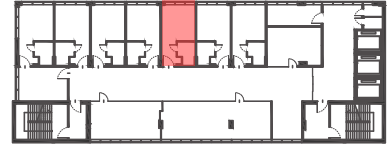


Figure 123. Rooms.

The flooring of the room is following the color of the sand in the bathroom. The design of the room is simpler than the common areas, because there is enough mobility in the common areas and this kind of design may feel more homey. The shared room is changed into a private room.



After

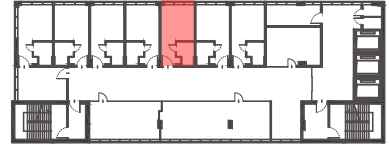


Figure 124. Rooms.

Shared rooms were transformed into one private room, where children can have more space for themselves and their families. The type of the sofa-bed for the companions was chosen to be more comfortable. The wooden headboard also continues on the ceiling. The main colors used in the room are soft orange and blue, which were among the colors that children desired. Both colors are also complementary to each other, which is why the complementary contrast is achieved.



After

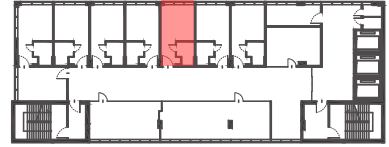


Figure 125. Rooms.

While one side of the room is painted in soft orange, for this side of the wall, a wallpaper is chosen from Walpepper Group, but these figures can also be painted on the wall without any wallpaper. The wallpaper chosen is filled with trees, plants, and some animals. The colors used are taken from nature, which are the shades of brown, green and blue. The cabinet drawers are painted in soft orange, while the cabinet itself is made of wood. Right next to the cabinet, there is a children's desk for personal use.

**Before**

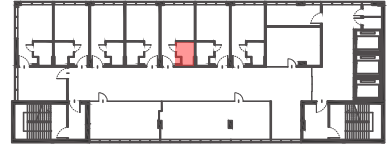


Figure 126. Source: Arzu Yuksel. This photo was taken on 20.08.2019 at the BAU Medical Park Goztepe Hospital with the authorization of the oncology department chief physician.

The bathroom is spacious and there are handrails for the physically disabled. Blue mosaics are used behind the toilet, along with white tiles, giving another feeling to the space.

After

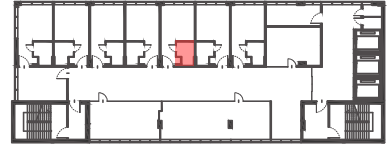


Figure 127. Bathroom.

As can be seen, the theme of the bathroom is the sea. One of the bathroom walls is covered with a wallpaper that is chosen from Wallpepper Group of fish and sea plants, but these figures can also be painted on the wall without any wallpaper. While the rest of the bathroom is covered with light blue tiles. There are more handrails next to the sink and inside the shower. The epoxy flooring of the sea and sand is chosen to complete the theme.



## PLAYROOM&CLASSROOM

Before

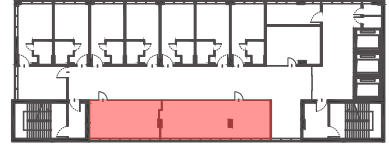


Figure 128. Source: Arzu Yuksel. This photo was taken on 20.08.2019 at the BAU Medical Park Goztepe Hospital with the authorization of the oncology department chief physician.

The hallway is big and empty, there is one wardrobe where all the toys are stored, and a library. There are some tables for children. The hallway is well lit during the day only with the use of natural light.

## 1. PLAYROOM After

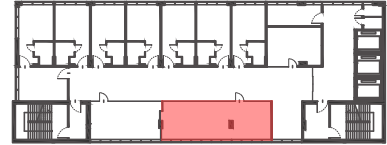


Figure 129. Playroom.

A part of the huge empty space of the hallway is turned into a playroom. The playroom is a colorful environment full of objects and toys. There are teepees (Indian tents) along with a small boat, a fake palm tree and a few tables for children to play board games. The lamps are cloud-shaped to give the appearance of the sky, while the ceiling is left in white to balance the colors. The wallpaper is chosen from Walpepper Group, but these figures can also be painted on the wall without any wallpaper.



After

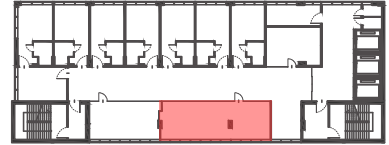


Figure 130. Playroom.

A different view from the playroom. The main flooring is made of grass effect vinyl flooring, while the flooring under the boat is made of water effect vinyl flooring. In the middle of the playroom, there is an aquarium that divides the room into two.



After

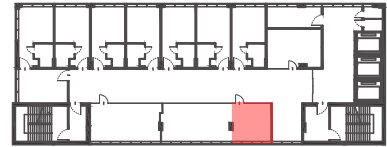


Figure 131. Playroom.

The other side of the playroom. It's more of a relaxing area with a sofa, beanbags, and an interactive wall. There's a ball pit to cheer up children, particularly younger ones. In this part, the colors used are more soft pink and soft purple, that children wanted to use in the hospital environment.

## 2.CLASSROOM

### After

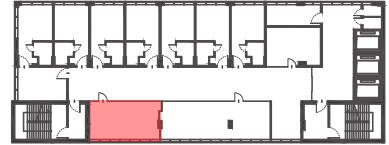


Figure 132. Classroom.

For the classroom, the colors are chosen mostly from nature to not to disturb and deconcentrate children. The wall that the teacher will be facing is covered with a wallpaper that has soft green tones to make sure that the wall that the teacher looks at while teaching the whole day is a color that makes them rest. The wallpaper is chosen from Wallpepper Group, but these figures can also be painted on the wall without any wallpaper.



After

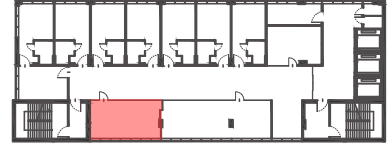


Figure 133. Classroom.

The board is an important element in the classroom, and the color behind the board must be a color that prevents students from getting tired of looking at the same color for a long time and provides children with both comfort and continuity of their attention.<sup>76</sup> Therefore the light blue color is chosen to serve this purpose.<sup>77</sup>

<sup>76</sup> Mahnke, F. H.; Mahnke, R. H. *Color and Light in Man-made Environments*. New York: Van Nostrand Reinhold, 1987. pg.83

<sup>77</sup> Filli Boya. "Ayben Ertem ile Okullarda Renk Etkisi." Filli Boya Renk Etkisi. n.d. <http://renketkisi.com/en/kartelalar/Filli-Boya-Okullarda-Renk-Etkisi.pdf>.

## KITCHEN Before

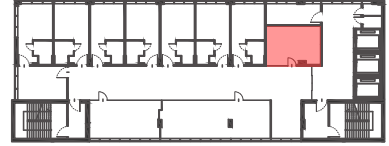


Figure 134. Source: Arzu Yuksel. This photo was taken on 20.08.2019 at the BAU Medical Park Goztepe Hospital with the authorization of the oncology department chief physician.

There is no kitchen dedicated to the patients and to their families in this pediatric oncology ward.

After

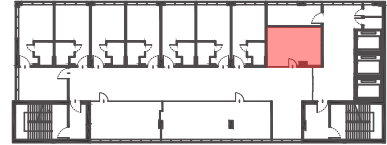


Figure 135. Kitchen.

Upon moving the nurse's office to another location, the space left empty became a kitchen. The kitchen may be the place where the families gather and eat together, can organize competitions between the children and their families, and it can break the ice between children and therefore make it easier for them to socialize. The flooring is made of grass effect vinyl flooring, giving the impression of "eating outdoors." The kitchen is large enough to house different families at the same time.



After

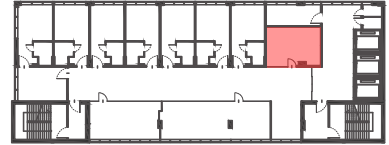


Figure 136. Kitchen.

The wallpaper chosen for the wall is filled with green trees in different shades, some yellowish-orange, pink and blue flowers, along with some birds. The wallpaper is chosen from Walpepper Group, but these figures can also be painted on the wall without any wallpaper. The ceiling and the walls are painted white, due to the colored furniture. The colors of the chairs are chosen from the wallpaper, while the rest of the furniture is made of wood.



## 2B.3. Conclusion

Designing places that are important for children by adults is a challenge, because the world of children is completely different from adults. Therefore, it is necessary to see the world through their eyes. This can be a kindergarten or a school; or hospitals for children that have been studied in this thesis. These places are important in children's lives. Children have to read, so they have to go to school; thus, the school should be designed in a way that facilitates the learning of children, but it should also make children to love their school. As a matter of fact, in the life of the sick child, hospitals can occupy a more important place than schools, because in some cases the hospital becomes the home of the child.

While working on this projects, the author of this thesis created an environment in an existing pediatric oncology ward that is child-centered, connected with nature and the activities that can be done in the nature.

The purpose of this project was to find an answer to "What can be done architecturally for children who have to stay in the hospital for a long time?". With the data obtained as a result of the site visits made to two hospitals, one of which is private and the other is a state hospital; interviews with children, along with their drawings showing the ideal characteristics of the hospital in children's minds; one floor of the pediatric oncology ward of the cancer hospital has been redesigned, completely child-oriented, evoking nature and responding to children's imagination.

One of the prominent features of this design is the correct use of colors, however, the use of colors in line with the wishes of the children. In addition to the use of color, a further important feature is the design of a space that focuses on children's imagination so children will not be bored, and, most importantly that minimizes their aspirations for home and social life. Of course, it may not be possible to completely end their longing for their home, but this can be minimized depending on how the spaces they stay are designed

The purpose of the restyling that has been done in this study is not only to reduce children's aspirations for home, but also for the social and educational life they have left behind. The design of the common areas is considered to be the best for children who spend weeks, even months in the pediatric oncology ward during their treatments. Because what children are lacking is their outside social life and having fun in nature, the restyling in this hospital is done to give these emotions back as much as they can.

The playroom was designed to be a place where children patients can meet and play, do different activities, but also just sit and relax, and maybe watch something. In addition to the classic games, an interactive wall is placed in the playroom because of the idea that classic children's games can become monotonous after a while and children can search for new and exciting things. With an interactive wall, children can watch movies, play through interactive images projected on the wall, project their own drawings or maybe just project a location they want to see or go.

The kitchen is another important feature that has been added to this floor. The kitchen was built for children and their families to have a fun and enjoyable time together as a family. Some competitions between families and children can be organized in the kitchen, and this may be another activity that can keep children away from boredom.

Children's hospitals have given priority since the past to important aspects of patients' physical health, such as functionality, hygiene and efficiency. Although "children-centered" designs have also given importance to the patient's emotional and mental health, this important subject has often been left behind, even though it has now begun to gain more importance. It is necessary to give importance to small details, such as small color touches that can be made, or some more well-thought-out elements for children in these healing spaces, that can change the feeling of the hospital environment in a positive way. Therefore, in future hospital projects in which patients are children, the approach and main objective of the design should always be children's needs and wishes, as has been tried in this restyling.

## 3B. BIBLIOG

**RAPHY**

## BOOKS & ARTICLES

- Akman Dombekci, H.; Yilmaz, F. O.; Ozata M. *The Current Situation and Future of Private Hospital Management*. Hacettepe Saglik Idaresi Dergisi, 2018.
- Albers, J. *Interaction of Colors*. New Haven ; London: Yale University Press, 1963.
- Alici, N. *"Color In Interior Space And The Effects Of Colors On Human Psychology."* Thesis, Istanbul, 2019.
- Andritsch, E.; Bauernhofer, T.; Stoeger, H.; Andritsch, H. *The ethics of space, design and color in an oncology ward*. Palliative and Supportive Care, 2012.
- Ataman, G.; Kursunluoglu Yarimoglu, E. *Factors Affecting Patient Satisfaction and Hospital Preferences Based on Hospital Types*. Hacettepe Saglik Idaresi Dergisi, 2018.
- Babakhani, R. *"Color and Light in Architecture and its Effects on Spirits of Space Users in a Psychological View."* Journal of Architectural Engineering Technology 6:1, 2017.
- Basustaoglu, A. *Bir Nefes Sihhat – Tevfik Saglam'ın Yasamı*. Istanbul: Is Bankasi Yayinlari, 2016.
- Bidese, P. *L'uso funzionale del colore negli ambienti sanitari*. Thesis, Politecnico di Torino, 2008.
- Birren, F. *Color & Human Response: Aspects of Light and Color Bearing on the Reactions of Living Things and the Welfare of Human Beings*. New York: Van Nostrand Reinhold Co., 1978.
- Birren, F. *"The need for color and light in future man-made spaces."* In *Colour for Architecture*, by Tom Porter and Byron Mikellides, 8. London: Studio Vista, 1976.
- Bishop, K. *The Role of Art in a Paediatric Healthcare Environment from Children's and Young People's Perspectives*. Sarawak, Malaysia: Asia Pacific International Conference on Environment-Behaviour Studies, 2010.



- Bosia, D.; Darvo, G. "Le linee guida per l'umanizzazione degli spazi di cura." Florance, 2015.
- Boyatzis, C. "*Children's Emotional Associations with Colors.*" The Journal of Genetic Psychology 155(1), 1994: 77-85.
- Braun, V.; Clarke, V. "*Using thematic analysis in psychology.*" Qualitative Research in Psychology 3:2, 2006: 77-101.
- Lawson, B.; Phiri M.; Wells-Thorpe, J. *The Architectural Healthcare Environment and its effect on Patient Health Outcomes.* Report, NHS Estates, 2003.
- Calissano, M. *Percorsi. Il colore come strumento di riqualificazione urbana.* Thesis, Politecnico di Torino, 2019.
- Cavmak, S.; Cavmak, D.. "*Türkiye'de Sağlık Hizmetlerinin Tarihsel Gelişimi Ve Sağlıkta Donusum Programi.*" Sağlık Yönetimi Dergisi, 2017: 48 - 57..
- Dalke, H.; Little, J.; Niemann, E.; Camgoz, N.; Steadman, G.; Hill, S.; Stott, L. *Colour and lighting in hospital design.* Article, London: Elsevier Ltd, 2005.
- Dalke, H.; Littlefair, P. J.; Loe, D. L.; Camgoz, N. *Lighting and Colour for Hospital Design: A Report on an NHS Estates Funded Research Project.* Report, London: TSO, 2004.
- Dalke, H.; Matheson, M. "*Colour Design Schemes for Long-term Healthcare Environments.*" London, 2003-2005.
- Darvo, G. "*L'umanizzazione degli spazi di cura.*" Thesis, 2012.
- Day, C. *Spirit & place : healing our environment, healing environment.* Oxford ; Auckland ; Boston: Architectural press, 2002.
- Deasy, C. M. *Designing Places for People: "A Handbook on Human Behavior for Architects, Designers and Facility Managers".* New York : Whitney, 1985.

- Estates, NHS. «*Ward layouts with single rooms and space for flexibility.*» Harrogate, 2005.
- Goethe, J. W. von. *Theory of Colours*. London: M.I.T. Press, 1840 .
- Hildebrand, G. *Origins of Architectural Pleasure*. Berkeley ; Los Angeles ; London : University of California Press, 1999.
- Itten, J.; Birren, F. *The elements of color : a treatise on the color system of Johannes Itten based on his book The art of color / ed. and with a foreword and evaluation by Faber Birren*. New York: New York : Van Nostrand Reinhold, 1970.
- Kandinsky, W. *Concerning the Spiritual in Art*. Massachusetts: Courier Corporation, 1977.
- Kyrkou, A.; Vavili, F. *"Innovative Materials in Children's Hospital Design."* Conference Paper, 2014.
- Lambert, V.; Hicks, P.; Coad, J.; Glacken, M. *Young children's perspectives of ideal physical design features for hospital built environments*. Article, Dublin: Journal of Child Health Care, 2014.
- Lensch, H. *International Healthcare Building Standards & Codes – Latest On Harmonization Of Codes And Accreditation*. Toronto UIA 2013, 2013.
- Lerwick, J.L. *Minimizing pediatric healthcare-induced anxiety and trauma*. Milwaukee: World J Clin Pediatr, 2016.
- Mahnke, F. H.; Mahnke, R. H. *Color and Light in Man-made Environments*. New York: Van Nostrand Reinhold, 1987.
- Marotta, A. *Policroma, Dalle teorie comparate al progetto del colore*. Torino: CELID, 1999.
- Marotta, A. *"RIFIORISCE LA VITA!" Il colore nell'umanizzazione dei luoghi di cura.*" Torino, 2012.
- Marotta, A. *"Anima valens in corpore aegro: Paths of the Spirit in the Places of Health-Care."* Capri, 2014.

- Marotta, A. *Imagination applied to European norms in "humanized" hospitals. More research, less cost.* In: Less More Architecture Design Landscape. Aversa - Capri : Le vie dei Mercanti. X Forum Internazionale di Studi, 2012.
- Marotta, A. *Lesson: Josef Albers e le interazioni del colore.* n.d.
- Marotta, A. *Lesson: Vedere non a caso: l'infinito universo della visione, Il colore come Bene Culturale: una dimensione trasversale.* n.d.
- Marotta, A. *Segno e colore nei luoghi di cura .* Córdoba: EGraFIA Argentina, 2016.
- Martens, H. *Private Hospitals in Europe : Supporting Sustainable Health Systems.* Supporting Sustainable Health Systems , 2017.
- Morandotti, M.. *"Elementi Di Progettazione Ospedaliera: Umanizzazione Delle Strutture Ospedaliere E Progettazione Degli Ambiti Di Degenza."* 2011/2012.
- Neufert, E.; Neufert, P. *Neufert Architects' Data.* Istanbul: Beta Basim Yayin Dagitim A.S., 2013.
- Pellitteri, G, Belvedere F. *Characteristics Of The Hospital Buildings: Changes, Processes And Quality.* University of Palermo, n.d.
- Ross, B. *"Hospital construction/ renovation guidelines."* Essen, Germany, n.d.
- Samimi, K. *Children's Cancer and Transplant Hospital: a Micro Town within a Bubble.* Thesis, University of Massachusetts Amherst, 2012.
- Sternberg, E. M. *Healing spaces : the science of place and well-being.* Cambridge (Massachusetts) ; London: the Belknap press : Harvard University, 2009.
- Sutton, T.; Whelan, B. M. *The Complete Color Harmony: Expert Color Information for Professional Color Results.* Massachusetts: Rockport Publishers, 2004.

- Taner, T.; Antony, J. *Comparing public and private hospital care service quality in Turkey*. Leadership in Health Services, 2006.
- Tasliyan, M.; Gok, S. *"Patient Satisfaction in Public and Private Hospitals: A Field Study in Kahramanmaras."* n.d.
- Tengilimoglu, D.; Kisa, A.; Dziegielewska, S. F. *Patient satisfaction in Turkey: differences between public and private hospitals*. Journal of Community Health, Vol. 24, No. 1, 1999.
- Tonkin, A. *Exploring the impact environments have on children and young people's experience of healthcare: a review of the literature*. Children's Environments of Care Report, Healthcare Play Specialist Education Trust, 2015.
- Ulrich, R. S. *"View Through a Window May Influence Recovery from Surgery."* Science 224(4647), May 1984: 420-421.
- Ulrich, R. S. *"Effects of Healthcare Environmental Design on Medical Outcomes."* In Healing Gardens, by eds. Clare Cooper Marcus and Marni Barnes, 27–86. New York: John Wiley & Sons Inc, 1999.
- Ulrich, R. S. *Effects of interior design on wellness: Theory and recent scientific research*. February 1991.
- Ulrich, R. S. *"Evidence-based health-care architecture."* The Lancet, December 2006: 538-539.
- Union of National European Paediatric Societies and Associations (EPA-UNEPSA). *«Conceptual Design of Future Children's Hospitals in Europe.»* Berlin, 2018.
- Yukay Yuksel, M.; Aksak, M.; Arican, T.; Bakan, M. *"An Investigation of Senior Vocational School Students' Perceptions of the Future through Their Drawings."* Eurasian Journal of Educational Research, 2016: 265-286.
- Yuksel, Muge Yukay, Kurt, Bilge, Gulsu, Nebahat, Akdag, Ceren, Aydin, Fatma, Erdogan, Fatih. *"A Qualitative Study on the School Pictures Drawn by Children Having Difficulty in Adapting to School."* Mersin University Journal of the Faculty of Education, 2016: 642-658.

## WEBSITES

- Archdaily. *Olivia Newton-John Cancer and Wellness Centre / Jackson Architecture +.* February 1, 2013. [https://www.archdaily.com/326443/olivia-newton-john-cancer-and-wellness-centre-jackson-architecture-mcconnell-smith-johnson?ad\\_source=search&ad\\_medium=search\\_result\\_all](https://www.archdaily.com/326443/olivia-newton-john-cancer-and-wellness-centre-jackson-architecture-mcconnell-smith-johnson?ad_source=search&ad_medium=search_result_all).
- Archdaily. *Santa Fe de Bogotá Foundation / El Equipo de Mazzanti.* July 20, 2017. <https://www.archdaily.com/876184/fundacion-santa-fe-de-bogota-el-equipo-de-mazzanti>.
- Archinect. *"Color in Architecture — More Than Just Decoration."* July 20, 2012. <https://archinect.com/features/article/53292622/color-in-architecture-more-than-just-decoration>.
- BAU Medical Park Goztepe. n.d. <https://www.medicalpark.com.tr/goztepe-hastanesi/h-8#/collapse1>.
- Daley, H. *House of Heroes by White Arkitekter provides space for children with long term disease.* April 12, 2018. <https://archinect.com/news/article/150059719/house-of-heroes-by-white-arkitekter-provides-space-for-children-with-long-term-diseases>.
- Design Boom. *"Moment Factory: Interactive musical wall for saint justine hospital."* May 23, 2012. <https://www.designboom.com/art/moment-factory-interactive-musical-wall-for-saint-justine-hospital/>.
- EMBT, Miralles Tagliabue. *Kálida Sant Pau Centre.* n.d. <http://www.mirallestagliabue.com/project/kalida-sant-pau-centre/>.
- Filli Boya. *"Ayben Ertem ile Okullarda Renk Etkisi."* Filli Boya Renk Etkisi. n.d. <http://renketkisi.com/en/kartelalar/Filli-Boya-Okullarda-Renk-Etkisi.pdf>.
- *Flexible Hourly Childcare in "SpielRäume".* n.d. <https://www.uibk.ac.at/familienservice/service-uni/spielraeume/index.html.en>.
- González, M. F. *Princess Máxima Centre for Child Oncology / LIAG Architects.* August 13, 2018. <https://www.archdaily.com/899421/princess-maxima-centre-for-child-oncology-liag-architects>.

- González, M. F. *Spielraeume Playrooms / studio3 - Institute for Experimental Studies UIBK*. April 11, 2018. [https://www.archdaily.com/892277/spielraeume-playrooms-studio3?ad\\_source=search&ad\\_medium=search\\_result\\_all](https://www.archdaily.com/892277/spielraeume-playrooms-studio3?ad_source=search&ad_medium=search_result_all).
- HealthcareSnapshots. *University Hospital of the Santa Fe de Bogotá Medical Foundation*. n.d. <https://healthcaresnapshots.com/projects/1897/university-hospital-santa-fe-de-bogota-medical-foundation/>.
- Heikinheimo, M. *Paimio Sanatorium*. September 8, 2014. <http://www.paimiosanatorium.fi/>.
- Hospital, Okmeydani Training and Research. *Who We Are*. n.d. <http://okmeydanieah.saglik.gov.tr/EN,386589/who-we-are.html>.
- *Itten's Color Contrasts*. n.d. <http://www.worqx.com/color/itten.htm>.
- "Johann Wolfgang von Goethe." *Colorsystem, Colour order systems in art and science*. n.d. [https://www.colorsystem.com/?page\\_id=766&lang=en](https://www.colorsystem.com/?page_id=766&lang=en).
- Mikocki, L. *Interactive installation at children's hospital by jason bruges studio*. February 4, 2013. <https://www.designboom.com/design/interactive-installation-at-childrens-hospital-by-jason-bruges/>.
- Orlian, L.; Orlian, N.; *Paint Colors for Kids' Room. Can It Affect Mood?* December 9, 2016. <https://www.teepeejoy.com/blog/paint-colors-for-kids-room/>.
- Ott, C.; *Kálida Sant Pau Center / Miralles Tagliabue EMBT*. May 14, 2019. [https://www.archdaily.com/916960/kalida-sant-pau-center-miralles-tagliabue-embt?ad\\_source=search&ad\\_medium=search\\_result\\_projects](https://www.archdaily.com/916960/kalida-sant-pau-center-miralles-tagliabue-embt?ad_source=search&ad_medium=search_result_projects).
- *Paimio Sanatorium*. n.d. <https://www.alvaraalto.fi/en/architecture/paimio-sanatorium/>.  
Pearson, Howard A. *History of Pediatric Hematology Oncology*. December 01, 2002. <https://www.nature.com/articles/pr2002282>.
- Pomroy, K. *"Introduction to the Psychology of Color: For Interior Designers."* The Art Career Project. June 28, 2019. <https://www.theartcareerproject.com/psychology-of-color-interior-design/>.



- Popova, M. *"Goethe on the Psychology of Color and Emotion."* Brain Pickings. n.d. <https://www.brainpickings.org/2012/08/17/goethe-theory-of-colours/>.
- Popova, M. *The Magic and Logic of Color: How Josef Albers Revolutionized Visual Culture and the Art of Seeing.* Brain Pickings. n.d. <https://www.brainpickings.org/2013/08/16/interaction-of-color-josef-albers-50th-anniversary/>.
- Silva, M. P. *"Psychology of colors in pediatric healthcare spaces."* La Healthcare Design Inc. n.d. <https://lahealthcaredesign.com/psychology-of-colors-in-pediatric-healthcare-spaces/>.
- Turkish Statistical Institute. *"Number of medical institutions, total number of hospital beds and number of hospital beds per 1000 population, 1967-2017."* Turkish Statistical Institute. n.d. <http://www.turkstat.gov.tr/UstMenu.do?metod=temelist>.
- Turkish Statistical Institute. *"Population Estimates, 2000-2006, Address Based Population Registration System (ABPRS), 2007-2018."* Turkish Statistical Institute. n.d. <http://www.turkstat.gov.tr/UstMenu.do?metod=temelist>.
- Vaija, M. *Alvar Aalto and the colors of the Paimio Sanatorium.* February 1, 2018. <https://www.finnishdesignshop.com/architecture/alvar-aalto-and-the-colors-of-the-paimio-sanatorium>.
- Wikipedia. *Neverland.* n.d. <https://en.wikipedia.org/wiki/Neverland>.
- Wikipedia. *Nishan Yaubyan.* n.d. [https://en.wikipedia.org/wiki/Nishan\\_Yaubyan](https://en.wikipedia.org/wiki/Nishan_Yaubyan).
- Wikipedia. *Theory of Colours.* n.d. [https://en.wikipedia.org/wiki/Theory\\_of\\_Colours#Goethe's\\_theory](https://en.wikipedia.org/wiki/Theory_of_Colours#Goethe's_theory).
- Woodman, E. *Revisit: 'Aalto's Paimio Sanatorium continues to radiate a profound sense of human empathy'.* November 17 , 2016. <https://www.architectural-review.com/buildings/revisit-aaltos-paimio-sanatorium-continues-to-radiate-a-profound-sense-of-human-empathy/10014811.article>.

