**KARADENİZ TECHNICAL UNIVERSITY**
**THE GRADUATE SCHOOL OF NATURAL AND APPLIED SCIENCES**

**Department of Architecture**

# A METHOD DEVELOPING ARCHITECTURAL DESIGN RECOMMENDATION UPON USER SATISFACTION RESEARCH: CASE STUDY OF CHILDREN'S UNIT OF KTÜ FARABI HOSPITAL, TRABZON-TR

**MASTER THESIS**

**Tasnim Naji HATEM**

**JULY 2019**
**TRABZON**

**KARADENİZ TECHNICAL UNIVERSITY**

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**Tasnim Naji HATEM**

**This thesis is accepted to give the degree of**

**MASTER OF SCIENCE**

**By**

**The Graduate School of Natural and Applied Sciences at**
**Karadeniz Technical University**

**The Date of Submission** : **03 / 06 /2019**

**The Date of Examination** : **09 / 07 /2019**

**Supervisor** : **Asst. Prof. Dr. Ayhan KARADAYI**

**Trabzon 2019**

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**Has been accepted as a thesis of**

**MASTER OF SCIENCE**

**after the Examination by the Jury Assigned by the Administrative Board of the Graduate School of Natural and Applied Sciences with the Decision Number1798 dated**

02 / 04 / 2019

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# ACKNOWLEDGEMENT

I would like to give genuine gratitude to my supervisor Asst. Prof. Dr. Ayhan KARADAYI, for continuing his motivation and support of this Master Thesis, with all the knowledge he has. The guidance and instruction he gives assisted me in time of research and writing this thesis. My sincere thanks as well to T.C. Başbakanlık, Yurtdışı Türkler ve Akraba Topluluklar Başkanlığı (YTB), who provided me with an opportunity to join their Turkey Scholarships Program.

Also, I would like to offer some words of gratitude and love to my friends for their constant spiritual support during this phase; Nagat and Sirina. And a special thanks to all my new friends that I have met in this beautiful and amazing journey in the lovely city Trabzon.

I am also very grateful to Amal, Batool, Mercede, and Fardowsa, for their great sense of respect and patience when helping me with doing the Thesis Survey.

Last but not least, I would like to thank all my family members for their mentally and psychologically support; my parents Naji HATEM and Safia HATEM, and to all my brothers and sisters for supporting me throughout this Thesis, and, the interesting and wonderful new experiences, especially my brother Majed, for being with me all the time.

Tasnim NAJI HATEM
Trabzon 2019

# THESIS DECLARATION

This Master Thesis as I present "A Method Developing Architectural Design Recommendation Upon User Satisfaction Research: Case Study of Children's Unit Of KTÜ Farabi Hospital, Trabzon-TR" which is presented as a Master of Science Thesis has been completed under the supervision of Asst. Prof. Dr. Ayhan KARADAYI, from the beginning to the end. I declare that I have collected the data/analyze myself, adequately cited and referenced the information and resources taken from the other original sources, acted in accordance with scientific research and ethical rules in the course of my work and I accept all kinds of legal consequences in case the occurrence of the accusation. 09/07/2019.

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SUMMARY

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Architecture Graduate Program
Supervisor: Dr.Öğr.Üyesi AYHAN KARADAYI
2019, 119 Pages, 19 Pages Appendix

Children, naturally, must be in a creative and special place in their surroundings. In the field of health, many factors must be considered for architectural design, unlike adults. In this study, at first, basic design principles for the children's healthcare building design gathered. Then those basic design principles were considered with Karadeniz Technical University's Farabi Hospital in Trabzon-Turkey as a case study. This hospital is investigated briefly within the context of the World Healthcare buildings standards. After the general location and plan analysis of the Farabi Hospital, the children's unit (outpatient and inpatient units) were examined in detail. Field analysis, observation technique, and user satisfaction surveys methods were used. At the end of the structured analyses, some defects were determined. These defects were the health structures in the first functions were not overlapping with the basic design principles and/or in some cases determined in some cases: the correct method of dimensioning and reinforcement of some rooms and the patient safety, morale improvement skills. As a result, a new method developıng architectural design has been recommended, throughout the unit analysis and the satisfaction survey. Furthermore, it should be noted that there are many different solutions to these architectural design problems, which in this study one of them.

**Key Words**: Hospital Design, Children Polyclinic Design, Patient Bedroom, User Satisfaction Survey, Post Occupancy Evaluation.

Yüksek Lisans

ÖZET

# KULLANICI MEMNUNİYETİ ARAŞTIRMASI DOĞRULTUSUNDA MİMARİ TASARIM ÖNERİLERİ GELİŞTİREN BİR YÖNTEM: TRABZON-KTÜ FARABİ HASTANESİ ÇOCUK BİRİMİ ÖRNEĞİ

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2019, 119 Sayfa, 19 Ek Sayfa

Çocuklar doğası gereği yaşadığı çevrelerde devamlı yaratıcı ve özel mekanlara ihtiyaç duyarlar. Pek çok alanda olduğu gibi, sağlık alanında da, çocukların bulunduğu ortamların tasarımını şekillendirmek için erişkinlerden farklı olarak birçok önemli faktör dikkate alınmalıdır. Bu çalışmada; çocuklar için sağlık tesislerinin tasarımında göz önüne alınması gereken temel ilkeler araştırılıp tespit edildikten sonra bir hastane örneğinde gözlemler, tespitler ve kullanıcı memnuniyeti anketleri yapıldı. Trabzon'da Karadeniz Teknik Üniversitesi bünyesinde bulunan Farabi Hastanesi örnek çalışma alanı olarak seçildi. Bu hastane Türkiye ve dünya sağlık sistemi standartları bağlamında, kısaca irdelendi. Saha çalışması için seçilen Farabi Hastanesi'nin genel konumlanma ve plan analizleri yapıldıktan sonra, Çocuk Servisi (poliklinik ve yataklı birimler) detaylıca incelendi. Yöntem olarak; alan analizi, gözlem, kullanıcı memnuniyet anketleri kullanıldı. Yapılan analizler sonunda, ilk bölümde belirlenen sağlık yapıları temel tasarım ilkeleri ile örtüşmeyen ve/veya kullanıcıların memnun olmadığı hususlar belirlendi: Bazı mekanların boyutlarının ve donatılarının doğru kullanılmadığı ve bunların da hasta güvenliği, morali ve iyileşme süreçlerini olumsuz etkilediği tespit edildi. Sonuç olarak; kullanıcı istekleri de göz önüne alınarak, evrensel hastane tasarım standartları doğrultusunda bazı tasarım önerileri sunuldu. Bilinmelidir ki, bahsi geçen mimari tasarım sorunlarına birçok farklı çözümlemeler de sunmak mümkündür.

**Anahtar Kelimeler**: Hastane Tasarımı, Çocuk Poliklinik Tasarımı, Hasta Yatak Odası, Kullancı Memnuniyeti Değerlendirmesi.

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# ABBREVIATIONS

| | |
|---|---|
| **ANA:** | Anesthesia Medical |
| **C-section:** | Cesarean Section |
| **CSR:** | Central Sterilization Room |
| **DXU:** | Diagnostic Units |
| **ENT:** | Ear-Nose-Throat |
| **ER:** | Emergency Room (Also ED [Emergency Department]) |
| **GU:** | Genitourinary |
| **ICU:** | Intensive Care Unit |
| **INTMED:** | Internal Medicine |
| **KTÜ:** | Karadeniz Technical University |
| **LAB:** | Medical Laboratory |
| **MOR:** | Minor Surgery |
| **NHS:** | National Health Service |
| **OB:** | Obstetrics (Labor And Delivery Rooms, Postpartum Ward, And Newborn Nursery For Healthy Babies) |
| **OB-GYN:** | Obstetrics And Gynecology |
| **OPD:** | Outpatient Department |
| **OR:** | Operating Room, Surgery Room |
| **PATH:** | Pathology |
| **PEDS:** | Pediatrics |
| **RR:** | Recovery Room |
| **SDP:** | Sağlıkta Dönüşüm Programı (Healthcare Transformation Program) |
| **SGK:** | Sosyal Güvenlik Kurumu (Social Security Institution) |
| **SICU:** | Surgical Intensive Care Unit |
| **SR:** | Sterilization Room |
| **X-RAY:** | Radiology |
| **MOH:** | Ministry of Health |

# 1. GENERAL INFORMATION

## 1.1. Introduction

Children are diverse in different types of terms, such as their characters are either less complicated or more complex than the adult, their requirements are many but simple, and their ages, in each age stage, they will have different structures, not only physically but also mentally. So in the field of health care, they will need a special focus on their unique needs, involves parents from start to finish, and is provided in places designed to be suitable and cooperative with their physical needs and their own thinking and child-friendly. Because of the different stages of growing and developing, children's health care needs are constantly changing, so it was divided into specific age stages, to facilitate their care. They will require extra time, extra monitoring and control, specialized medicines, and staff with the skills and compassion to understand the needs of children.

That’s why they need an individual children’s unit. Whether freestanding acute care hospitals, freestanding specialty and rehabilitation hospitals, or hospitals organized within larger medical centers, children’s hospitals provide quality medical care, every day, to children all over the world. They are the column of the nations of the healthcare infrastructure.

This thesis discussed the children's units in hospitals in terms of architectural design, especially by taking a case study of the hospital in the city of Trabzon and conduct an architectural analysis of the children's unit located in the KTÜ Farabi Hospital there and then identify the architectural problems by using different methods.

In this chapter, general information will be displayed, starting with this thesis overview, then going through background about Hospitals in Turkey, children's unit in a hospital and at the end of the chapter general information about the case study which is Farabi Hospital Children's Unit. The phases of the study summarised in Figure (1).

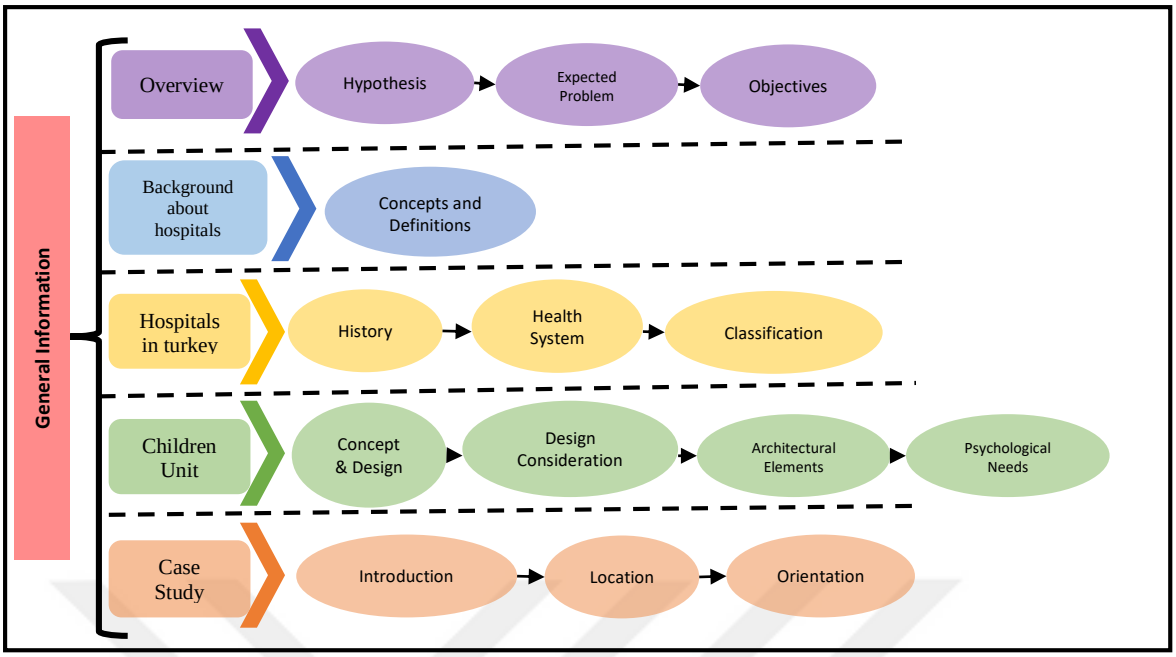



Figure 1. The phases of the study.

### 1.2. Study Area and the Expected Problems

In this thesis, the most important points of the architectural problems that are expected to be found in the children's unit should be listed in order to solve them through research. In this research the most important problems expected are:

1. Unconsidered the architectural standards for children's hospitals, through:
    - The appropriate layout plan
    - Use the appropriate sizes.
    - Use the appropriate material and furniture.
    - Use the appropriate light. etc.
2. Unconsidered the (physiologically, psychologically, etc.) for children by unit staff.

### 1.3. Hypothesis

Children’s unit is for children’s health, meeting the healthcare needs of children from the small points to the big ones. So the hypothesis of this thesis, it is divided into two questions.

- The first is the answer to the theoretical method, which is the most important points that must be considered when designing children's healthcare unit.
- The second, consists of two parts, that lies positively on the method of case study analysis and satisfaction survey, which is, what are the problems and the architectural problems found in the children's unit?

This research is limited to specific small objectives that give one important goal at the end. These objectives start with:

1. Conducting theoretical research on hospitals in general.
2. Conduct theoretical research of the Children's unit in hospitals.
3. Conducting an architectural analysis of the Children's unit at Farabi Hospital.
4. Conducting a user's satisfaction survey in that children's unit.
5. Identification of problems in the children unit.

### 1.4. The Study Method

The process of the thesis based on six main steps: The first step is to have a general and background information about hospitals and the overall types of hospitals. The second step is a general input about the hospitals in Turkey and the health system in there and a historical background, after that a small comparison of Turkey health system with the world health system.

The third step, is more specific about the children unit, by having a definition of the unit then, the children unit design of interior space and the relationship between the design and the children. Finally, in this step, there will be a list of the most important architectural elements that should be available in the Children unit. In this step there will not be a specific or details about the architectural elements and standards that should be available in the children's unit, this information will be available as a result of this thesis in the final step.

The fourth and the fifth step will be a detailed analysis of the case study of the children's unit in the Farabi hospital of KTÜ. University in Trabzon city, Turkey, and a user's satisfaction survey that targets the visitors and the staff of the unit.

As a result of the last two steps, the final step will have a list of the problems in the children's unit of the hospital that have been found from the case study analysis and the results of the survey. Figure (2) shows the thesis methods and steps.

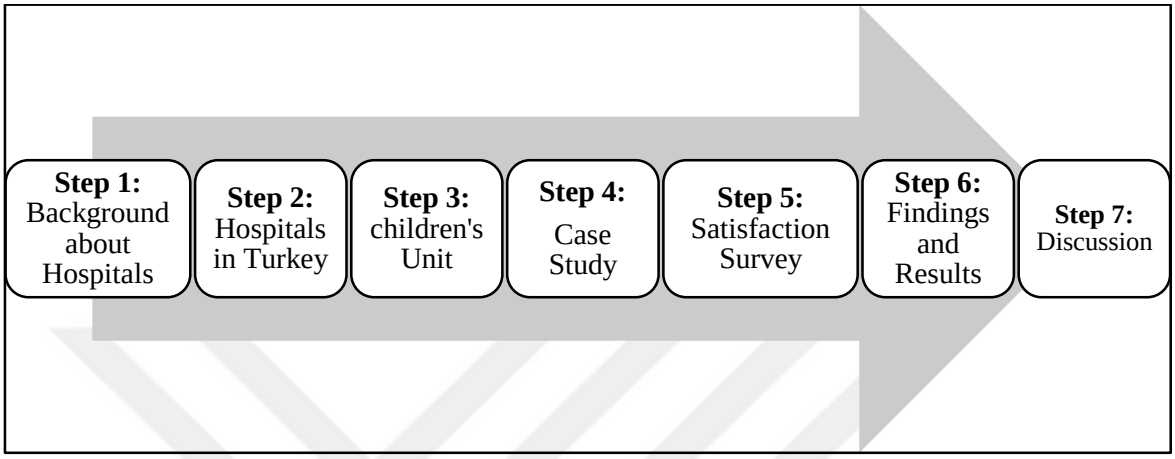



Figure 2. Thesis methods and steps.

### 1.5. Concepts and Definitions

It must recognize the most important knowledge and concepts of a hospital to understand the primary purpose of it, taking into account the necessary areas that must be available to the visitor or the individual who work in the establishment.

#### 1.5.1. Hospitals and Their Classification

The hospital is a place to treat and rehabilitate patients. (Çetintaş, 2016).

Hospitals are defined as an essential part of a social and medical organization, providing full health care to the population, therapeutic or preventive, and extending its outpatient services to the family in their home environment. The hospital is also a training center for health workers and for medical researches. (Gish, 1977).

According to a report by the WHO (1980) Committee of Experts on Medicare Regulation, it was necessary to define the hospital in a more practical way. The definition should be as simple and comprehensive as possible to apply to various hospitals of any kind,

especially in industrialized and developing countries, therefore, it is defined that the hospital as an institution that guarantees the patient medical care and nursing.

Architecturally, hospitals are the most complex building types. Each hospital is comprised of a wide range of services and functional units. These diagnostic and treatment functions, such as clinical laboratories, imaging, emergency rooms, and surgery; hospitality functions, such as food service and housekeeping; and the fundamental inpatient care or bed-related function. This diversity is reflected in the breadth and specificity of regulations, codes, and oversight that govern hospital construction and operations. The functional units within the hospital can have competing needs and priorities. Idealized scenarios and strongly-held individual preferences must be balanced against mandatory requirements, actual functional needs (internal traffic and relationship to other departments) (Robert, 2017).

#### 1.5.1.1. Hospitals Classification

While there may be differences between hospitals in terms of size, operation and the services they provide, the common aspect of all of them is that they deal with health problems, and they are separated into species according to their size and their relevance to the diagnosis and management of one or more diseases (Çetintaş, 2016).

Furthermore, according to Çetintaş, the Farabi Hospital considered as a large hospital which has more than (500) beds in terms of the size. Additionally, Educational/University hospital in terms of establishment which is a hospital that treats people like any other hospital with specialization in training medical students at the university and qualifying them to be an official doctor (Çetintaş, 2016).

Also, Karataş says that the size of hospitals and the services provided are achieved according to the patients and their needs, which is in case of the Farabi Hospital is 1000 beds specialization of educational institutions hospitals; C-sections, psychiatry, orthopedics, jaw surgery, and dermatology (Karataş, 1979).

### 1.5.2. Hospitals Functions

Çetintaş (2016) believes and supports that is the basic functions in hospital design can be listed under two notes:

A. Basic Function Areas

Administration, Policlinics, Emergency Services, Patient care rooms (services), Operating rooms and birth rooms, Intensive care units, Diagnostic units, Treatment units, Sterilization units can be defined as the basic functional areas of hospitals.

- Administration.
- Outpatient Clinics: OPD (Outpatient Department) are departments where patients and their relatives are interviewed by doctors for diagnosis and treatment.
- Emergency Services (ER).
- Patient Care Centres: Patient Care Centres are the departments that determine the capacity of the hospital and include patient rooms, nursing station, day room, assistant room, patient care room, clean-dirty laundry room, and clinical warehouse.
- Operating rooms (OR).
- Labor rooms or birth rooms.
- Intensive Care Units (ICU).
- Diagnostic Units.
- Sterilization Units.

B. Support Function Areas

Circulation areas, waiting areas, register areas, technical services, refectory, counseling, security, morgue, waste center, laundry, support function areas of hospitals.

- Technical Services.
- Waiting Areas: Patient waiting areas are the areas for which the daily patient flow intensity is met. Hospitals; OPD, ER, patient care units, OR, diagnostic and treatment units are the areas where patient waiting areas are required.
- Circulation Areas: Designed on the circulation area, the patients should be designed not to interrupt the flow of patients in waiting areas.

- Register area: it must be directly related to waiting areas.
- Counseling: It meets the patient and should be located in a place where the patient can see when they enter the hospital.
- Security.
- Waste Center.
- Laundry.
- Dining hall and kitchen.

### 1.6. Hospitals in Turkey

In this part simple and general explanation about hospitals in Turkey will be presented, starting with a historical background of the hospitals in Turkey, the health system in Turkey, and finally, hospitals classifications in Turkey.

#### 1.6.1. History of Hospitals in Turkey

In the history of the health system in Turkey, at the first developmental stages of the hospital concept, it seems that special temples have been built in ancient Greek to help heal the patients. It is noteworthy that these structures are located in decent places near hot, healing and mineral-rich water resources. In the 1st century BC, during the Romans period, hospitals were built for soldiers, civilians and slaves who had different characteristics. The Romans have established institutions similar to those of the Republican Greeks (Yilmaz, 2012).

Also according to Yilmaz, as for modern history, it is considered the period of importance for the health sector in Turkey. Starting with the Republican Era, the newly formed state hospitals have been planned to be according to the new needs, and the existing old hospital buildings have been renovated according to their needs. Haseki Hospital, Şıli Etfal Hospital, Guraba Hospital, Haydarpaþa Numune Hospital, Cerrahpaþa Hospital, Trabzon Numune Hospital, Ankara Medical Faculty, Bursa Memleket Hospital. It is known that the suite system, which is popular in many hospitals built before the Republican period, is used. In many hospitals built during the Republican Era, it was thought that the block

system would take place and the varieties would be achieved through the interventions. This subject has been developed and changed according to certain years in the contests.

Then secondly, because of the rising standards of living in the 20th century gave rise to the need for special spaces, and in order to do so, opening a compartment was divided into smaller constructions. In the 20th century, the new health professions, which together with the technology and the scientific knowledge in front of the traditional knowledge and the technology of health are the precursors of life (Yilmaz 2012).

### 1.6.2. Health System in Turkey

Health care in Turkey consists of a mix of public and private health services. Turkey has universal health care under its Universal Health Insurance (Genel Sağlık Sigortası) system, which is under this system, all residents registered with the Social Security Institution (SGK) can receive medical treatment free of charge in hospitals contracted to the SGK.

Healthcare Transformation Program (Sağlıkta Dönüşüm Programı -SDP) has been collecting health financing in one place in Turkey since 2003 and health service providers, including the private sector, it has been receiving service from the Social Security Institution (Sosyal Güvenlik Kurumu -SGK) the understanding of giving was dominant and the practice of family medicine was initiated. Then public hospital associations (Devlet Hastanesi Sendikaları) were established with the aim of making public hospitals semi-autonomous and transforming into a market-like structure (Erol and Özdemir, 2014).

### 1.6.3. Classification of Hospitals in Turkey

According to ATA Corporate Consulting (ATA Kurumsal Danışmanlık) hospitals in Turkey are classified by many different service options which are:

- Hospitals by Number of Beds:

This classification made according to the bed capacity, not only the number of beds but also the staff, expert staff, technical equipment and financial support of the hospitals are

taken into consideration. According to the number of beds, the classification of hospitals is as follows (URL-19):

- Private, public, or research hospitals with 50 beds.
- Hospital complex with 100 beds.
- 200-bed hospitals.
- Hospital with 400 or more beds.

➢ Hospitals by Service Type:

Since each hospital can't provide suitable solutions for each patient, hospitals are divided into 3 types according to the services (URL-19):

- Public hospitals
- Private hospitals
- Educational hospitals

### 1.7. Children Unit in a Hospital

It is defined as a unit specially designed and equipped for the health care of children by a specialized team of doctors and nursing staff and with the help of another team of technicians using specialized medical devices and devices for the purpose of providing the necessary health care for children, including diagnosis and treatment. There are many different sections within the unit such as clinics, department of laboratories and patient rooms. (Ahmed, 2008).

#### 1.7.1. Children's Unit Concept and Design

The translation of the psychological and biological concepts that accompanied the development of the child in its different stages of age, brings together the relationship of these concepts with its spatial dimension and the translation of these relations into an architectural presence. Before, there was no such thing as architecture or design for the child. But recently, the design in general for children has been developing and in a quick way,

designers begin to take into account the needs of a child in the architect an interior design (Yasmin, 2011).

Studying the stages of childhood and the physical needs of all ages of the child used for the spaces within the unit, as well as knowledge of the basic requirement that must be available in the area, is the main factor during design. The design of the children's unit within the hospitals has evolved in terms of the techniques used and the most important elements that must be observed during the design, by following the needs of the child and taking into consideration in the design (Komiske, 2005).

From this point of view, it was important to study the child's humanitarian needs and to take them into sight when designing hospital buildings. This helps greatly in the speed of healing the child and removing the child's fear of the hospital and becomes popular for him to accelerate his recovery (Komiske, 1999).

According to Yasmin, the internal areas of the children's unit should be concerned with the following elements: environment, safety, stimulation through color, light, and shapes, and finally taking into consideration the family accompanying the patient. One of the principles of healthcare design for children is to focus on ease of movement, comfort, control, and understanding. The availability of entertainment tools that attract the attention of children in a controlled environment, children, regardless of their age, will respond to the elements and areas that encourage them to play. Colors, lighting, and landscaping in children's medical facilities are influenced positively by the stages of the treatment of children. The availability of swabs with the exploitation of all of the previous elements generates a kind of distraction for the children from the stress that resulting from visiting the hospital, and thus generates a sense of stability for the child (Yasmin, 2011).

Children’s unit, the unit design became mostly important because children are in a unique and different status of learning, knowing and interact with the world and the environment around them, demanding specific activities and actions for an ordinary development. Therefore, children’s unit design should offer a homely atmosphere and environment while bringing the outside daily and comfortable facilities (playground areas, social rooms, etc.) to the inside (Yasmin, 2011).

### 1.7.2. Basic Considerations in Children's Unit Design

Until recently there was nothing we could call a child-specific architecture; it could say architecture for the child's use, it is no more than an ordinary intellectual and material architecture. In recent studies, the child usually reacts to this world as a free will, so designer most emphasis and consider the need to deal with the world of the children's creation, through (Abdel Qawy, 1991):

- To provide the environment in terms of aesthetics, the child has an innate motivation to make things creatively, and this must be characterized by designing in aesthetic values and take care to coordinate the surrounding.
- This environment must-have elements of safety to achieve peace for the child, and be suitable for the place in terms of capacity, and the launch of the child without obstacles (Ez Al-Din, 1991).
- All rooms should have privacy, even if they contain more than one person. The room also includes a bathroom, patient companion area, a wardrobe, desk, refrigerator, with window overlooking the outer corridor and outdoor landscaping.
- The nursing station is centrally located between rooms with observation viewing and privacy options.
- Provide all the necessary amenities that encourage parents not only to spend the night as a companion for their children but also encourages them to participate in caring for their children.
- The design of the facility is not only attentive to children but to all parties, including staff, siblings and parents.
- Recognizing the importance of the reception area as the most important point gives the initial impression of the unit.
- Securing children while they walking through the unit is important, with attention to some details that provide the safety factor.
- Also taking into consideration the child's scale in furniture design is very important.
- The distance from the design of the narrow corridors with sharp vision, and make them in an open field vision.

According to Al-khlousy, with the great development of the methods of treatment and diagnosis, it was necessary to be accompanied by a similar development in the planning and design of children's units, and with this development, it must be emphasized the lack of a

consistent trend of design, but there is a set of general principles that must be applied to all units regardless of its design direction (Al-khlousy, 1999):

**A.** Users Participation: The idea of using users to the spaces within the unit is a traditional idea, but the designer must cultivate this sensitive point in a smart way, by producing a design illusion shared by the patients, giving a certain proportion of the patient's attention. At the same time, individual and private space should be available for certain patients.

The participation of users in the same area can be seen as a factor in the healing of the feathers, especially the children. Children usually feel secure and positive production in spaces containing groups. Participation in spaces in the unit can produce learning energy for the child, and also positive for the child in terms of rapid healing. (Raafat, 1996).

**B.** Human dimension: Raafat (1996) Thinks, If the hospital is for the doctor a place of work and experience and research, it is for the patient is the place to seek healing, so the humanity of the spaces within the emptiness of the unit is a necessary treatment and therefore the principles of design, the unit must give the patient a sense of safety and comfort in the space Internal or external, and this can be achieved by many architectural means (natural lighting - linking the interior space abroad - colours)

**C.** Susceptibility for extension: There are some areas in the unit that are usually more susceptible than other sections for extension and expansion, and it is the function of the designer to know the possibilities of these extensions and their proportions, and to design the unit and this spaces by allowing it to extensions in a horizontal or vertical ways, either by forming layout plans that allow horizontal extension or Selects the structural system that allows the flexibility to use the space and the vertical extension (Raafat, 1996).

**D.** Flexibility: Due to the continuous change in treatment, diagnosis and medical care methods that require the use of different spaces depending on the development of their equipment and machines, the design of the unit should allow sufficient flexibility to change and change the use of spreads as needed (Al-khlousy, 1999).

Flexibility in the unit must be exercised through:

- Vertical and horizontal flexibility especially for clinics and medical service areas.
- For the passage of electrical cables and the increase in electrical power.

- Construction system, so that changes can be made and the walls if necessary (Masoud, 1982).

**E.** Aesthetics in the interior design: The interior design of the unit is a specialized art that mixes functional and aesthetic considerations and includes a practical consideration, for example:

- Facilitate the movement of workers and patients by organizing guiding signs and using colors to facilitate identification and movement between them, and choose the materials of internal corridors that resist the continuous use for several years, while at the same time facilitate cleaning and sterilization (Ibrahim, 2000).
- To achieve the actual needs of the place and the nature of the activity by knowing the size of the space, the subject of treatment and deepen the sense of beauty and appropriate to the spirit of the times.
- Fit the design of unity for the child and the environment, taking into consideration the psychological and social factors of the child dealing with the place and its life, age and circumstances, as well as the surrounding environment in which the child's behavior and habits are shaped.
- The nature of the materials used and their properties. In order for the interior design to function properly, the designer should study the requirements of the place and its purpose and the appropriate material to achieve the goal. The functional solution must be an aesthetic solution that satisfies the aesthetic need of the user (Abdel Halim, 1984).
- Patients can receive their relatives when they are in the unit so it is important that the unit is designed in a way that makes it easier for these visitors to reach their patients in their rooms.
- The environment of the unit must be calm and contain elements that attract attention such as the external views and the presence of works of art (Series, 2000).

#### 1.7.2.1. The Needs of Different Age Groups for Children

According to Malkin (1992), this is the age stages for children and their needs in each one, as it is shown in Table (1).

Table 1. Children age group and needs (Malkin, 1992).

| Age | Note |
|---|---|
| 0 - 12 months | Children at this stage are in good condition when they have their needs, food, security, warmth, and hygiene, equipped with sensory stimulation experiences. Their condition will be good depending on the activities. |
| 1 - 6 years | They need direct visual supervision from the nursing team and a safe environment. So they have the need for the more appropriate measurement for everything around them with considering safety because of their uncontrolled movement. |
| 6 - 12 years | Provide opportunities to acquire sensory and motor skills. Therefore provide study, play areas within the unit. And it is better for them to stay in more than one patient's rooms. |
| 12 - 18 years | At this age, the child feels that he has become bigger and does not consider himself a child. Thus they prefer to have more privacy for them to do their daily normal activity. |

#### 1.7.2.2. Children's Scale

Staying in hospital often means relying on others to meet the basic needs of the child as much as possible, so children are allowed to do things for themselves in the hospital beds, chairs, toilets, doors, wardrobes, furniture, in general, to give them some control over the environment and to enhance their sense of their own worth (Maklin, 1992).

Therefore, the designer must consider that the elements of the main space of the form and proportions and dimensions correspond to the scale of the child used for this space as well as suit the type of activity that occurs functionally and culturally, and if this is done in the design of the space for children, it has the greatest impact in meeting the need for self-reliance and control of the environment in children.

During the design of the unit, to reach the appropriate children's scale, two important factors must be considered (Amnia, 2010):

- Ergonomics: in the unit design it is really important to consider child comfort. It is interested in studying the methods that ensure its safety in the use of products. Also, it is necessary to know the characteristics of the individual by dealing with the internal design units so that he can organize these movements with good performance for the function of the unit, which requires attention to study the dimensions and measurements of the children's body.
- Anthropometric: it is associated with many vital areas, it provides measurements and weights for children and movements of the body organs to illustrate the mechanism of movement in children. Anthropometric measurements have an important role in selecting the components of the child's room. These measurements prepare us with specific principles and methods used in the formation and design of the children's requirements whether internal or external.

### 1.7.3. Children Unit Architectural Elements

Children units care for many treatments, diagnostic, hostel, and recreational activities services for sick children and their families, The range of the different space zones that must be available began from the examination rooms, the labs, the clinics, and the patients' rooms...etc. and the important services and equipment that must be provided in the unit.

According to Al-Kholousy, these requirements are the main and basic requirements that must be available in all of the Children's Units. Figure (3) is a diagram showing all the spaces that should be available and required in the children's unit (Al-Kholousy, 1999).

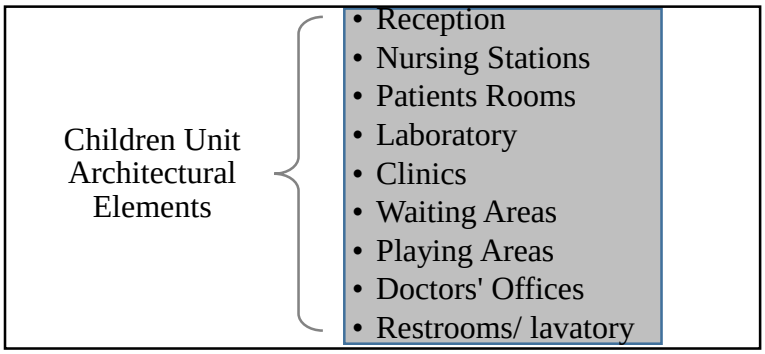



Figure 3. Children's unit architectural elements.

**A.** Reception: The reception area is usually available for all hospital units to take appointments. But in some cases it can be separate individually for each unit, to impose some type of arrangement for the clinics of the unit. In the case of the children's unit, safety conditions must be met through the use of suitable materials, while at the same time trying to use the colors suitable for the nature of the children unit. (Rashdan, 2005).


Figure 4. Texas Children's Hospital West Campus reception (URL-9).

**B.** Nursing Stations: Are usually directed to patients in the unit, save files for the patients, and the most important part is to work on caring for patients and directing them to restore health, while at the same time help the doctor. Nursing stations are usually distributed around the clinics (Abdel-kader, 1994).

Figure 5. Nemours Children's Hospital nursing station (URL-10).

**C.** Patients Rooms: In the children's unit, it is preferable to have individual rooms for each child, and to have space in the room dedicated to parents, in order to provide maximum privacy and psychological comfort to the patients and their companions. But at the same time, there must be play spaces and a family area or room for each group of rooms, to reduce the tension in the therapeutic stage of the patient. The room should include, a bed for the patient, a bed for the companions (or an adjustable sofa), a unit for keeping the patient's belongings, a television unit, a private toilet. Also, the room must have windows to provide the proper amount of natural lighting and also to give a sense of connection to the external environment (Yasmin, 2011).

Figure 6. UCSF Benioff Children's Hospital patient room (URL-18).

**D.** Laboratory: The laboratories are closed rooms connected to a small open room for taking different samples of the patient. Usually, its places are fortified in term of disinfecting. In some hospitals, children's laboratories are separated from adults to create an environment that provides a kind of psychological safety and comfort for the child to overcome the vagueness by controlling the internal design and colors used within the spaces that the samples are taken from the children (Maklin, 1992).

Figure 7. Phoenix Children’s Hospital laboratory (URL-11).

**E.** Clinics: Clinics are spaces reserved for the meeting between the doctor and the patient. Consists of two parts, the first is a region through which the patient can view the health problem to the doctor in a comfortable and private way, and the second section, especial for the doctor to examine the patient. The two sections are usually separated by the furniture used. Each clinic has its own furniture according to the type of clinic and the equipment needed by the doctor for examination. In the case of children's unity, several aspects must be adhered to. The furniture used should be suitable for children of different sizes, and it is also necessary to create a suitable environment for the child in the clinic through the design and color used. It had to meet the doctor's requirements in this space (Rashdan, 2005).

Figure 8. Children's clinic design example (URL-12).

**F.** Waiting Areas: Waiting areas are usually distributed throughout the hospital, both in front of the reception to take appointments or in front of the clinics to wait for the

role to see the doctor. Each hospital unit also has its own waiting areas. In the case of a pediatric unit, it is usually centered on the clinics and nurse stations. It should be taken in mind that patients in the waiting area are children with their parents. The waiting area is in general and largely divided by the furniture used. It must be considered the measurement of the furniture used for children of all ages, as well as the ones who will guard them to the hospital. The color used and the lighting used plays a major role in determining and creating a suitable environment for the child in the space (Raafat, 1996).

Figure 9. Texas Children's Hospital West Campus waiting area (URL-13).

Figure 10. Nemours Children's Hospital waiting area (URL-14).

**G.** Playing Areas: Usually, they are open spaces or closed rooms around the waiting area. Playing areas are usually available in children's units because of their psychological importance to take a strike and fear of the child from the hospital, or to spend the waiting time without creating a kind of boredom of the child, which leads to inconvenience of various types, whether for the child or the child's parents. In terms of design must create a fun space for children so that it is automatically attracted to this environment through the shapes and colors used in the design. And also the light either natural or artificial plays a role as a significant factor that can be used by the designer in creating a comfortable space for the child. Providing toys and games are not usually necessary. Safety conditions must also be observed (Raafat, 1996).

Figure 11. Children playing area example from (Copenhagen Children's Hospital with Competition) (URL-15).

**H.** Doctors' Offices: They are closed offices or one large space that has desks for doctors. They are usually used by doctors to do their own research or take a simple break. (Abdel-kader, 1994).

**I.** Restrooms/ lavatory: The restroom must be provided throughout the hospital and must be sterilized and cleaned constantly. In the case of children's unit, it should be noted that a large rate of the users are children and therefore the size of the latrines and the safety conditions must be taken in consideration, whether in terms of hygiene or safety (Maklin, 1992).

### 1.8. Psychological Needs in the Children's Unit:

A sense of psychological comfort inside the unit has a positive role in the success of the therapeutic process in accordance with modern medical trends that have highlighted the importance of meeting the psychological needs of the patient and to achieve comfort and peace of mind to him, which have a greater impact on the therapeutic results of these sick children (Raafat 1996).

To take care of a sick child requires training of a unique kind, children are not small adults but, on the contrary, they live in their own fantasy world, which is governed by their own sense and needs, and no one can easily acquire the art of treating and caring for children (Florence, 1859).

There are many psychological needs for the child inside the unit and the designer must consider them during the design process.

#### 1.8.1. The Family

Having one or both parents with the child is the most important factor in helping them to face the crisis of entering hospitals, because the presence of the parents helps to facilitate the hospital routine, for example, they need a comfortable and good quality wait areas, or providing some areas where parents can relax a little from the requirements. Also, having playrooms or studying for siblings has a very important and good impact.

There should be a family lounge to relax, to provide a kind of family atmosphere and access to privacy at the same time, to allow social interaction with parents and other opportunities for mutual support. The patients accompanying needs in the patient's room a seat that opens up to a bed, allowing them to stay with the sick child at all times and not feel tired. There must be a special waiting areas for the accompanying and guests to provide special care for the patient and parents because they are a quiet area for making phone calls, where they can do their office work in the event of a long-term need for the child to be in the unit, and a place to visit relatives without disturbing the child. The presence of a cafeteria area is very important, to provide food for accompanying and visitors, these areas provide meals and soft drinks for them (Maklin, 1992).

### 1.8.2. Social Communication

The child needs social interaction. Within the unit, the environment must be provided to the child to communicate with others and to deal with them. Otherwise, the child will go to self-isolation, which will negatively affect his treatment with doctors and nursing staff during the therapeutic phase. And the child needs the attention and affection of adults and their love and the feel of desirable, when the child feels that he/she unwanted that will cause him/her many problems that lead to tendencies to isolation and lack of communication with the staff and the eldest, though, the children communicate with their peers considered as a part of their daily activities (Maklin, 1992).

Therefore, the design and existence of rooms and areas for play and study within the unit, its presence will simplify the process of communication and interaction between children and adults.

### 1.8.3. Harmony

According to Maklin, when all the components within the internal space are balanced with each other, a harmonious environment is formed so that one element does not override other elements that are because the patient does not have the energy to adapt to the environment and does not reject it. When the patient adapts to the surrounding environment and the children can feel the harmony in the space, positive energy is produced by the child, and this energy can be turned to benefit the patient to focus on healing. This is a complex issue, but because what is seen as harmonious may vary from child to another depending on their personality, cultural background, and the environment in which the child was accustomed to at home (Maklin, 1992).

### 1.8.4. Comfort

To provide a comfortable environment for the child, a kind of interior space that is read in certain ways by the child must be created through several different design elements. Such as creating spaces where the child feels proud or heroic. For example, by creating a readable environment for children with the use of colors and understandable banners that help them

find their way easily and feel that they have control over the surrounding environment (Maklin, 1992).

### 1.8.5. Imagination

Maklin said that imagination is an important part of a child's life. It provides an opportunity to escape from reality and to appear strong before adults or adversaries. Children in their imagination can fight monsters and win them, so the children's unit must contain elements of imagination to provide children with an outlet to dispel their fears and encourage them to dream to conquer their diseases (Maklin, 1992).

By imagining and daydreams, the child has a dream world that fulfills his desires that he cannot achieve in his real world. Imagine a safety window for the child's psychological health. It reduces mental tension and reduces feelings of inadequacy, aggression, and jealousy. For example, a child can play punitive games with his brother who is jealous of him or his brother who beats him (Amnia, 2010).

### 1.8.6. Privacy

“Privacy is an innate human feeling that a person needs at a personal or family level. Each of these levels has specific requirements, depending on the activity of the individual” (Raafat, 1997).

In recent field research called Design for Properties, which conducted on a number of patients to identify the most concern for them in the case of their stay in the hospital. The greatest cause of concern is that they have to sleep in a room with strangers, one of the important reasons why newly built hospital systems are designed with single-bed accommodations, according to Ruga, the bed is the most private place for an individual. Most of the healthcare facilities, where the individual loses most of his or her privacy, the patient continues to use the same bed throughout his hospital stay and considers it to be his own property for his personal use only (Ruga, 1997).

### 1.8.7. Security and Safety

It is one of the most important humanitarian needs that must be provided to the sick child within the unit that feels comfortable because he cannot bear more pressures resulting from the environment in which he is in addition to the condition of the disease (Ruga, 1997).

According to NSH Estates, Children are usually willing to show their independence but are unable to distinguish between safe and unsafe environments and require continuous supervision. The child's growth process psychologically and physically continuous process and a great majority of children acquire for new and different skills every day. Curiosity is natural in this age, so security and safety are the basic considerations to be considered in the design of a child's unit (NSH Estates, 2006).

The safety considerations in the interior design mean how the designer design the interior environment so that it is comfortable for the child psychologically and reassuring and does not raise fears within it may not be a real danger exists, but there is a psychological concern, contrary to security considerations that are intended to protect the human from the risk of existing Indeed, the development of a sense of safety is generated by the nature of the design of the place, in the sense that the design of the place allows the possibility of natural observation by making the spaces including the range of users of the space (NSH Estates 2006).

### 1.8.8. Controlling Environment

Amnia (2010), believes that the child needs to have a sense of control over the surroundings and is not overwhelmed or afraid of anything, so the child should be given the opportunity to explore his own experience and experience his own skills, which generates his feelings of competition. In order to achieve this, the designer must make the environment around the child understandable and clear, through the use of colors and signs understandable and provide easy ways to find things in the space through elements close to the child and has to do with his life experiences and things that have been dealt with before. The child needs a sense of self-satisfaction and the ability to balance with the environment, and may try to draw attention to it and to reach the appreciation of the surroundings and interests, and this should be provided through the social environment within the unit, which

is integrated through the cooperation between parents and treatment in dealing with patients from children.

### 1.8.9. Play Areas

Playing, in this case, is to exploit the kinetic energy of the child to bring the psychological pleasure of the individual is not playing without mental energy or physical movement, the game is a positive environment that incorporates different elements of measurement, colors, texture, spaces, and lighting (Komiske, 1999).

A playroom for each age group must be secured, each of which is independent and without folding barriers. The minimum room space for very young children is 55 square meters. The other rooms are 75 square meters. The minimum area is 30 square meters per child. And the playing zone should contain (Senda, 1992):

- Space for manual games: Playing with hand-held toys promotes some of the children's toys with cubes. Children can learn colors. The space for hand-held games is a quiet corner. Children play individually, and all or part of them can be a corner for reading and listening.
- Artworks space: In this area, a small number of children draw pictures, and this area must be away from the general movement of the room and must have specific access points, and requires a place to wash hands.
- Spaces allocated to the cubes: Cubes create possibilities for different kinds of education. These include the development of self-expression, mental cooperation, and similar skills.
- Moving area: These are spaces in which children practice skating, jogging, jumping and other motor skills necessary for their physical development. This space may be inside or outside the building itself in an open space and external spaces allow larger areas of internal spaces.
- Entertainment: An open theater, a covered theater, a ballroom, a puppet theater, a showroom, and a display room. In the absence of a theater or a room for a celebration, a multi-purpose hall is required.

### 1.9. Case Study (Farabi Hospital in Trabzon, Turkey)

With the protocol signed between the Ministry of Health and Social Welfare and Karadeniz Technical University in 1980, the hospital of Faculty of Medicine, which started to serve actively with the allocation of 225-bed building located in Soguksu-Camlik district as a temporary building in Trabzon city by a closed area of 38.000 m2, then moved to Ortahisar district in in KTÜ campus and KTÜ Faculty of Medicine. The construction of the Farabi Hospital was completed in 1986 and it was moved to its new and modern buildings with 600 bed capacity in one block (A block).

After this date, Farabi Hospital, which showed a rapid development with academic and administrative staff and physical facilities, completed the construction of an additional hospital building with a capacity of 308 beds (B block), which was started to be constructed in 1993 on 25.000 m2 closed area within the campus. After the completion of the renovation works in A-block, in September 2005, it continues its service with a total capacity of 800 patients' beds in both main blocks.

Besides education and research, there is a significant increase in the number of patients who applied to KTÜ Farabi Hospital with 800-bed capacity serving to a wide mass of people of Eastern Black Sea Region. The hospital management states its mission and vision as follows:

**A.** Mission: **"**To protect and improve the health of people in accordance with the understanding of patient-oriented contemporary health care delivery; to provide the patients with the highest quality health service with the latest information and technology; The aim of this course is to provide the substructure support to health professionals wish are physicians, especially physicians, and to conduct scientific research**" (**URL-2).

**B.** Vision: **"**In health services; Using advanced medical technology, professional ethics, and patient rights, evidence-based medical practices, patient and employee satisfaction, regional and national level to be preferred health institutions. In line with the developments and needs in the health sector at the national and international level, it is

necessary to provide the necessary infrastructure for physicians, specialists and other health professionals to carry out effective vocational education**" (**URL-2).

**C.** Physical Structure and Capacity: Currently the hospital has a closed area of 70.000 m2 and has 800 patients' beds. Table (2), describe the bed's divisions for each service section of the hospital:

Table 2. Divisions and the number of beds in Farabi Hospital (URL-2).

| **Name of Space / Department** | **Number of Beds** |
|---|---|
| Internal Diseases | **88** |
| Gynecology and Obstetrics | 41 |
| Brain surgeon | 68 |
| Ear, Nose and Throat Diseases | 42 |
| Dermatology | 8 |
| Neurology | 29 |
| Infectious Diseases | 13 |
| Oncology | 25 |
| **Pediatric Surgery** | **20** |
| Cardiovascular Surgery | 26 |
| Chest Diseases | 27 |
| General Surgery | 62 |
| **Pediatry** | **101** |
| Eye diseases | 23 |
| Orthopedics and Traumatology | 44 |
| Physical therapy and rehabilitation | 20 |
| Urology | 34 |
| Mental health | 18 |
| Thoracic Surgery | 14 |
| Cardiology | 33 |
| Plastic surgery | 17 |
| Emergency Inspection | 20 |
| Other (Except Dental Polyclinics) | 26 |
| TOTAL | 800 |

Note from the table above that the total of children bed in the hospital is (121 bed), so it is a total of (15.1 %) from the overall percentage of the beds in the hospital.

### 2.1.1. Location

The hospital is located in Trabzon, Turkey, within the district of Ortahisar, Figure (12). It is located within the borders of the campus of KTÜ, and it’s considered as the university's hospital. Figure (13), shows the location of the Farabi Hospital within KTÜ campus.

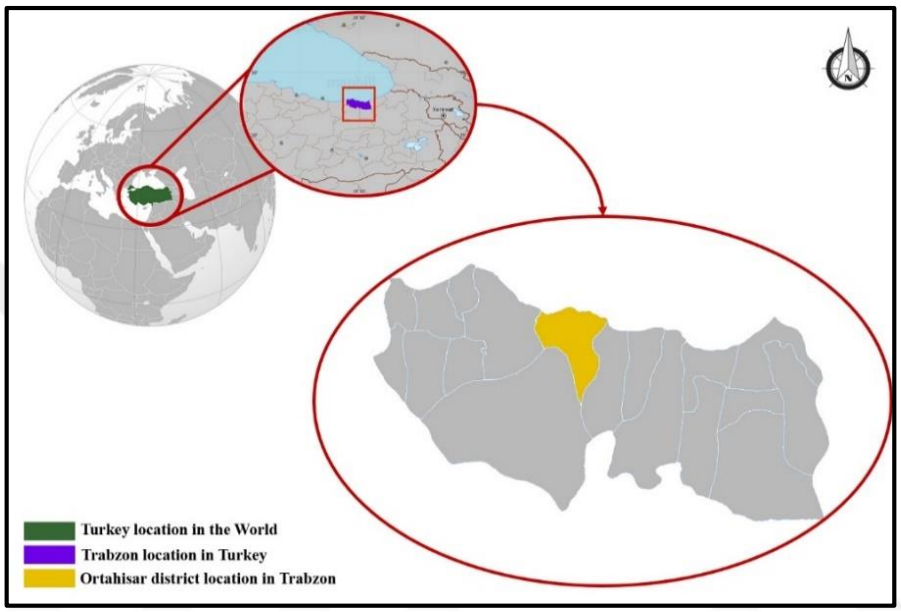



Figure 12. Turkey, Trabzon and Ortahisar location maps (URL-3).


Figure 13. Farabi Hospital location in KTÜ campus, (Aerial photo).

The Farabi Hospital consist of clinical blocks (A and B Blocks), and polyclinic building. There are transitions between the blocks. (A block) consists of 11 floors, (B block) consists of 6 floors and the polyclinic building, (D block) consists of 4 floors. (C block) consists of 3 floors and some of the polyclinic. Generally, the children's unit in the hospital is located in (A Block), which mostly consists of the polyclinic and the bed services within the unit. But also, (B and C Blocks) consist of some of the polyclinic and bed services of the children's unit, Figure (14) shows the hospital building blocks.

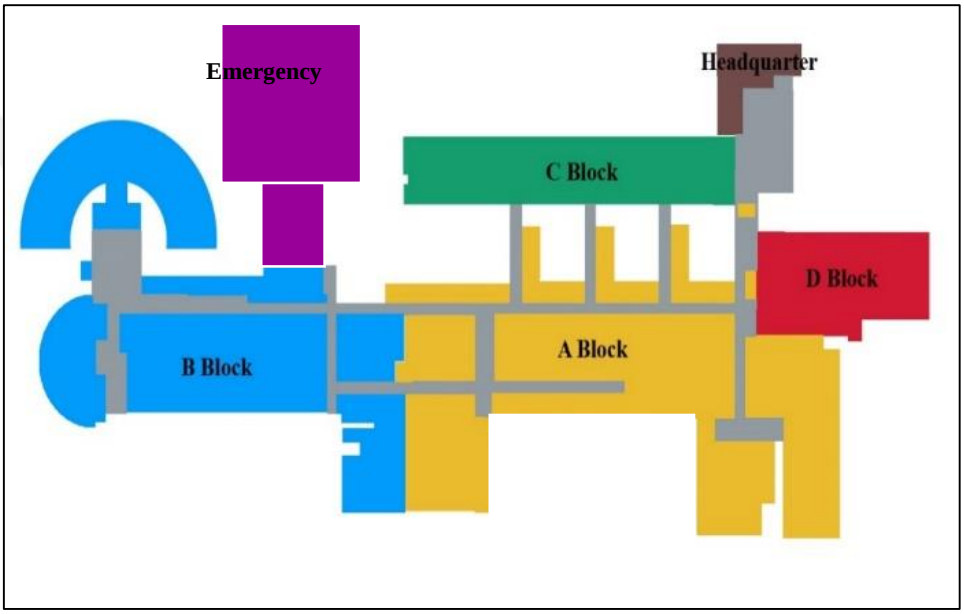



Figure 14. Farabi Hospital layout building block.

Figure 15. North Farabi Hospital view (URL-17).

Figure 16. South Farabi Hospital view (URL-17).

### 2.1.2. Orientation

The hospital is surrounded by a lot of facilities of KTÜ campus, the most important ones are, faculties of Medicine, Dentistry and Pharmacy, Figure (17).

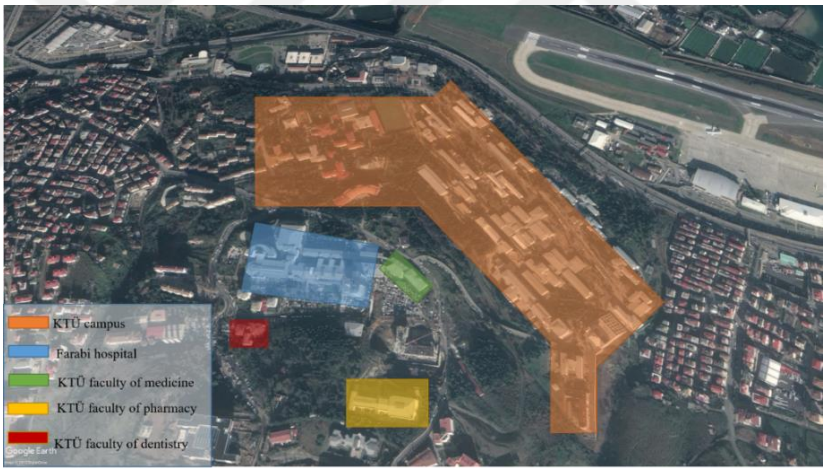



Figure 17. Farabi Hospital surrounding, (Aerial photograph).

The hospital overlooks view from the North to the Black Sea, and from the South, West, and East, regardless of the existing buildings to a Green Landscape. Furthermore, the transportation and parking areas. The hospital is surrounded by one secondary road (Farabi Street) from the North and Eastside, which is coming from and leads toward two Highways (Devlet Karayolu, and 2$^{nd}$ Sahil Youlu). There is some small sub-road (Farabi Hospital Streets) around the hospital to lead to the hospital and the parking around the hospital. There are four parking lots available around the hospital. Likewise, bus and minibus stations are easily available. **Appendix 1** shows the roads, transportation, and the parking of the hospital.

## Chapter Conclusion

This chapter is the introduction to the research, in which general information has been expanded through, which it is conceivable to identify the basic steps that must be advanced during the design of the children's unit.

Briefly in this chapter, first, general hospitals identification, in this part types and functions of hospitals were specified. Secondly, a general background about Turkey hospital and the health care system has been clarified in Turkey. Third, in the beginning, a clarification of the unit of children, in general, has been graduated by clarifying through the identification of the most important functions of the unit and also on what is the architectural elements that must be available in the unit. Fourthly, the most important psychological elements to be observed during the architectural design of the unit were identified. And finally, an introduction to the case study selected in the research (Farabi Hospital in Trabzon Turkey Children's Unit) was presented and summarized in terms of general information about the hospital and its location.

In the next chapter, the selected case study will be identified by clarifying the research methods used in the research. The next part of the research considered as the main part of the research, which will identify the most important results and solutions for this research.

## 2. METHODOLOGY

In this research method, two main steps were used to give the information and goals to be accessed. The first is based on the analysis of the children unit architecturally to clarify the search area, and the other is the work of a satisfaction survey to find the most important objectives to be taken into account during the design of the unit and also give a profile of the users and staff of the unit design.

In the charts below, Figure (18), we can see the process throughout this chapter. Therefore we can see that this chapter will be focusing on the two methods that have been used by the author of the thesis which is, the case study analyzes and the satisfaction survey.

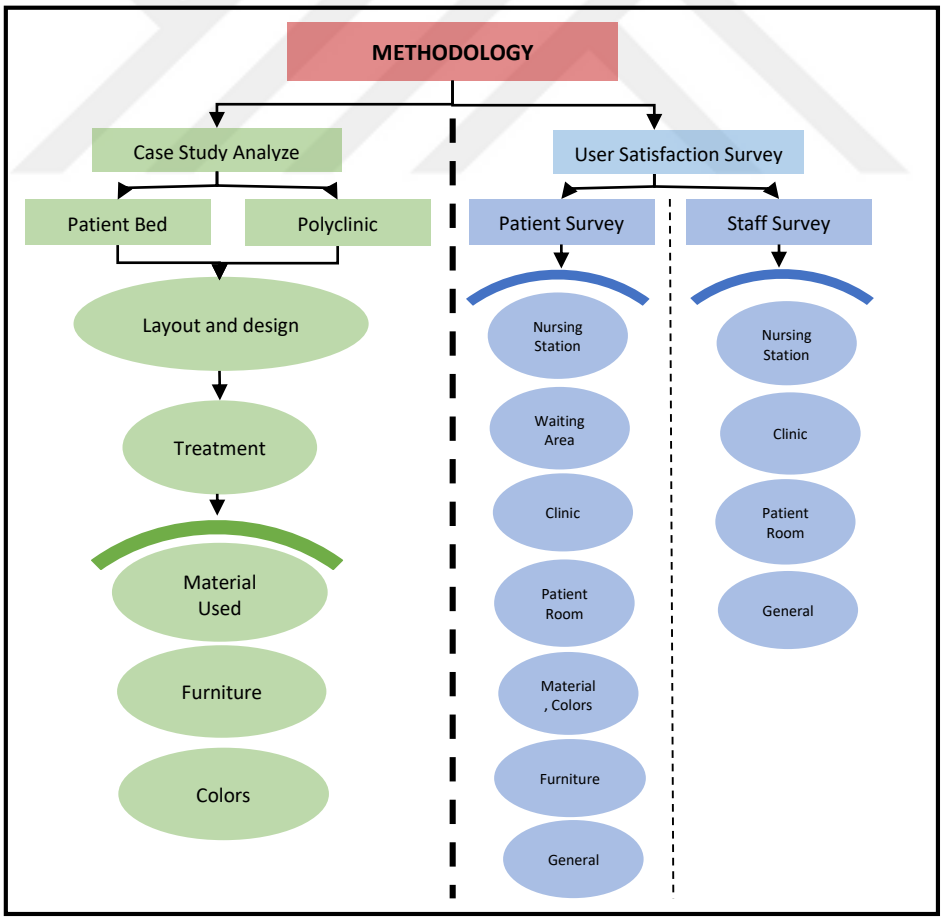



Figure 18. Process accomplished through the methodology chapter.

### 2.2. Method Used

- Step One: The hospital has been identified in general, and, the unit would be addressed in particular through an analysis of the architectural elements of the children's unit available in the hospital.

In the hospital analysis method, it was studied by four stages. These are:

**A.** Layout and design: At this stage, the layout of the spaces within the unit would be shown taking into account the design shape and dimensions of each region. From this point, it is possible to define whether the shape and size of the space are suitable for the function given to it or not.

**B.** Treatment: Finally, the factors of the outer layers would be in display in terms of the materials, colors used and the necessary architectural supplements, and the furniture used.

- Step Two: It was an analysis by the work of a satisfaction survey on the user opinion and staff of the unit, in which cause the survey to be divided into two parts:

**A.** First, children's unit satisfaction patient survey, it was set to the consent of patients or the persons accompanying them in this case because the unit is specific for children.

**B.** Second, children's unit satisfaction staff survey, in this case, would be targeting the doctors and nurses, who are key users of the unit.

### 2.3. Case Study: Analyses of the Existing Building

In the analysis of the case study, emphasis will be placed on two important points that already mentioned which is the existing layout and design of the children's unit and the treatment that has been used in the unit according to the materials, colors used and the present furniture.

#### 2.3.1. Layout and Design

Going through the contains of the unit spaces by determining the layout design and shape, that would give important information about the shapes and dimensions of each of the

available spaces within the unit; with the knowledge of this information, the function of these areas whether it’s suitable or not would be defined.

The children's unit in Farabi hospital consists of two main sections: First, the polyclinic, which is concentrated on the first floor of the (A Block) and some in the (C Block). The second is the patients' bed service which is mostly in different floors in the (A block), Table (3) shows the location and content of the children's unit in each floor of each block.

Table 3. Location and Content of the Children's Unit in Each Floor of Each Block

| Blocks | | |
|---|---|---|
| A block | Floor 1 | Children EEG laboratory, children thoracic allergy polyclinic, pediatric hematology and oncology polyclinic, pediatric nephrology, pediatric newborn polyclinic, infant bed service, adolescent bed service. |
| | Floor 2 | Newborn ICU. |
| | Floor 3 | Pediatric infection bed service, newborn bed service, pediatric ICU. |
| | Floor 4 | Pediatric operation bed service, pediatric oncology bed service. |
| B block | Floor -1 | Children urology bed service, Children emergency. |
| C block | Floor 2 | Children operation polyclinic, children urology polyclinic. |

These two main sections – the polyclinic and bed service- can be accessed by entering from the ground floor of (A Block). Through the use of the Northern door of the hospital (front entrance of A Block), it could be access to clinics, and by using the Eastern door of the block, the bed service can be accessed. **Appendix 2,** shows the ground floor layout plan.

#### 2.3.1.1. Polyclinic

As it is observed from the previous information, it is noticeable that most of the clinics are located in the first and second floor, generally in the (A Block). **Appendix 3,** shows the children's unit first floor layout plan, which is the existing clinics in the children's unit. In the area specified for the clinics, the clinics were divided into two types:

**A.** The first type consisted of private clinics with specific doctors, which is a pediatric consultant. This type of clinics can be designed and organized by doctors who are using the space.

**B.** The second type, public clinics, it was divided according to specialization, One clinic is used by several specialized doctors according to the department of the clinic. The designs and the planning in the spaces of the clinics are usually standard design in all of them.

There is also a third section in the polyclinic area which is very important: the waiting area. The area mostly available in the private and the public polyclinics. For this type of area, it is well available around both types of polyclinics, as shown in **Appendix 4-A**, shows the children's unit private & public polyclinics & waiting area layout and components. And in **Appendix 4-B,** shows the sizes of the children's polyclinic.

#### 2.3.1.2. Patients Bed Service

Patients' rooms are available and accessible in the same location in the hospital layout-plan for each floor (First, Second, Third and Fourth floors), which is in the East side of the (A Block), and that gives easy access to the location of the different patients' room services.

There are four different services available for children's patients' rooms: infant service, pediatric infection service, pediatric operation service, and, pediatric oncology service, each section of these services located in the same layout area but on different floors.

**Appendix 5-A** shows the Bed Service Components and Spaces of all of these services, and **Appendix 5-B** shows sizes of the children's bed services.

For the waiting area in this part of the unit, it is hardly available. Therefore there are no enough waiting areas, nor there any visitors to family rooms. This causes a great shortage and imbalance in this section, because of the importance of the waiting and guest areas for the visits to the patients' rooms.

### 2.3.2. Treatment

The architectural treatments used in the hospital, in general, are outdated and not refurbished as will be observed through the images that have been included. This gives negative points for the materials used in the pediatric unit, both for the clinics and the patients' rooms, due to their lack of aesthetics and safety. In this part, three main elements of the treatment have been targeted:

- The materials used in the children's unit.
- The colors currently present in the unit.
- The furniture used in terms of materials and design.

#### 2.3.2.1. Polyclinic

By going through the three main parts of the polyclinic -public polyclinic, private polyclinic, and the waiting areas- the color, materials, and furniture used in the area, were specified.

##### 2.3.2.1.1. Materials Used

The materials used in the unit are generally limited and non-varied, making it easier to determine the type of materials used in each space by looking only. In this case, these materials can be seen throughout the included images in the table below, Table (4).

Table 4. Materials used in the polyclinic.

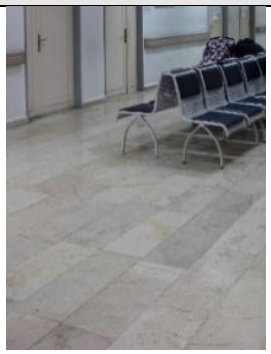
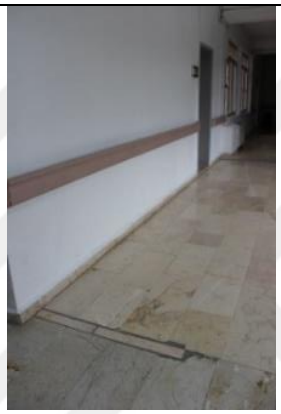
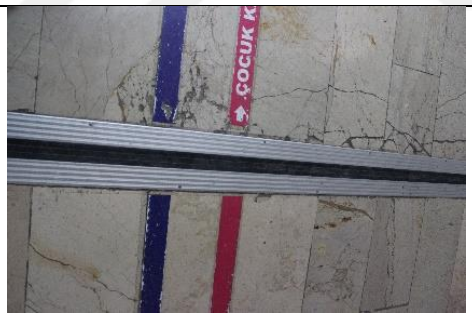
| Placement | Material | Photo | Note / Comment |
|---|---|---|---|
| Flooring | Marble tiles |  | Most of the floors used in the clinics' department are tiles |
| | |  | It can be seen from this picture that an attempt was made to fix a tile flooring problem, but it was treated badly. |
| Flooring | Aluminum and rubber floor trim |  | They are usually used as a separator between two different material, but in this case, was used between two different areas due to construction. |
| Wall | Watercolor painting |  | the painting is fading and the paste is visible. |

Table 4. (Sequel) Materials used in the polyclinic.

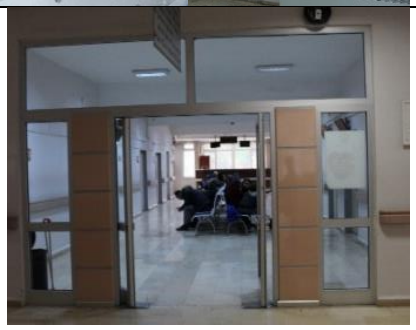
| Placement | Material | Photo | Note / Comment |
|---|---|---|---|
| Wall | Wood and plastic. |  | The wall handrails made of wood sheets covered with plastic sheets and all plastic for the edges. |
| | Marble tiles |  | The base wall skirting board made from the same material has been used in the flooring. |
| Windows | Wood and glass |   | Aluminum or metal for the joints and the handles. |
| Doors | Wood, glass, and aluminum |  | A type of partition door that is separated between the private and the public polyclinic. |
| Doors | Wood and aluminum |   | Simply wood material used is a particle board for the door itself and aluminum for the door frame. |

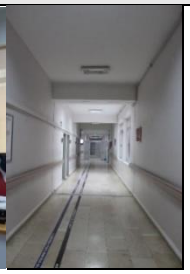
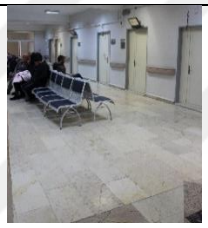
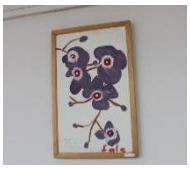
Table 4. (Sequel) Materials used in the polyclinic.

| Placement | Material | Photo | Note / Comment |
|---|---|---|---|
| Ceiling | Plaster |  | The normal plaster finishing that is applied directly to the last construction material. |
| | Gypsum board |  | In the polyclinic it is only available above nurse's stations. |

#### 2.3.2.1.2. Colors

The colors used in the polyclinics area are limited by the use of cold colors and a small variety, although the areas of the polyclinics and waiting are allocated under the children's unit. The colors used were shown in the table below, Table (5).

Table 5. Color used in the polyclinic.

| Color | Photo | Note / Comment |
|---|---|---|
| • White<br>• Gray |   | Some of the areas have a simple white and gray colors on the walls and ceiling. |
| • Blue<br>• Red<br>• White<br>• Green<br>• Black |   | These colors are used on the floor to direct people to their destination. |
| • Beige<br>• light brown |  | The tiling of the floor. |
| Artwork<br>(On the walls) |    | This painting is available only in the children unit walls. |
| Beige |  | _____ |

#### 2.3.2.1.3. Furniture

Most of the furniture used in this section of the unit is essential and old furniture both inside the clinic and in the waiting area. The furniture used in general does not take into account that it is used in a unit for children's, in terms of design size and color, Table (6).

Table 6. Furniture used in the polyclinic.

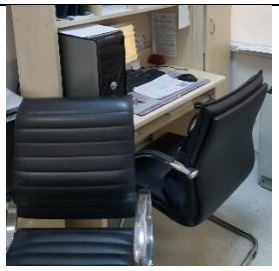
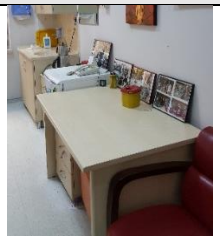
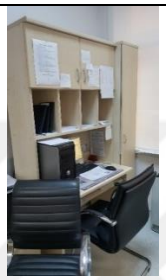
| Area | Furniture | Photo | Note / Comment |
|---|---|---|---|
| Waiting area | Waiting bench chairs. |   | Made of stainless steel and plastic covers cushions |
| Between the waiting areas and the polyclinics. | - Information desk<br>-Reception desk |  | Made of woods and aluminum bars. |
| Polyclinics. | Chairs |  | These type of chairs are used by the doctors and the interns. |
| | Sofas |  | Used by the patient and the guardians, made of steel and covers by cushions. |

Table 6. (Sequel) Furniture used in the polyclinic.

| Area | Furniture | Photo | Note / Comment |
|---|---|---|---|
| Polyclinics. | Desk. |  | Used by the doctors and the interns, made out of woods. |
| | Desk with cabinet. |  | This type of disks has its own cabinet to save the files. |
| polyclinics | Cabinet. |  | A locker type of cabinets. |
| | |  | This cabinet has shelves in the above part and a drawer in the lower part. |
| | Examination bed |  | it has plastic covers cushions the above part and, a drawer in the lower part. |
| | |  | This type specifically for taking samples. |

#### 2.3.2.2. Patients Bed Service

Patient room service, in the children's unit, can be seen as a more varied treatment form the polyclinic area. But at the same time, these treatments are limited.

##### 2.3.2.2.1. Materials Used

In terms of the materials used in this penalty, it is not very different from the area of the clinics, but it could be noted that there are new materials (especially in the flooring) that take into consideration that the patients who use the space are children, Table (7).

Table 7. Materials used in the bed service.

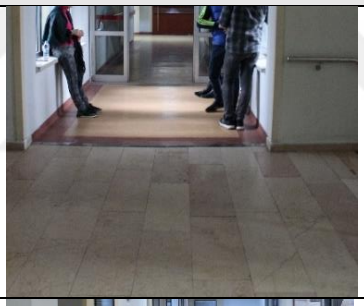
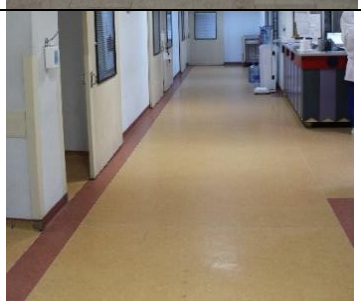
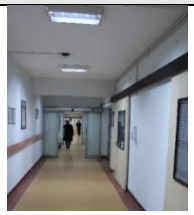
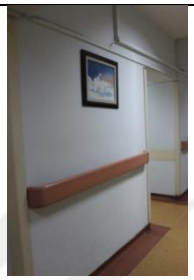
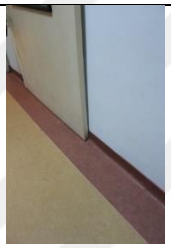
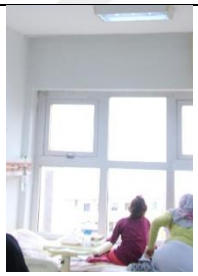
| Placement | Material | Photo | Note / Comment |
|---|---|---|---|
| Flooring. | Marble tiles |  | Generally, it is in the corridor that is lead to the services of the patient bedrooms. |
| | Linoleum. |  | It is used in the whole flooring for the patient serviced bedrooms and corridors. |
| | Aluminum floor trim. |  | To join between two separate material. |

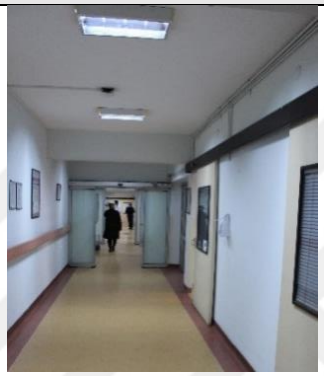
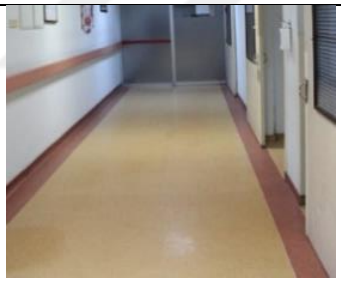
Table 7. (Sequel) Materials used in the bed service sanction.

| Placement | Material | Photo | Note / Comment |
|---|---|---|---|
| Wall. | Water wall painting |  | The wall painting in this section is will applied. |
| Wall. | Plastic. |  | The wall handrails in this section are fully made out of plastic. |
| | Linoleum. |  | The base wall shoe made from the same material has been used in the flooring. |
| Windows. | Aluminum and glass. |  | _____ |
| Doors. | Wood. |  | This type of sliding door only uses for the patient room. |
| Ceiling. | Plaster and gypsum board. |  | _____ |

#### 2.3.2.2.2. Colors

In this section of the unit, the colors were the same colors used in the polyclinic, but the colors used in the flooring are different in terms of colors shades are darker in this section, Table (8).

Table 8. Colors used in the bed service.

| Color | Photo | Note / Comment |
|---|---|---|
| White. |  | On the walls and ceiling. |
| Ocher. |  | It's a color from yellow to dark orange or brown. |
| Red-brown. |  | Shades of color between red and brown. |
| Artwork<br>(On the walls) |   | The painting is much more professional in this section. |

#### 2.3.2.2.3. Furniture

In this section, the furniture in this part is more versatile, due to the diversity of the existing space, and at the same time to multiple users of the space, Table (9).

Table 9. Furniture used in the bed service.

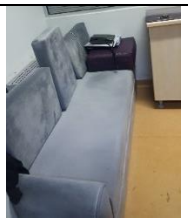
| Area | Furniture | Photo | Note / Comment |
|---|---|---|---|
| Nurses station. | Reception desk. |   | There are two different designs for the reception desk, and they are both made of wood. |
| Nurses station. | Cabinet. |  | |
| Doctors' lounge. | Sofa. |  | Made of fabric and wood frame. |
| | Chair. |  | A movable chair and it is the same type that is used in the nurse's station. |

Table 9. (Sequel) Furniture used in the bed service.

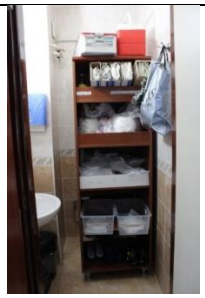
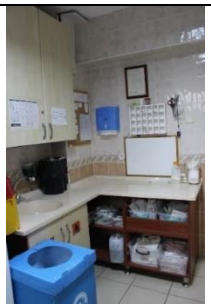
| Area | Furniture | Photo | Note / Comment |
|---|---|---|---|
| Doctors' lounge. | Cabinet. |  | Used as a pantry. |
| | Refrigerator. |  | It is also used as a table because of the small space. |
| Nurse storage and Preparation room. | Cabinet. |  | To store all the tools that are used by nurses, or requested by the doctor. |
| | |  | |
| | Shelves. |  | Used for tools that need to for quick access. |
| | Hygiene and sink display. |  | For sterilization and cleanliness. |

Table 9. (Sequel) Furniture used in the bed service.

| Area | Furniture | Photo | Note / Comment |
|---|---|---|---|
| Patient room. | Bed. |  | The rooms are very small and have a traditional hospitals bed for the patients. This bed is not set up for children so that they do not take into account their own sizes and safety. |
| | Patient headset. |  | A simple toolbar above each bed. |
| | Bedside table |  | For personal use by patients. |
| | Cupboard. |  | To store patients clothes. |

## 2.4. Survey of the Children Units

The survey considered an important part of this research, because of the importance of the service scope and samples that were conducted with this questionnaire in the unit, whether from employees or patients and the visitors of the children unit.

### 2.4.1. Survey Objectivity

The main objective of the survey was to try to gather as much information as possible about all the potential problems that exist in the children's unit design that meet the individuals using the space, which was not found during the unit analysis.

Taking into consideration the important and high-quality information that has been extracted. The information that would be available from the survey can be used as an important input, which will solve many of the problems currently in the unit, which was not paid attention by the designer but formed a big problem for users in the unit space.

### 2.4.2. Survey Type

Closed format user satisfaction survey questions have been applied, in which five rates were used in the order of scaling, (Strongly Agree, Agree, Disagree, Strongly Disagree, Don’t Know), to present a choice for the respondents to rank the available rating answers to the questions required. The results would be analyzed in a statistical way, by setting a percentage of each question, using Microsoft EXCEL Program.

### 2.4.3. The Placement Of The Survey Location

The site of the survey is fully focused on the children's unit inside the Farabi hospital. The survey was being conducted in two main areas of the children's unit:

**A.** First Area: The clinics' zone, this area includes the different clinics within the children's section and the inspection rooms available in each clinic, as well as the waiting area available around the clinics.

**B.** Second Area: The patient room zone, which generally includes the patients 'rooms available in the unit whether the single or multi-person patient rooms, as well as the nurses' stations available around the rooms.

### 2.4.4. Survey Users

For users of the survey, it was divided into two parts, depending on the user's difference to the unit, as well as the method of space using by each of the two parts.

#### 2.4.4.1. Patient Survey

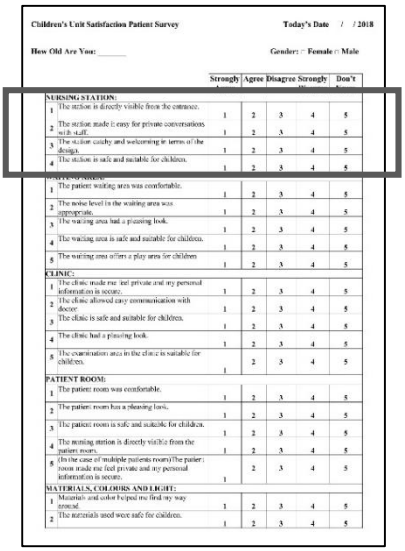
In this section of the survey patients and their families will be targeted, whether in the clinic or in the patients' rooms of the unit.

This survey is concentrated in seven parts, through which questions in each part are asked to identify the patients and their satisfaction with the space visited by them.

**Appendix 6-A** shows the patient survey in English, and **Appendix 6-b** shows the patient survey in Turkish. The survey was translated into Turkish because of the survey site located in KTÜ, Trabzon, Turkey, and the subjects practicing the Turkish Language.

##### 2.4.4.1.1. Nursing Station

In this part of the survey, four questions have been asked about the nursing station as it is shown in Figure (19) below. And in Table (10) analysis of each question, according to this, we can view the importance of this part.



Children's Unit Satisfaction Patient Survey — Today's Date / / 2018

How Old Are You: _____ Gender: ○ Female ○ Male

| | | Strongly | Agree | Disagree | Strongly | Don't |
|---|---|---|---|---|---|---|
| **NURSING STATION:** | | | | | | |
| 1 | The station is directly visible from the entrance. | 1 | 2 | 3 | 4 | 5 |
| 2 | The station made it easy for private conversations with staff. | 1 | 2 | 3 | 4 | 5 |
| 3 | The station catchy and welcoming in terms of the design. | 1 | 2 | 3 | 4 | 5 |
| 4 | The station is safe and suitable for children. | 1 | 2 | 3 | 4 | 5 |
| **WAITING AREA:** | | | | | | |
| 1 | The patient waiting area was comfortable. | 1 | 2 | 3 | 4 | 5 |
| 2 | The noise level in the waiting area was appropriate. | 1 | 2 | 3 | 4 | 5 |
| 3 | The waiting area had a pleasing look. | 1 | 2 | 3 | 4 | 5 |
| 4 | The waiting area is safe and suitable for children. | 1 | 2 | 3 | 4 | 5 |
| 5 | The waiting area offers a play area for children | 1 | 2 | 3 | 4 | 5 |
| **CLINIC:** | | | | | | |
| 1 | The clinic made me feel private and my personal information is secure. | 1 | 2 | 3 | 4 | 5 |
| 2 | The clinic allowed easy communication with doctor | 1 | 2 | 3 | 4 | 5 |
| 3 | The clinic is safe and suitable for children. | 1 | 2 | 3 | 4 | 5 |
| 4 | The clinic had a pleasing look. | 1 | 2 | 3 | 4 | 5 |
| 5 | The examination area in the clinic is suitable for children. | 1 | 2 | 3 | 4 | 5 |
| **PATIENT ROOM:** | | | | | | |
| 1 | The patient room was comfortable. | 1 | 2 | 3 | 4 | 5 |
| 2 | The patient room has a pleasing look. | 1 | 2 | 3 | 4 | 5 |
| 3 | The patient room is safe and suitable for children. | 1 | 2 | 3 | 4 | 5 |
| 4 | The nursing station is directly visible from the patient room. | 1 | 2 | 3 | 4 | 5 |
| 5 | (In the case of multiple patients room)The patient room made me feel private and my personal information is secure. | 1 | 2 | 3 | 4 | 5 |
| **MATERIALS, COLORS AND LIGHT:** | | | | | | |
| 1 | Materials and color helped me find my way around. | 1 | 2 | 3 | 4 | 5 |
| 2 | The materials used were safe for children. | 1 | 2 | 3 | 4 | 5 |

Figure 19. "Nursing Station" Part of questionnaire in the patient survey.

Table 10. Patient survey (Nursing Station) questions.

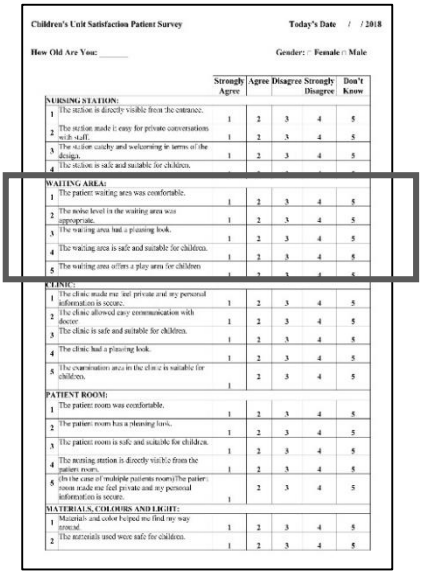
| | **Questions:** | **Description:** |
|---|---|---|
| **Q1** | **The station is directly visible from the entrance.** | It will be determined whether access to the station from the entrance is easy or not, in order to take this part of the patient to know the general information related to access to the clinic or to the patients' rooms, if it is far from the entrance of the unit, this will cause a barrier for the visitor to go to the destination to be accessed. |
| **Q2** | **The station made it easy for private conversations with staff**. | In this case, the patient or his or her family usually prefer some privacy. In this case, this privacy should not be high but it should be available in general. If this is not present, this will be a communication barrier between the nurses and the patients, and this is considered a malfunction in the nursing station. |

Table 10. (Sequel) Patient survey (Nursing Station) questions.

| | **Questions:** | **Description:** |
|---|---|---|
| **Q3** | **The station catchy and welcoming in terms of the design.** | The design of the station should be considered in terms of shape and color used in the station to draw the attention of the children to the place and create a kind of psychological comfort for the child, making communication with the patient easier. |
| **Q4** | **The station is safe and suitable for children.** | If the station is not safe and the child is given, it will make communication with the nurse difficult, and this is the opposite of why the station is from a fundamental point. |

#### 2.4.4.1.2. Waiting Area

The waiting area is one of the large areas that must be available in the children's unit, especially in front of the clinics, Figure (20).



**Children's Unit Satisfaction Patient Survey** **Today's Date / / 2018**

**How Old Are You:** _____ **Gender:** ☐ **Female** ☐ **Male**

| | | Strongly Agree | Agree | Disagree | Strongly Disagree | Don't Know |
|---|---|---|---|---|---|---|
| **NURSING STATION:** | | | | | | |
| 1 | The station is directly visible from the entrance. | 1 | 2 | 3 | 4 | 5 |
| 2 | The station made it easy for private conversations with staff. | 1 | 2 | 3 | 4 | 5 |
| 3 | The station catchy and welcoming in terms of the design. | 1 | 2 | 3 | 4 | 5 |
| 4 | The station is safe and suitable for children. | | | | | |
| **WAITING AREA:** | | | | | | |
| 1 | The patient waiting area was comfortable. | 1 | 2 | 3 | 4 | 5 |
| 2 | The noise level in the waiting area was appropriate. | 1 | 2 | 3 | 4 | 5 |
| 3 | The waiting area had a pleasing look. | 1 | 2 | 3 | 4 | 5 |
| 4 | The waiting area is safe and suitable for children. | 1 | 2 | 3 | 4 | 5 |
| 5 | The waiting area offers a play area for children | 1 | 2 | 3 | 4 | 5 |
| **CLINIC:** | | | | | | |
| 1 | The clinic made me feel private and my personal information is secure. | 1 | 2 | 3 | 4 | 5 |
| 2 | The clinic allowed easy communication with doctor. | 1 | 2 | 3 | 4 | 5 |
| 3 | The clinic is safe and suitable for children. | 1 | 2 | 3 | 4 | 5 |
| 4 | The clinic had a pleasing look. | 1 | 2 | 3 | 4 | 5 |
| 5 | The examination area in the clinic is suitable for children. | 1 | 2 | 3 | 4 | 5 |
| **PATIENT ROOM:** | | | | | | |
| 1 | The patient room was comfortable. | 1 | 2 | 3 | 4 | 5 |
| 2 | The patient room has a pleasing look. | 1 | 2 | 3 | 4 | 5 |
| 3 | The patient room is safe and suitable for children. | 1 | 2 | 3 | 4 | 5 |
| 4 | The nursing station is directly visible from the patient room. | 1 | 2 | 3 | 4 | 5 |
| 5 | (In the case of multiple patients room) The patient room made me feel private and my personal information is secure. | 1 | 2 | 3 | 4 | 5 |
| **MATERIALS, COLOURS AND LIGHT:** | | | | | | |
| 1 | Materials and color helped me find my way around. | 1 | 2 | 3 | 4 | 5 |
| 2 | The materials used were safe for children. | 1 | 2 | 3 | 4 | 5 |

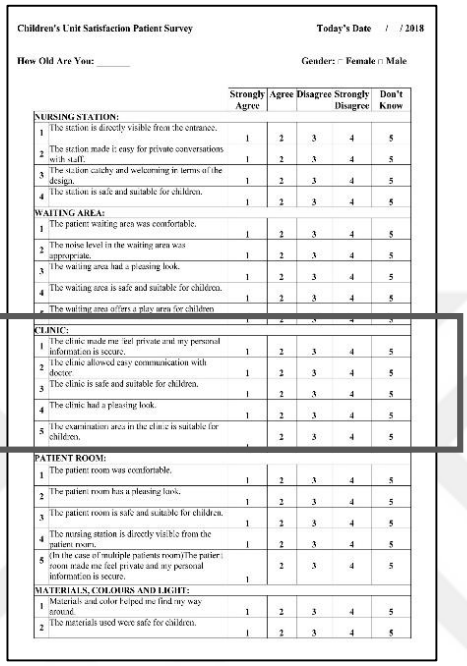
Figure 20. “Waiting Area” Part of questionnaire in the patient survey.

Table 111. Patient survey (Waiting Area) questions.

| | **Questions:** | **Description:** |
|---|---|---|
| **Q1** | **The patient waiting area was comfortable.** | It should be comfortable in terms of movement and arrangement so that the length of waiting in some cases gives a penalty of comfort to the patient and his parents. If the patient is uncomfortable in the waiting area, especially the parents, because they are the people responsible for the children, this will cause some kind of tiredness, stress, tension, and discomfort. |
| **Q2** | **The noise level in the waiting area was appropriate.** | The lack of arrangement and design of the area in a comfortable way, whether in motion or waiting, generates a large amount of noise from children, which causes the displacement of the rest of the patients and staff in the hospital and result in a lack of good work. |
| **Q3** | **The waiting area had a pleasing look.** | The waiting area providing an attractive and good appearance affects the psychological atmosphere for the children, such as the selection of special types of furniture and colors used in the space. In the absence of this thing, that will create a dull, frightening and tense atmosphere for the child. |
| **Q4** | **The waiting area is safe and suitable for children.** | It is very important because it is an open area for the child, which gives him freedom of movement, playing and running, but the lack of a safe space in this area will cause problems greater than the problem of health for the sick child. |
| **Q5** | **The waiting area offers a play area for children.** | In the case of the children unit, it provides a very important play area for the length of the waiting periods, and also to create a nice atmosphere to help to calm the child. In the play area, it must be taken into consideration the types of games that must be available. |

#### 2.4.4.1.3. Clinic

The first component of the Pediatric Unit is the first phase of the patient's healing stages, so its design efficiency is important, Figure (21).



Children's Unit Satisfaction Patient Survey — Today's Date / / 2018

How Old Are You: _____ Gender: ☐ Female ☐ Male

| | | Strongly Agree | Agree | | Disagree | Strongly Disagree | Don't Know |
|---|---|---|---|---|---|---|---|
| **NURSING STATION:** | | | | | | | |
| 1 | The station is directly visible from the entrance. | 1 | 2 | | 3 | 4 | 5 |
| 2 | The station made it easy for private conversations with staff. | 1 | 2 | | 3 | 4 | 5 |
| 3 | The station catchy and welcoming in terms of the design. | 1 | 2 | | 3 | 4 | 5 |
| 4 | The station is safe and suitable for children. | 1 | 2 | | 3 | 4 | 5 |
| **WAITING AREA:** | | | | | | | |
| 1 | The patient waiting area was comfortable. | 1 | 2 | | 3 | 4 | 5 |
| 2 | The noise level in the waiting area was appropriate. | 1 | 2 | | 3 | 4 | 5 |
| 3 | The waiting area had a pleasing look. | 1 | 2 | | 3 | 4 | 5 |
| 4 | The waiting area is safe and suitable for children. | 1 | 2 | | 3 | 4 | 5 |
| 5 | The waiting area offers a play area for children | 1 | 2 | | 3 | 4 | 5 |
| **CLINIC:** | | | | | | | |
| 1 | The clinic made me feel private and my personal information is secure. | 1 | 2 | | 3 | 4 | 5 |
| 2 | The clinic allowed easy communication with doctor | 1 | 2 | | 3 | 4 | 5 |
| 3 | The clinic is safe and suitable for children. | 1 | 2 | | 3 | 4 | 5 |
| 4 | The clinic had a pleasing look. | 1 | 2 | | 3 | 4 | 5 |
| 5 | The examination area in the clinic is suitable for children. | 1 | 2 | | 3 | 4 | 5 |
| **PATIENT ROOM:** | | | | | | | |
| 1 | The patient room was comfortable. | 1 | 2 | | 3 | 4 | 5 |
| 2 | The patient room has a pleasing look. | 1 | 2 | | 3 | 4 | 5 |
| 3 | The patient room is safe and suitable for children. | 1 | 2 | | 3 | 4 | 5 |
| 4 | The nursing station is directly visible from the patient room. | 1 | 2 | | 3 | 4 | 5 |
| 5 | (In the case of multiple patients room)The patient room made me feel private and my personal information is secure. | 1 | 2 | | 3 | 4 | 5 |
| **MATERIALS, COLOURS AND LIGHT:** | | | | | | | |
| 1 | Materials and color helped me find my way around. | 1 | 2 | | 3 | 4 | 5 |
| 2 | The materials used were safe for children. | 1 | 2 | | 3 | 4 | 5 |

Figure 21. “Clinic” Part of questionnaire in the patient survey.

Table 12. Patient survey (Clinic) questions.

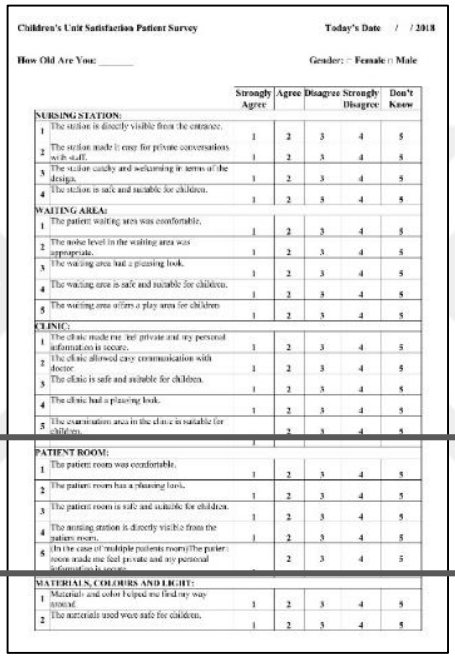
| | **Questions:** | **Description:** |
|---|---|---|
| **Q1** | **The clinic made me feel private and my personal information is secure.** | The rate of privacy in the case of clinics between the patient and the doctor must be 100%. In the absence of privacy based on a mistake in design, this destroys the basic objective of the availability of a closed room, and create discomfort for the patient and the doctor at the same time. |

Table 12. (Sequel) Patient survey (Clinic) questions.

| | **Questions:** | **Description:** |
|---|---|---|
| **Q2** | **The clinic allowed easy communication with the doctor.** | Communication between the patient and the doctor should be in an easy space. In the absence of any type of communication through the design, it wıll causes a problem to discover the need of the patient for the doctor. |
| **Q3** | **The clinic is safe and suitable for children.** | In the clinics, with the availability of many tools and medicines for the examination of the doctor, we have to provide a safe environment for the child in the clinic must observe the safety rules for the child, and be as safe as possible. |
| **Q4** | **The clinic had a pleasing look.** | The clinic is considered the first stage of healing the child while designing we have to consider creating a suitable and attractive environment for the child. Through the design of the clinic with a catchy view, it creates a kind of psychological comfort for the patient and makes communication with the physician easier, which generates confidence among them. Lack of pleasing look in pediatric clinics is causing a bad clinic design. |
| **Q5** | **The examination area in the clinic is suitable for children**. | The examination area in the clinic is usually scary for the child, usually the movements of the patient are quick and unexpected, so be careful to choose the furniture suitable for children in this area, and also places the tools that are used, and most important must be safe for the child, If the place is not suitable in terms of security for the child, it will create greater health problems for the patient. |

#### 2.4.4.1.4. Patient Room

Patient rooms are a large part of the hospital. For children's rooms, it is considered a particularly sensitive area, because of the importance of age difference for its users. The patients' rooms in the children's unit should create an atmosphere of comfort and attractiveness of a special kind in order to make them feel safe and stable, especially for long-term patients, Figure (22).



Children's Unit Satisfaction Patient Survey — Today's Date / / 2018

How Old Are You: _____ Gender: ○ Female ○ Male

| | | Strongly Agree | Agree | | Disagree | Strongly Disagree | Don't Know |
|---|---|---|---|---|---|---|---|
| **NURSING STATION:** | | | | | | | |
| 1 | The station is directly visible from the entrance. | 1 | 2 | 3 | 4 | 5 | |
| 2 | The station made it easy for private conversations with staff. | 1 | 2 | 3 | 4 | 5 | |
| 3 | The station catchy and welcoming in terms of the design. | 1 | 2 | 3 | 4 | 5 | |
| 4 | The station is safe and suitable for children. | 1 | 2 | 3 | 4 | 5 | |
| **WAITING AREA:** | | | | | | | |
| 1 | The patient waiting area was comfortable. | 1 | 2 | 3 | 4 | 5 | |
| 2 | The noise level in the waiting area was appropriate. | 1 | 2 | 3 | 4 | 5 | |
| 3 | The waiting area had a pleasing look. | 1 | 2 | 3 | 4 | 5 | |
| 4 | The waiting area is safe and suitable for children. | 1 | 2 | 3 | 4 | 5 | |
| 5 | The waiting area offers a play area for children | 1 | 2 | 3 | 4 | 5 | |
| **CLINIC:** | | | | | | | |
| 1 | The clinic made me feel private and my personal information is secure. | 1 | 2 | 3 | 4 | 5 | |
| 2 | The clinic allowed easy communication with doctor | 1 | 2 | 3 | 4 | 5 | |
| 3 | The clinic is safe and suitable for children. | 1 | 2 | 3 | 4 | 5 | |
| 4 | The clinic had a pleasing look. | 1 | 2 | 3 | 4 | 5 | |
| 5 | The examination area in the clinic is suitable for children. | 1 | 2 | 3 | 4 | 5 | |
| **PATIENT ROOM:** | | | | | | | |
| 1 | The patient room was comfortable. | 1 | 2 | 3 | 4 | 5 | |
| 2 | The patient room has a pleasing look. | 1 | 2 | 3 | 4 | 5 | |
| 3 | The patient room is safe and suitable for children. | 1 | 2 | 3 | 4 | 5 | |
| 4 | The nursing station is directly visible from the patient room. | 1 | 2 | 3 | 4 | 5 | |
| 5 | (In the case of multiple patients room) The patient room made me feel private and my personal information is secure. | | 2 | 3 | 4 | 5 | |
| **MATERIALS, COLOURS AND LIGHT:** | | | | | | | |
| 1 | Materials and color helped me find my way around | 1 | 2 | 3 | 4 | 5 | |
| 2 | The materials used were safe for children. | 1 | 2 | 3 | 4 | 5 | |

Figure 22. “Patient Room” Part of questionnaire in the patient survey.

Table 13. Patient Survey (Patient Room) Questions.

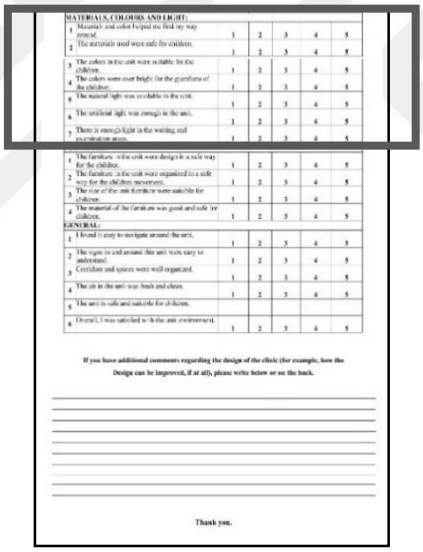
| | **Questions:** | **Description:** |
|---|---|---|
| **Q1** | **The patient room was comfortable.** | Creating a comfortable environment for the child inside the room makes the stages of patient healing faster and easier psychologically, to create this kind of comfort you must finesse many factors including, the overall layout design of the room so that it is |

Table 13. (Sequel) Patient survey (Patient Room) questions.

| | **Questions:** | **Description:** |
|---|---|---|
| **Q1** | **The patient room was comfortable.** | Comfortable and easy for movement, choosing the right kind of furniture for children and also the location of furniture in the room, lastly the colors used inside the rooms play a large role. The lack of comfort factor will work to obstruct the healing stages of the patient. |
| **Q2** | **The patient room has a pleasing look.** | It should be considered the selection of furniture in terms of shape and design, also what the piece can be found in the room, and choosing the colors of the room to be attractive and suitable for children. |
| **Q3** | **The patient room is safe and suitable for children**. | Availability of safety rules within the patient rooms is very important because the room contains many tools and materials that can be harmful to the child. In the absence of safety factors inside the room, this means a defect in the design of the patient's room and it is not suitable for the patient presence inside the room. |
| **Q4** | **The nursing station is directly visible from the patient room.** | The nurses 'station should be close and visible from the patients' rooms, because of the importance of their presence with the children around the clock for their safety and follow up their health states. |
| **Q5** | **(In the case of multiple patients room)The patient room made me feel private and my personal information is secure**. | Multiple patient rooms there will be a kind of lack of privacy for patients, usually, the patients will be with simple cases in these rooms. But in general, during designing, it can create a kind of privacy - but a simple one- by adding a partition or a divider between each patient bed. |

#### 2.4.4.1.5. Materials, Colours, and Light

First, selecting the appropriate materials inside the children's unit is a very important task in many aspects, in order to ensure the safety of the child and also suitable for the types of space, there are many areas with different functions within the unit, depending on each function, the appropriate materials are selected for use. Second, the colors used within the unit should take into account that the largest proportion is the children, but at the same time, there are many adult people in the space. The color chosen balance in the unit between all ages is very important. Finally, the lighting of the spaces inside the unit must be balanced between natural artificial lighting and artificial lighting. Sometimes it is preferred to have one of them only, but it should be available adequately and appropriately within the space. In this part of the questionnaire, six questions were be asked Figure (23).



Thank you.

Figure 23. “Materials, Colours and Light” Part of questionnaire in the patient survey.

Table 14. Patient survey (Materials, Colours, and Light) questions.

| | **Questions:** | **Description:** |
|---|---|---|
| **Q1** | **Materials and color helped me find my way around.** | The use of colors and materials during design to guide patients within the unit or to the unit is a key factor in the design. The unit is usually |

Table 14. (Sequel) Patient survey (Materials, Colours and Light) questions.

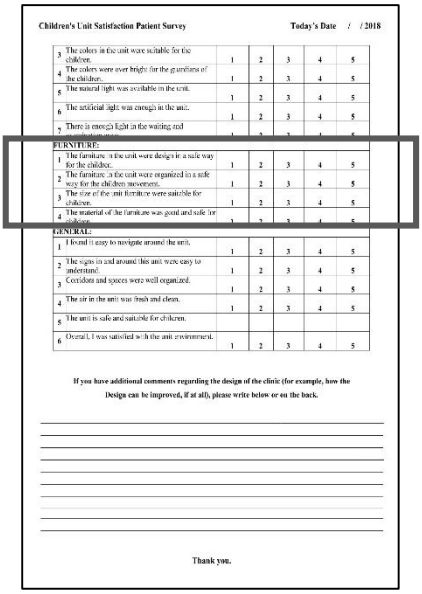
| | **Questions:** | **Description:** |
|---|---|---|
| **Q1** | | visited by people for the first time, so through the use of color to guide them to the places they want to reach it will be faster and easy. |
| **Q2** | **The materials used were safe for children.** | Selecting the right material for each space in the unit is very important, based on the space function. But also during the selection of materials should be taken into account that these materials are suitable and safe for children in the unit. |
| **Q3** | **The colors in the unit were suitable for the children.** | Choosing the right colors creates an attractive and suitable atmosphere and space for the children, so during the unit design, the color selection is very important. |
| **Q4** | **The colors were over bright for the guardians of the children.** | It is true that the availability of many colors inside the unit creates a pleasant and comfortable atmosphere for the child, but when these colors are over bright that can cause some kind of discomfort for adults. |
| **Q5** | **The natural light was available in the unit.** | The presence of natural lighting in general in the space creates a kind of communication between the person and the external natural. The availability of this type of lighting within the unit is very important to connect the outside and inside to give a sense of freedom for the children, but it must be available in a certain amount so that it is not very low, in this case, can be attached to artificial lighting, and also it should be not too bright so it creates some kind of discomfort. |

Table14. (Sequel) Patient survey (Materials, Colours and Light) questions.

| | **Questions:** | **Description:** |
|---|---|---|
| **Q6** | **The artificial light was enough in the unit.** | The availability of artificial lighting within the space must be available in sufficient quantities within the unit. As we mentioned earlier in natural lighting, creating low or excessive lighting will be by a problem within the unit, including the inability to have sufficient sight within the space. |

### 2.4.4.1.6. Furniture

Choosing the appropriate pieces of furniture for each space on its own function in the children's unit must be carefully studied, so that this piece is suitable for the place and also for children and adults, it should be a sufficient, appropriate proportion of the two of them, and finally, it has to be safe. In this part of the questionnaire, four questions were asked Figure (24).



Children's Unit Satisfaction Patient Survey — Today's Date / /2018

| | | | | | | |
|---|---|---|---|---|---|---|
| 3 | The colors in the unit were suitable for the children. | 1 | 2 | 3 | 4 | 5 |
| 4 | The colors were over bright for the guardians of the children. | 1 | 2 | 3 | 4 | 5 |
| 5 | The natural light was available in the unit. | 1 | 2 | 3 | 4 | 5 |
| 6 | The artificial light was enough in the unit. | 1 | 2 | 3 | 4 | 5 |
| 7 | There is enough light in the waiting rod | 1 | 2 | 3 | 4 | 5 |
| **FURNITURE:** | | | | | | |
| 1 | The furniture in the unit were design in a safe way for the children. | 1 | 2 | 3 | 4 | 5 |
| 2 | The furniture in the unit were organized in a safe way for the children movement. | 1 | 2 | 3 | 4 | 5 |
| 3 | The size of the unit furniture were suitable for children. | 1 | 2 | 3 | 4 | 5 |
| 4 | The material of the furniture was good and safe for children. | 1 | 2 | 3 | 4 | 5 |
| **GENERAL:** | | | | | | |
| 1 | I found it easy to navigate around the unit. | 1 | 2 | 3 | 4 | 5 |
| 2 | The signs in and around this unit were easy to understand. | 1 | 2 | 3 | 4 | 5 |
| 3 | Corridors and spaces were well organized. | 1 | 2 | 3 | 4 | 5 |
| 4 | The air in the unit was fresh and clean. | 1 | 2 | 3 | 4 | 5 |
| 5 | The unit is safe and suitable for children. | | | | | |
| 6 | Overall, I was satisfied with the unit environment. | 1 | 2 | 3 | 4 | 5 |

If you have additional comments regarding the design of the clinic (for example, how the Design can be improved, if at all), please write below or on the back.

Thank you.

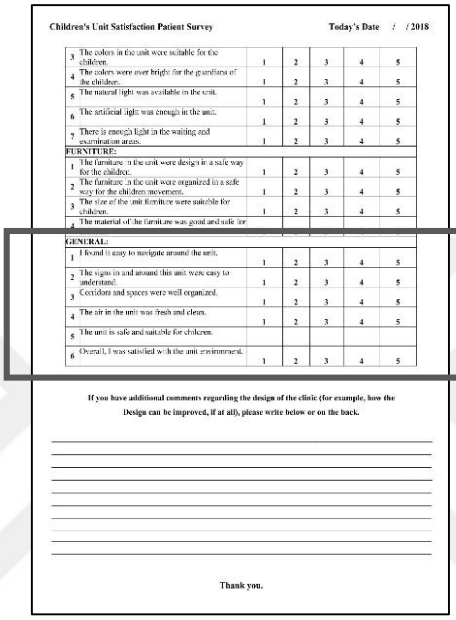
Figure 24. “Furniture” Part of questionnaire in the patient survey.

Table 15. Patient survey (Furniture) questions.

| | **Questions:** | **Description:** |
|---|---|---|
| **Q1** | **The furniture in the unit was designed in a safe way for the children.** | Every piece of furniture in the unit, whether for children or adults, it must be safe for the children, the safety level in the children unit should be high in general. The pieces of furniture that are designed or selected for the unit should be suitable and safe by designing the shape of the piece itself, such as having no sharp edges, and sometimes it does not have the capability of moving. |
| **Q2** | **The furniture in the unit was organized in a safe way for the children movement.** | It is customary for children to carry the energy and the ability to move fast and everywhere, whether in the case of illness or in the normal state. Therefore, the method and location of the furniture within the unit layout spaces should not obstruct the movements of the children or adults and to be safe. At the same time, the furniture arrangement could be designed to control the movement of children within the unit. |
| **Q3** | **The size of the unit furniture was suitable for children.** | Taking into account the sizes of furniture to be suitable for children is very important in the unit so that it is easily used by the child, and also to feel they belong to this space. In the absence of suitable furniture sizes, this is considered as a big design mistake in the children's unit. |
| **Q4** | **The material of the furniture was good and safe for children**. | These materials must be safe for the child to use and at the same time safe for movement around it. The comfort level of the materials used in the furniture is very important, the lower the comfort level the more they will fell panic. |

#### 2.4.4.1.7. General

In this section, simple and general questions about the children's unit, such as the general atmosphere of the unit, the movement, the air, and so on. Five questions will be asked in this part which is, Figure (25).



Children's Unit Satisfaction Patient Survey — Today's Date / /2018

| | | | | | | |
|---|---|---|---|---|---|---|
| 3 | The colors in the unit were suitable for the children. | 1 | 2 | 3 | 4 | 5 |
| 4 | The colors were over bright for the guardians of the children. | 1 | 2 | 3 | 4 | 5 |
| 5 | The natural light was available in the unit. | 1 | 2 | 3 | 4 | 5 |
| 6 | The artificial light was enough in the unit. | 1 | 2 | 3 | 4 | 5 |
| 7 | There is enough light in the waiting and examination areas. | 1 | 2 | 3 | 4 | 5 |
| **FURNITURE:** | | | | | | |
| 1 | The furniture in the unit were design in a safe way for the children. | 1 | 2 | 3 | 4 | 5 |
| 2 | The furniture in the unit were organized in a safe way for the children movement. | 1 | 2 | 3 | 4 | 5 |
| 3 | The size of the unit furniture were suitable for children. | 1 | 2 | 3 | 4 | 5 |
| 4 | The material of the furniture was good and safe for | | | | | |
| **GENERAL:** | | | | | | |
| 1 | I found it easy to navigate around the unit. | 1 | 2 | 3 | 4 | 5 |
| 2 | The signs in and around this unit were easy to understand. | 1 | 2 | 3 | 4 | 5 |
| 3 | Corridors and spaces were well organized. | 1 | 2 | 3 | 4 | 5 |
| 4 | The air in the unit was fresh and clean. | 1 | 2 | 3 | 4 | 5 |
| 5 | The unit is safe and suitable for children. | | | | | |
| 6 | Overall, I was satisfied with the unit environment. | 1 | 2 | 3 | 4 | 5 |

**If you have additional comments regarding the design of the clinic (for example, how the Design can be improved, if at all), please write below or on the back.**

**Thank you.**

Figure 25. “General” Part of questionnaire in the patient survey

Table 16. Patient survey (General) questions.

| | **Questions:** | **Description:** |
|---|---|---|
| **Q1** | **I found it easy to navigate around the unit.** | The ease of access and navigating within the unit from one area to another, easily finding the destination, is an important factor within the unit, which facilitates the movement of people entering the space and try to move away from the formation of unwanted crowding within children's unit. |

Table 16. (Sequel) Patient survey (General) questions

| | **Questions:** | **Description:** |
|---|---|---|
| **Q2** | **The signs in and around this unit were easy to understand.** | The presence of guidance signs on floors, walls, or ceilings is important to facilitate quick access to the destination. This can be done through design using boards or wall and floor stickers. If not available, there will be some kind of jamming inside the unit. |
| **Q3** | **Corridors and spaces were well organized.** | Interconnection of corridors with spaces within the unit should be a subject in a neat and easy manner during the design the layout of the hospital in general, the movement between the corridors and other spaces should be easy and understandable to try to avoid the loss of children in the space. |
| **Q4** | **The air in the unit was fresh and clean.** | Generally, when clean and fresh air is available, this will protect against the spread of diseases, especially within the children's unit, because of the unpredictability of the movement of children. In the absence of pure air, this indicates that there are insufficient cleanliness and sterilization of existing spaces. |
| **Q5** | **Overall, I was satisfied with the unit environment.** | In the absence of a safe and suitable environment for the child in the unit, it gives a great lack of design, at the same time lack of psychological atmosphere will not help adults to communicate with the child and this is the basis of the existence of a unit for children. |

### 2.4.4.2. Staff Survey

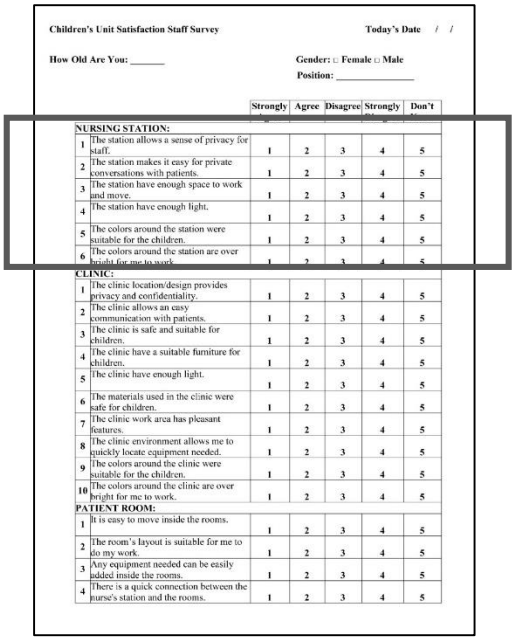
In this part of the survey, the health care employees in the children unit would be targeted, such as doctors and nurses, both in the clinic area and in the patients' room area.

This questionnaire was divided into four sections, to take a general satisfaction opinion about the design from workers of the Children's Unit. In each section, several questions were asked.

The children's unit satisfaction staff survey form in **Appendix 7-A,** shows the staff survey in English, and**, Appendix 7-B,** shows the staff survey in Turkish.

#### 2.4.4.2.1. Nursing Station

During the design of the nurses' station, several important factors, such as the time spent by the nurse at the station, and the number of nurses using the station, should be considered. Six questions were asked about the design of the station in this part of the questionnaire, Figure (26).



**Children's Unit Satisfaction Staff Survey** **Today's Date** / /

**How Old Are You:** _____ **Gender:** □ **Female** □ **Male**

**Position:** _____

| | | Strongly | Agree | Disagree | Strongly | Don't |
|---|---|---|---|---|---|---|
| **NURSING STATION:** | | | | | | |
| 1 | The station allows a sense of privacy for staff. | 1 | 2 | 3 | 4 | 5 |
| 2 | The station makes it easy for private conversations with patients. | 1 | 2 | 3 | 4 | 5 |
| 3 | The station have enough space to work and move. | 1 | 2 | 3 | 4 | 5 |
| 4 | The station have enough light. | 1 | 2 | 3 | 4 | 5 |
| 5 | The colors around the station were suitable for the children. | 1 | 2 | 3 | 4 | 5 |
| 6 | The colors around the station are over bright for me to work. | 1 | 2 | 3 | 4 | 5 |
| **CLINIC:** | | | | | | |
| 1 | The clinic location/design provides privacy and confidentiality. | 1 | 2 | 3 | 4 | 5 |
| 2 | The clinic allows an easy communication with patients. | 1 | 2 | 3 | 4 | 5 |
| 3 | The clinic is safe and suitable for children. | 1 | 2 | 3 | 4 | 5 |
| 4 | The clinic have a suitable furniture for children. | 1 | 2 | 3 | 4 | 5 |
| 5 | The clinic have enough light. | 1 | 2 | 3 | 4 | 5 |
| 6 | The materials used in the clinic were safe for children. | 1 | 2 | 3 | 4 | 5 |
| 7 | The clinic work area has pleasant features. | 1 | 2 | 3 | 4 | 5 |
| 8 | The clinic environment allows me to quickly locate equipment needed. | 1 | 2 | 3 | 4 | 5 |
| 9 | The colors around the clinic were suitable for the children. | 1 | 2 | 3 | 4 | 5 |
| 10 | The colors around the clinic are over bright for me to work. | 1 | 2 | 3 | 4 | 5 |
| **PATIENT ROOM:** | | | | | | |
| 1 | It is easy to move inside the rooms. | 1 | 2 | 3 | 4 | 5 |
| 2 | The room's layout is suitable for me to do my work. | 1 | 2 | 3 | 4 | 5 |
| 3 | Any equipment needed can be easily added inside the rooms. | 1 | 2 | 3 | 4 | 5 |
| 4 | There is a quick connection between the nurse's station and the rooms. | 1 | 2 | 3 | 4 | 5 |

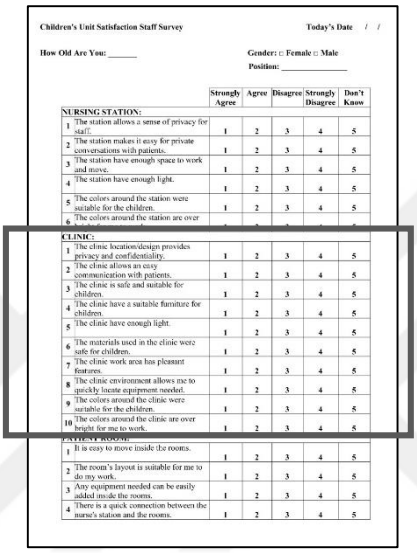
Figure 26. “Nursing Station” Part of questionnaire in the staff survey.

Table 17. Staff survey (Nursing Station) questions.

| | **Questions:** | **Description:** |
|---|---|---|
| **Q1** | **The station allows a sense of privacy for staff.** | The station should be designed so that the privacy of the nurses is given to perform their work, the level of privacy for this should be high, or the staff cannot do their work in a professional and a good way. |
| **Q2** | **The station makes it easy for private conversations with patients.** | The level of privacy in the station between the nurse and the patient or their family is not high but it should be present. And that is to facilitate and help the process of communication between nurses and the patient. |
| **Q3** | **The station has enough space to work and move.** | During the design of the station, consideration should be given to the number of nurses using the area, and the equipment and tools that must be available for the use of the nurse. At the same time, there should be enough room for the movement of nurses inside the station. |
| **Q4** | **The station has enough light.** | There should be adequate lighting inside the station for nurses to perform their work. Natural lighting can be available with artificial at the same time. |
| **Q5** | **The colors around the station were suitable for the children.** | To attract the attention of children to the station, colors can be used in and around the station, but choosing what colors are used is very important, giving the nurses and children a chance to create a pleasant and fun atmosphere to communicate with the children. |
| **Q6** | **The colors around the station are over bright for me to work.** | Choosing what colors are used in or around the station should be well selected, so it will do not cause a kind of dispersion of the nurses to perform their work. |

#### 2.4.4.2.2. Clinic

The clinic is divided into two important sections, the first is the doctor's desk, and the second is the examination area. Generally in the clinic during design, it should create a space that gives the doctors the ease and ability to do their job well. Ten questions were asked in this part of the questionnaire, Figure (27).



Children's Unit Satisfaction Staff Survey — Today's Date / /

How Old Are You: _____ Gender: □ Female □ Male

Position: _____

| | | Strongly Agree | Agree | Disagree | Strongly Disagree | Don't Know |
|---|---|---|---|---|---|---|
| **NURSING STATION:** | | | | | | |
| 1 | The station allows a sense of privacy for staff. | 1 | 2 | 3 | 4 | 5 |
| 2 | The station makes it easy for private conversations with patients. | 1 | 2 | 3 | 4 | 5 |
| 3 | The station have enough space to work and move. | 1 | 2 | 3 | 4 | 5 |
| 4 | The station have enough light. | 1 | 2 | 3 | 4 | 5 |
| 5 | The colors around the station were suitable for the children. | 1 | 2 | 3 | 4 | 5 |
| 6 | The colors around the station are over | | | | | |
| **CLINIC:** | | | | | | |
| 1 | The clinic location/design provides privacy and confidentiality. | 1 | 2 | 3 | 4 | 5 |
| 2 | The clinic allows an easy communication with patients. | 1 | 2 | 3 | 4 | 5 |
| 3 | The clinic is safe and suitable for children. | 1 | 2 | 3 | 4 | 5 |
| 4 | The clinic have a suitable furniture for children. | 1 | 2 | 3 | 4 | 5 |
| 5 | The clinic have enough light. | 1 | 2 | 3 | 4 | 5 |
| 6 | The materials used in the clinic were safe for children. | 1 | 2 | 3 | 4 | 5 |
| 7 | The clinic work area has pleasant features. | 1 | 2 | 3 | 4 | 5 |
| 8 | The clinic environment allows me to quickly locate equipment needed. | 1 | 2 | 3 | 4 | 5 |
| 9 | The colors around the clinic were suitable for the children. | 1 | 2 | 3 | 4 | 5 |
| 10 | The colors around the clinic are over bright for me to work. | 1 | 2 | 3 | 4 | 5 |
| **PATIENT ROOM:** | | | | | | |
| 1 | It is easy to move inside the rooms. | 1 | 2 | 3 | 4 | 5 |
| 2 | The room's layout is suitable for me to do my work. | 1 | 2 | 3 | 4 | 5 |
| 3 | Any equipment needed can be easily added inside the rooms. | 1 | 2 | 3 | 4 | 5 |
| 4 | There is a quick connection between the nurse's station and the rooms. | 1 | 2 | 3 | 4 | 5 |

Figure 27. “Clinic” Part of questionnaire in the staff survey.

Table 18. Staff survey (Clinic) questions.

| | **Questions:** | **Description:** |
|---|---|---|
| **Q1** | **The clinic location/design provides privacy and confidentiality.** | Within clinics, the privacy level should be high so that the doctors can communicate with the patient directly without fear. This is usually a difficult task in government hospitals for its continuous congestion, therefore, the design of the clinics' placement in the layout plan can be developed so that it contains privacy. |

Table 18. (Sequel) Staff survey (Clinic) questions.

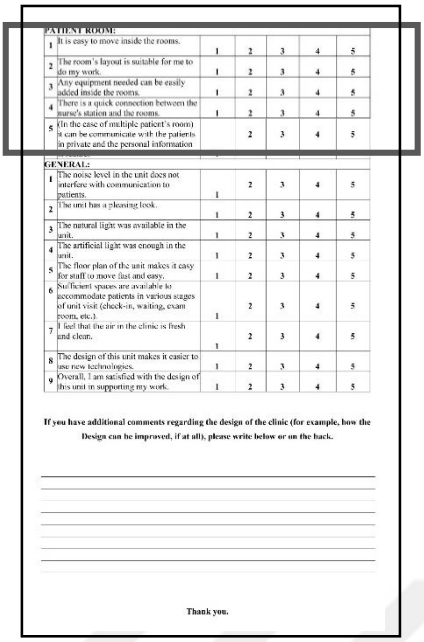
| | **Questions:** | **Description:** |
|---|---|---|
| **Q2** | **The clinic allows easy communication with patients.** | The clinics should be designed from the inside so that spaces and furniture arrangement allow this communication. In the case of the absence of contact between the doctor and the children, this will give panic and fear to the child. |
| **Q3** | **The clinic is safe and suitable for children.** | The clinic should be safe for the child, in order for them to exercise the beginning stages of treatment of the patient. If the child's safety rules are not available or weak in the clinic, it is a barrier for the doctor to focus on doing the work and trying to help the children. |
| **Q4** | **The clinic has suitable furniture for children.** | The availability of appropriate furniture for children for each clinic based on the type of clinic is very important for a doctor to practice the healing process very well. For the children's unit, furniture must be suitable for children. |
| **Q5** | **The clinic has enough light.** | Inside the clinic and especially in the examination area, sufficient lighting must be provided to the doctor to clearly and correctly detect the patient's condition. In the absence of adequate lighting inside the clinic, this will be a barrier to the doctor to detect the type of the condition of the patient. |
| **Q6** | **The materials used in the clinic were safe for children.** | As mentioned earlier, the clinic should be a safe place for children to the doctors to be able to perform their duties in an excellent manner, including the materials used in the clinic. The materials used should be safe and suitable for children, and at the same time should be good and appropriate for the doctor. |

Table 18. (Sequel) Staff survey (Clinic) questions.

| | **Questions:** | **Description:** |
|---|---|---|
| **Q7** | **The clinic work area has pleasant features.** | During the design of children's clinics can be used several factors and advantages to make the place enjoyable and comfortable for the child, such as, the availability of different colors, forms of furniture, and sometimes provide some toys. But at the same time, it should be appropriate for the doctor who is using for this clinic. |
| **Q8** | **The clinic environment allows me to quickly locate the equipment needed.** | There should be a suitable environment for the doctor to move quickly within the clinic, so that there is sufficient space within the clinic and arrange the equipment and tools to be used easily by the doctor. |
| **Q9** | **The colors around the clinic were suitable for the children.** | The availability of attractive colors around the clinic takes children's attention away from their fear of visiting the doctor, and providing them within the clinic helps to create a fun and enjoyable environment for them. Therefore, there should be suitable colors for children around and inside the clinic. |
| **Q10** | **The colors around the clinic are over bright for me to work.** | The presence of bright colors inside the clinic can work to disperse the medical practice of work, so choosing the appropriate colors is very important to the doctor. |

#### 2.4.4.2.3. Patient Room

Provide a suitable environment for medical staff to work on the stages of healing the patient is very important. In the patient rooms of the pediatric unit, the presence of adults in this area should be taken into consideration. Five questions were asked in this answer, Figure (28).



PATIENT ROOM:

| | | | | | | |
|---|---|---|---|---|---|---|
| 1 | It is easy to move inside the rooms. | 1 | 2 | 3 | 4 | 5 |
| 2 | The room's layout is suitable for me to do my work. | 1 | 2 | 3 | 4 | 5 |
| 3 | Any equipment needed can be easily added inside the rooms. | 1 | 2 | 3 | 4 | 5 |
| 4 | There is a quick connection between the nurse's station and the rooms. | 1 | 2 | 3 | 4 | 5 |
| 5 | (In the case of multiple patient's room) it can be communicate with the patients in private and the personal information | | 2 | 3 | 4 | 5 |

GENERAL:

| | | | | | | |
|---|---|---|---|---|---|---|
| 1 | The noise level in the unit does not interfere with communication to patients. | 1 | 2 | 3 | 4 | 5 |
| 2 | The unit has a pleasing look. | 1 | 2 | 3 | 4 | 5 |
| 3 | The natural light was available in the unit. | 1 | 2 | 3 | 4 | 5 |
| 4 | The artificial light was enough in the unit. | 1 | 2 | 3 | 4 | 5 |
| 5 | The floor plan of the unit makes it easy for staff to move fast and easy. | 1 | 2 | 3 | 4 | 5 |
| 6 | Sufficient spaces are available to accommodate patients in various stages of unit visit (check-in, waiting, exam room, etc.). | 1 | 2 | 3 | 4 | 5 |
| 7 | I feel that the air in the clinic is fresh and clean. | 1 | 2 | 3 | 4 | 5 |
| 8 | The design of this unit makes it easier to use new technologies. | 1 | 2 | 3 | 4 | 5 |
| 9 | Overall, I am satisfied with the design of this unit in supporting my work. | 1 | 2 | 3 | 4 | 5 |

**If you have additional comments regarding the design of the clinic (for example, how the Design can be improved, if at all), please write below or on the back.**

**Thank you.**

Figure 28. "Patient Room" Part of questionnaire in the staff survey.

Table 19. Staff survey (Patient Room) questions.

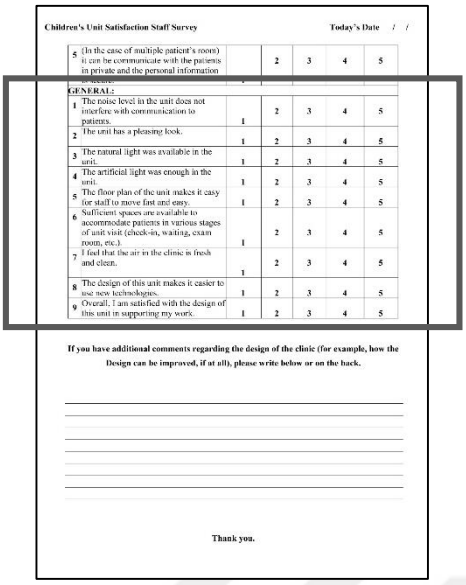
| | **Questions:** | **Description:** |
|---|---|---|
| **Q1** | **It is easy to move inside the rooms.** | The designer should carefully study the movement while designing the children's rooms so that the movement of the medical staff is fast and easy, both to and from the room or inside the room. |
| **Q2** | **The room's layout is suitable for me to do my work.** | The design of the room layout in the children unit should be not only suitable for the children, but also for the staff to do their work well and simple. Therefore, the appropriate environment for the patient to recover, and the staff do their work must be created in a good am an excellent way. |

Table 19. (Sequel) Staff survey (Patient Room) questions.

| | **Questions:** | **Description:** |
|---|---|---|
| **Q3** | **Any equipment needed can be easily added inside the rooms.** | Because of the different types of diseases for each child using the room, it should consider adding any equipment and different tools for each room according to that. Therefore during the design of the rooms should be provided space for the existence of this equipment in an easy way. |
| **Q4** | **There is a quick connection between the nurse's station and the rooms.** | The design of the layout plan between patient rooms and nurses' stations connected, so that movement between them is quick and easy in cases of emergency and others. |
| **Q5** | **(In the case of multiple patient's rooms) it can communicate with the patients in private and personal information is secure.** | In this case, there should be an opportunity for patients and their families to communicate with the medical staff in an easy way with privacy. |

#### 2.4.4.2.4. General

In this part of the questionnaire, nine general questions were asked about the children unit design for the medical team, Figure (29).



Children's Unit Satisfaction Staff Survey — Today's Date / /

| | | | | | |
|---|---|---|---|---|---|
| 5 | (In the case of multiple patient's room) it can be communicate with the patients in private and the personal information are secure. | 1 | 2 | 3 | 4 | 5 |
| **GENERAL:** | | | | | | |
| 1 | The noise level in the unit does not interfere with communication to patients. | 1 | 2 | 3 | 4 | 5 |
| 2 | The unit has a pleasing look. | 1 | 2 | 3 | 4 | 5 |
| 3 | The natural light was available in the unit. | 1 | 2 | 3 | 4 | 5 |
| 4 | The artificial light was enough in the unit | 1 | 2 | 3 | 4 | 5 |
| 5 | The floor plan of the unit makes it easy for staff to move fast and easy. | 1 | 2 | 3 | 4 | 5 |
| 6 | Sufficient spaces are available to accommodate patients in various stages of unit visit (check-in, waiting, exam room, etc.). | 1 | 2 | 3 | 4 | 5 |
| 7 | I feel that the air in the clinic is fresh and clean. | 1 | 2 | 3 | 4 | 5 |
| 8 | The design of this unit makes it easier to use new technologies. | 1 | 2 | 3 | 4 | 5 |
| 9 | Overall, I am satisfied with the design of this unit in supporting my work. | 1 | 2 | 3 | 4 | 5 |

**If you have additional comments regarding the design of the clinic (for example, how the Design can be improved, if at all), please write below or on the back.**

**Thank you.**

Figure 29. "General" Part of questionnaire in the staff survey.

Table 20. Staff survey (General) questions.

| | **Questions:** | **Description:** |
|---|---|---|
| **Q1** | **The noise level in the unit does not interfere with communication with patients.** | Spaces can be created to distract children from creating a high noise level, by creating play areas, or by designing spaces so that they are fun and learning. If the noise level is too high in the unit, this will be a barrier to communication with other patients who are being treated by the doctor, and also it will be a major obstacle for the other staff to do their work properly. |
| **Q2** | **The unit has a pleasing look.** | When the child views a beautiful aesthetic look inside the unit, this will give a sense of comfort and communication with the medical team. |
| **Q3** | **The natural light was available in the unit.** | As mentioned before, the presence of natural light creates a balance between the outside and the inside of the unit. So its existence gives a kindly comfort to perform good work. |

Table 20. (Sequel) Staff survey (General) questions.

| | **Questions:** | **Description:** |
|---|---|---|
| **Q4** | **The artificial light was enough in the unit.** | Artificial lighting should be available in the appropriate amount for the medical team, while at the same time it should be controlled quickly and easily by them. |
| **Q5** | **The floor plan of the unit makes it easy for staff to move fast and easy.** | Try to design the unit layout plan so that it provides a quick and easy movement for the team. The location of the furniture parts within the unit, and the medical equipment should also be taken into account so that they do not constitute a barrier to movement for the medical team. |
| **Q6** | **Sufficient spaces are available to accommodate patients in various stages of unit visit (check-in, waiting, exam room, etc.).** | During the daily working hours in the children's unit, there are some hours that contain congestion. Therefore, you should consider how many people can be accommodated in the unit, by creating a layout plan that takes the average of this daily number of visitors in all parts of the children's unit. |
| **Q7** | **I feel that the air in the clinic is fresh and clean.** | Provides fresh and clean air inside the children's unit, giving the team the ability to perform their work without fear of spreading diseases. |
| **Q8** | **The design of this unit makes it easier to use new technologies.** | The attempt to create a space gives the ability to add new equipment and technology is very important, especially in our present time of fast development in the medical field, which gives the need for extra space within the unit. |
| **Q9** | **Overall, I am satisfied with the design of this unit in supporting my work.** | This is to see the general satisfaction of the medical team within the children unit, to practice their jobs in a good way. |

**Chapter Conclusion**

In the second chapter of the research in general, the method used in the research was clarified. These are two methods, the first through the analysis of the case study, the second through the work of a users satisfaction survey.

In analyzing of the case study of a children's unit in the hospital, an analysis of the most important elements that can be performed on the design of the unit was carried out architecturally, in short by analyzing the materials used, colors and furniture.

But before that, it has been going through the layout plan and circulation of the unit. From the previous two points, the problems in the unit were identified.

In the second part of the methods used, the satisfaction survey, the main objective, and types of the survey were identified.

In each type of survey, the most important parts that have been observed, whether on the patient or staff in terms of their satisfaction with each part or not. In each part, a set of questions was developed and each question was analyzed by the reasons for selection in this chapter.

In the third chapter which is the results of the survey were presented in detail for each type, part and question.

## 3. RESULTS

In this section, the results of the survey have been presented. These results were based on the answers of responders the scope of the research. Two types of the survey have been provided in this research, patients' survey and staffs survey. Patients' survey and staffs survey results would begin to be displayed based on the parts that have been divided, each penalty would be taken individually with its own questions and the results of the survey after each part, these results were scheduled based on the number of questions that have been answered and the number of the responders. The results were placed in tables by percentage and would be compound with a graphic to be understood easily.

### 3.1. Patients' Survey

The patient survey has seven parts targeting different areas and spaces, each part has a certain number of questions, and according to this part, the result will be provided and applied.

Before starting the survey, the age and gender of the person have been requested, in order to determine the rate of age and gender of persons, to see if there was a difference or gap between them in the satisfaction. It was noticed that the average age of (40) respondent were (35). And we could notice in the chart the gender average percentage between the female and male.

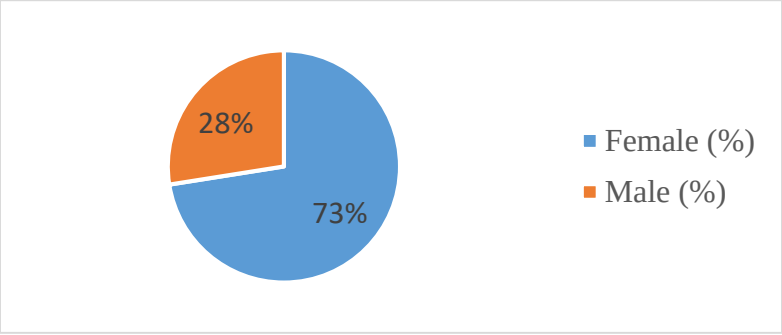



Figure 30. Gender average.

### 3.1.1. Nursing Station

This part targeted the nurse's stations available in the children's unit, and four questions have been put forward. The result of this part is in the chart below, Figure (31).

- Question 1: The station is directly visible from the entrance.
- Question 2: The station made it easy for private conversations with staff.
- Question 3: The station catchy and welcoming in terms of the design.
- Question 4: The station is safe and suitable for children.

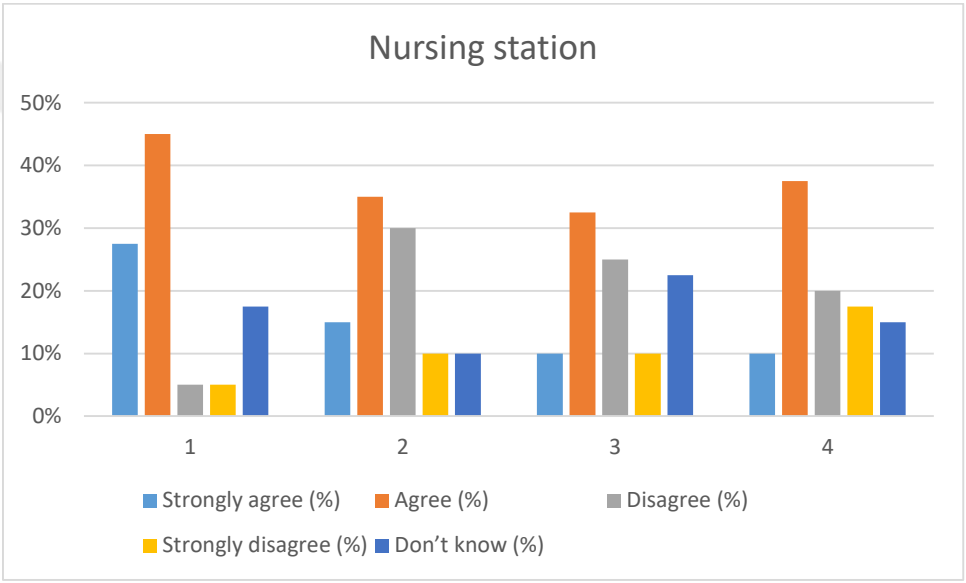



Figure 31. Patient survey (Nursing station) result chart.

As for the first question, the answer with the highest percentage was in the agreement (45%). As for the second question, the highest scale was also to the agreement by (35%). For the third question, the highest rate to agree by (33%). For the last question, it was also the same (38%) to agree.

### 3.1.2. Waiting Area

In this part, five questions have been asked about the satisfaction of this area. The result is in the chart below, Figure (32).

- Question 1: The patient waiting area was comfortable.

- Question 2: The noise level in the waiting area was appropriate.
- Question 3: The waiting area had a pleasing look.
- Question 4: The waiting area is safe and suitable for children.
- Question 5: The waiting area offers a play area for children.

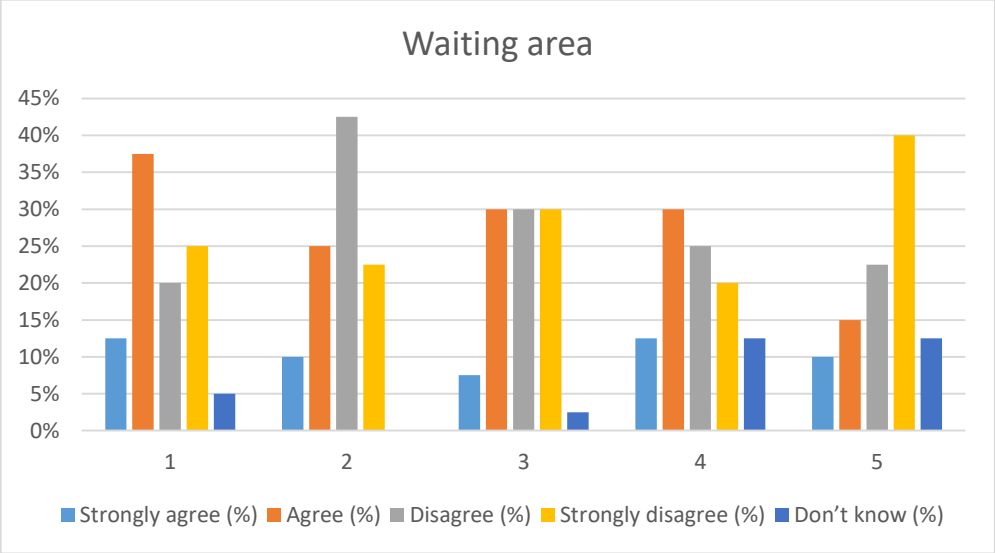



Figure 32. Patient survey (Waiting area) result chart.

The first question goes by (38%) as the highest rate for agreeing. Question two take a (43%) for the disagree. For the third it was (30%) for, agree, disagree, and strongly disagree. The fourth question was (30%) as the highest for agree. The last question has a (40%) for strongly disagree.

### 3.1.3. Polyclinic

Also in this part, five-question has been required. The result is in the chart below, Figure (33).

- Question 1: The clinic made me feel private and my personal information is secure.
- Question 2: The clinic allowed easy communication with the doctor.
- Question 3: The clinic is safe and suitable for children.
- Question 4: The clinic had a pleasing look.
- Question 5: The examination area in the clinic is suitable for children.

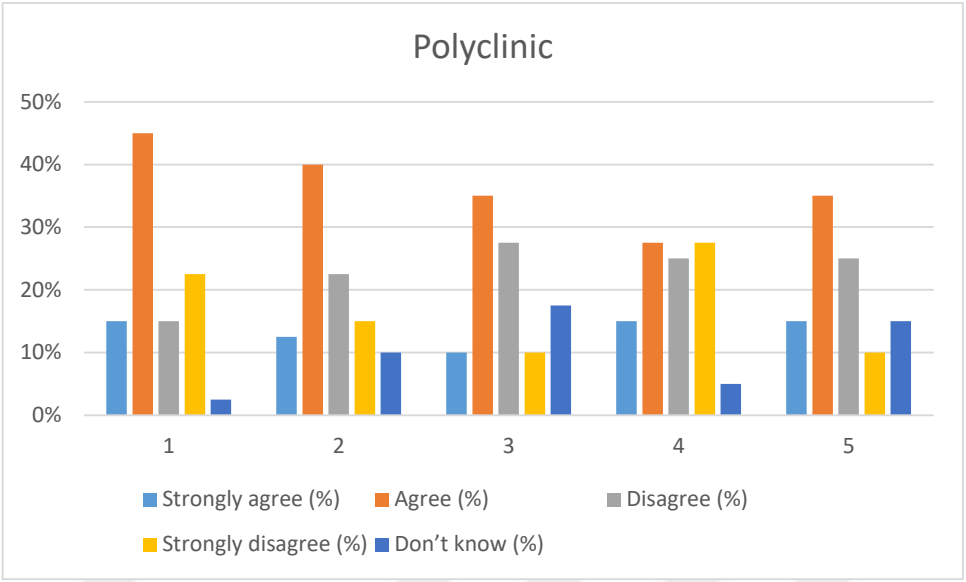



Figure 33. Patient survey (Polyclinic) result chart.

This part of the survey the agree mostly goes with the highest rate. The first question goes by (45%) agree. The second question starts with (40%) agree. The third one goes by, agree (35%). Question four was different by having (28%) to agree and strongly disagree. The final one has a (35%) to agree.

### 3.1.4. Patient Rooms

About the patient rooms satisfaction five question in this section. The result is in the chart below, Figure (34).

- Question 1: The patient room was comfortable.
- Question 2: The patient room has a pleasing look.
- Question 3: The patient room is safe and suitable for children.
- Question 4: The nursing station is directly visible from the patient room.
- Question 5: (In the case of multiple patients room) The patient room made me feel private and my personal information is secure.

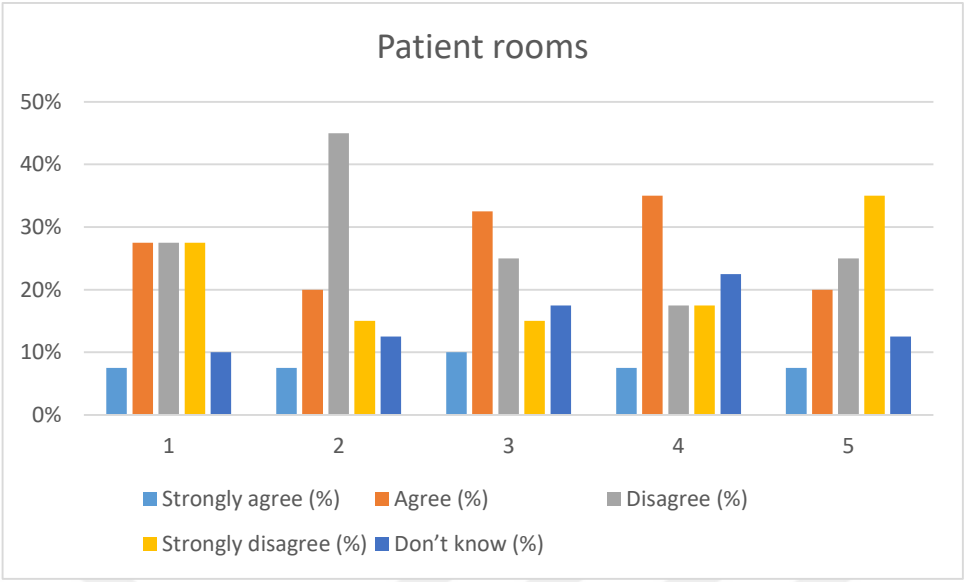



Figure 34. Patient survey (Patient rooms) result chart.

The question one has a result of (28%) for agree, disagree and strongly disagree. The second has a (45%) to disagree. Question three starts with the agreement by (33%). For the fourth one, it was (35%) agree. Finally, the fifth question goes by (35%) strongly disagree.

### 3.1.5. Materials, Colours, and Light

In this part of the survey, seven questions were asked. The result is in the chart below, Figure (35).

- Question 1: Materials and color helped me find my way around.
- Question 2: The materials used were safe for children.
- Question 3: The colors in the unit were suitable for the children.
- Question 4: The colors were over bright for the guardians of the children.
- Question 5: The natural light was available in the unit.
- Question 6: The artificial light was enough in the unit.
- Question 7: There is enough light in the waiting and examination areas.

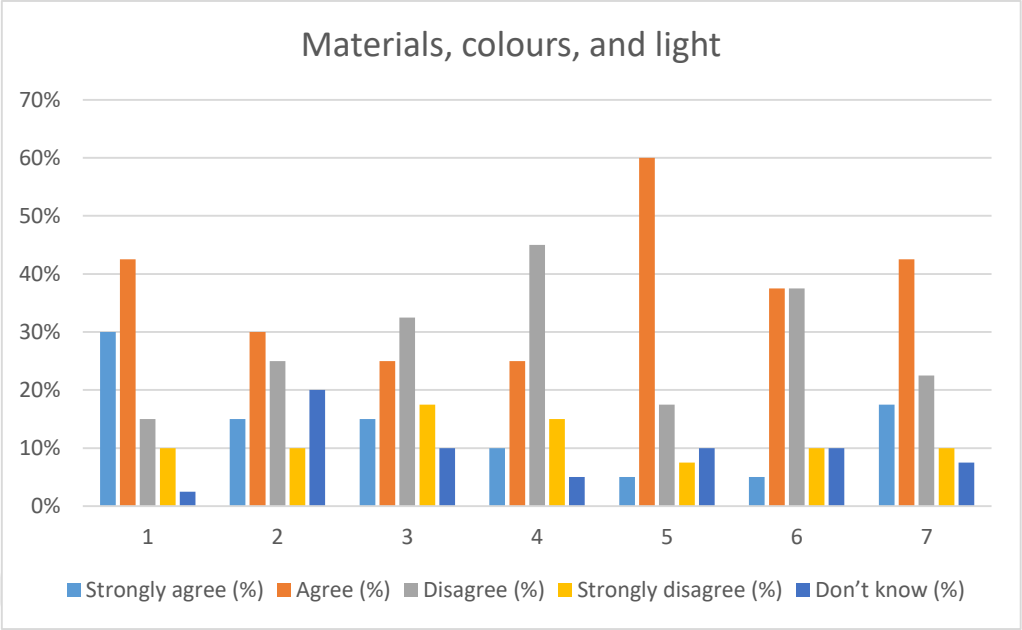



Figure 35. Patient survey (Materials, colors, and light) result chart.

For the first one, the highest rate is (43%) agree. The second question, have a (30%) agree. For the third one, the highest is disagree by (33%). Fourth, (45%) to disagree. Question five, disagree and agree have the same result which is (38%). Finally, the last question goes by a (43%) agree.

### 3.1.6. Furniture

In this section, four questions have been asked. The result is in the chart below, Figure (36).

- Question 1: The furniture in the unit was designed in a safe way for the children.
- Question 2: The furniture in the unit were organized in a safe way for the children movement.
- Question 3: The size of the unit furniture were suitable for children.
- Question 4: The material of the furniture was good and safe for children.

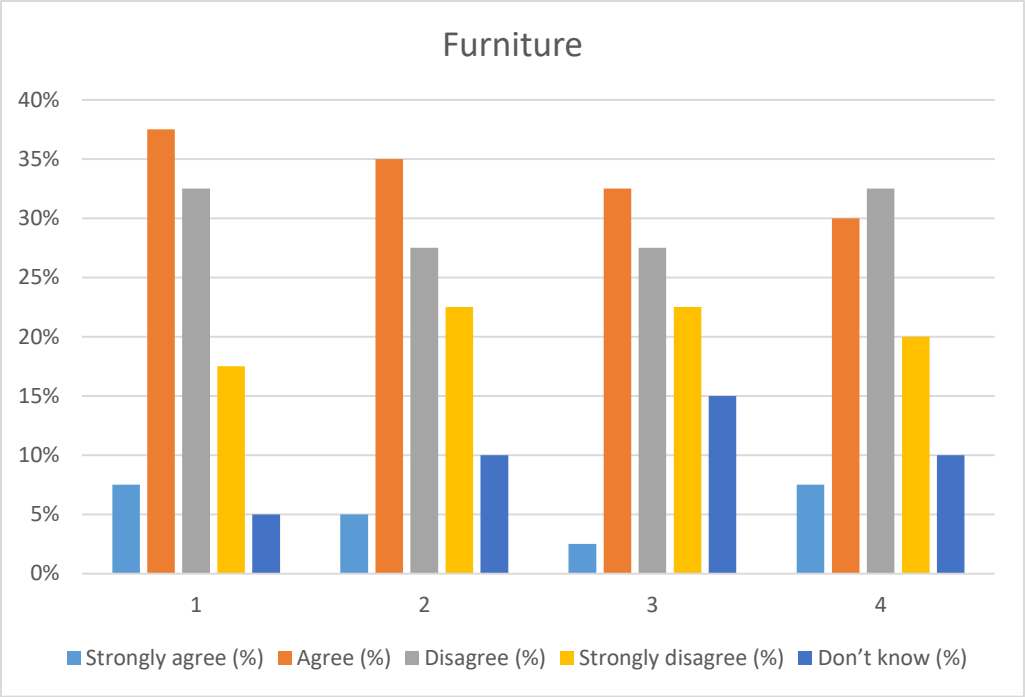



Figure 36. Patient survey (Furniture) result chart.

For the first question, it has a (38%) to agree. Second, is a (35%) agree. Third, the highest is agree by (33%). Fourth, a (33%) disagree.

### 3.1.7. General

In this part, six questions were asked. Figure (37) shows the result.

- Question 1: I found it easy to navigate around the unit.
- Question 2: The signs in and around this unit were easy to understand.
- Question 3: Corridors and spaces were well organized.
- Question 4: The air in the unit was fresh and clean.
- Question 5: The unit is safe and suitable for children.
- Question 6: Overall, I was satisfied with the unit environment.

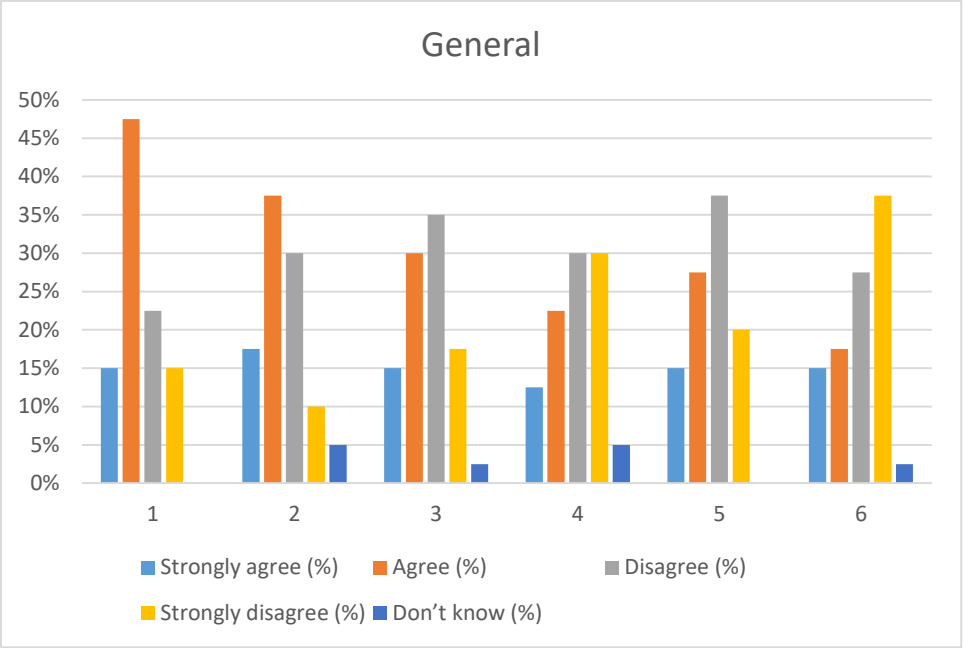



Figure 37. Patient survey (General) result chart.

Question one goes by (48%) agree. Question two has a (38%) agree. Question three, for the disagree it has a (35%). Question four has a (30%) for disagree and strongly disagree. Question five has highest as (38%) for disagree. Question six, it has a (38%) for strongly disagree.

### 3.2. Staff Survey

Questions in this part of the survey were divided into four regions. In each region, a number of questions were asked for the satisfaction of the staff. These questions and divisions were developed to determine the satisfaction of the staff on the spaces, and whether these areas are suitable and good to perform their work or not.

In the staff survey both gender and age were required. Also, the position of the job in the staff survey was required to find out the largest percentage of each job in the children's unit.

It was notified that the average age of the (25) respondent in this survey is (34). And we can see in the chart below the average of the jobs positions from the total of the respondent in the survey.

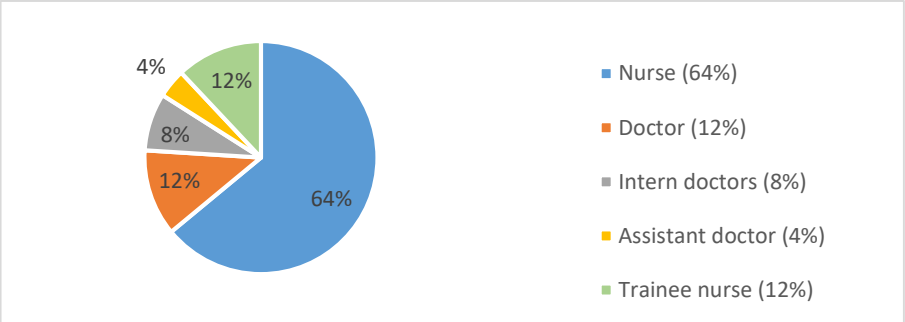



Figure 38. The average of jobs positions.

### 3.2.1. Nursing Station

In this part, six questions have been asked to the staff. The result is in the chart below, Figure (39).

- Question 1: The station allows a sense of privacy for staff.
- Question 2: The station makes it easy for private conversations with patients.
- Question 3: The station has enough space to work and move.
- Question 4: The station has enough light.
- Question 5: The colors around the station were suitable for the children.
- Question 6: The colors around the station are over bright for me to work.

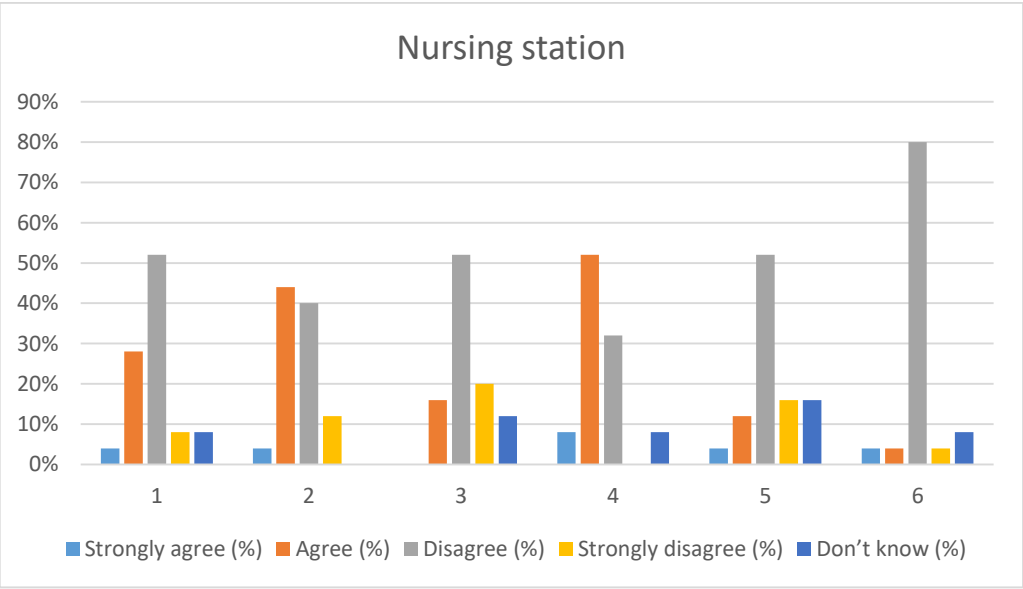



Figure 39. Staff survey (Nursing station) result chart.

For the first on it has a (52%) disagree as to the highest percentage. Second, a (44%) agree. Third, it goes by (52%) to disagree. Fourth, a (52%) agree. The fifth has a disagree by (52%). Sixth, it has (80%) to disagree.

### 3.2.2. Polyclinic

Ten questions were asked in this section. Figure (40) shows the result.

- Question 1: The clinic location/design provides privacy and confidentiality.
- Question 2: The clinic allows easy communication with patients.
- Question 3: The clinic is safe and suitable for children.
- Question 4: The clinic has suitable furniture for children.
- Question 5: The clinic has enough light.
- Question 6: The materials used in the clinic were safe for children.
- Question 7: The clinic work area has pleasant features.
- Question 8: The clinic environment allows me to quickly locate the equipment needed.
- Question 9: The colors around the clinic were suitable for the children.
- Question 10: The colors around the clinic are over bright for me to work.

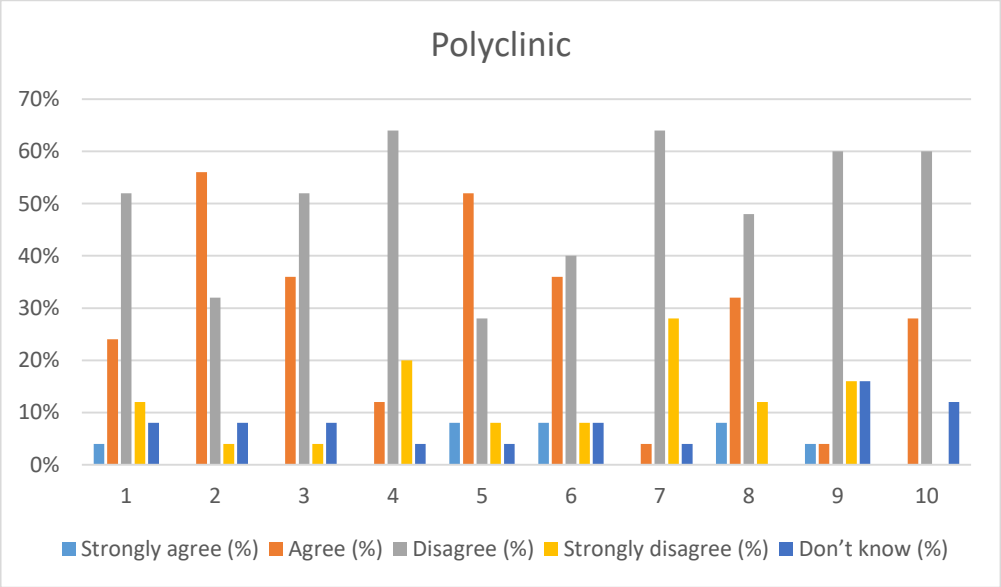



Figure 40. Staff survey (Polyclinic) result chart.

Question one goes up with disagree by (52%). Then for question two, up from agreeing by (56%). Question three, by having a (52%) disagree. Question four, the disagree has the highest by (64%). After that question five, it starts with a (52%) agree. Question six, (40%) disagree. After, question seven has a rate of (64%) disagree. Question eight, up from (48%) disagree. Question nine has a (60%) disagree. Finally, question ten, up from (60%) to disagree.

### 3.2.3. Patient Rooms

In the patients' rooms part, five questions were asked. The result is in the chart below, Figure (41).

- Question 1: It is easy to move inside the rooms.
- Question 2: The room’s layout is suitable for me to do my work.
- Question 3: Any equipment needed can be easily added inside the rooms.
- Question 4: There is a quick connection between the nurse's station and the rooms.
- Question 5: (In the case of multiple patient’s rooms) it can communicate with the patients in private and the personal information is secure.

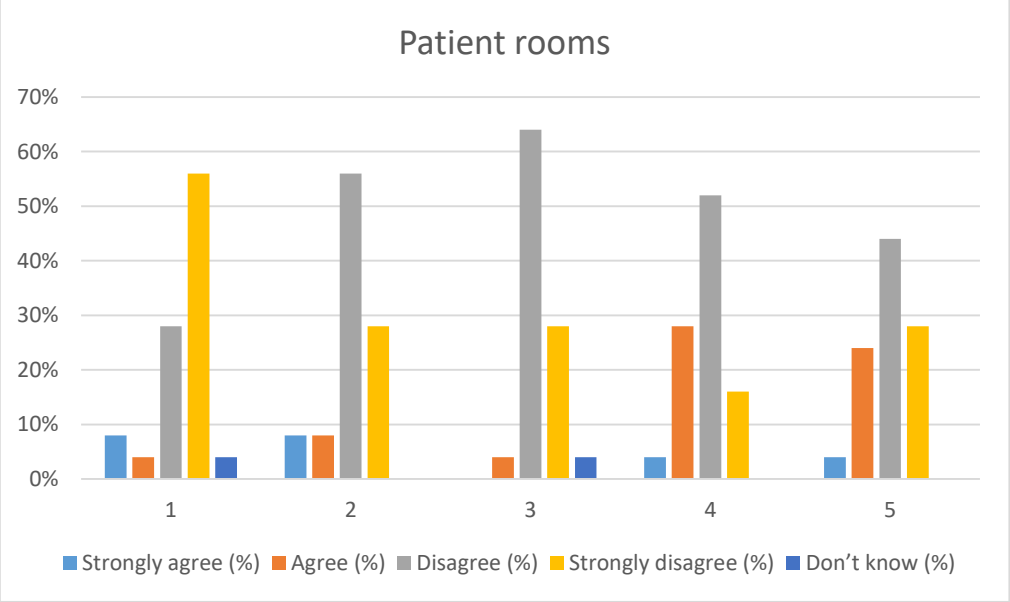



Figure 41. Staff survey (Patient rooms) result chart.

First, up from strongly disagree by (56%). The rest of the questions was all a result of disagreeing but with different percentage, starting by the second questions by a (56%), third, (64%), fourth, a (52%), finally, an (44%).

### 3.2.4. General

In the final part of the staff survey, nine questions asked. Figure (42) shows the result.

- Question 1: The noise level in the unit does not interfere with communication with patients.
- Question 2: The unit has a pleasing look.
- Question 3: The natural light was available in the unit.
- Question 4: The artificial light was enough in the unit.
- Question 5: The floor plan of the unit makes it easy for staff to move fast and easy.
- Question 6: Sufficient spaces are available to accommodate patients in various stages of unit visit (check-in, waiting, exam room, etc.).
- Question 7: I feel that the air in the clinic is fresh and clean.
- Question 8: The design of this unit makes it easier to use new technologies.
- Question 9: Overall, I am satisfied with the design of this unit in supporting my work.

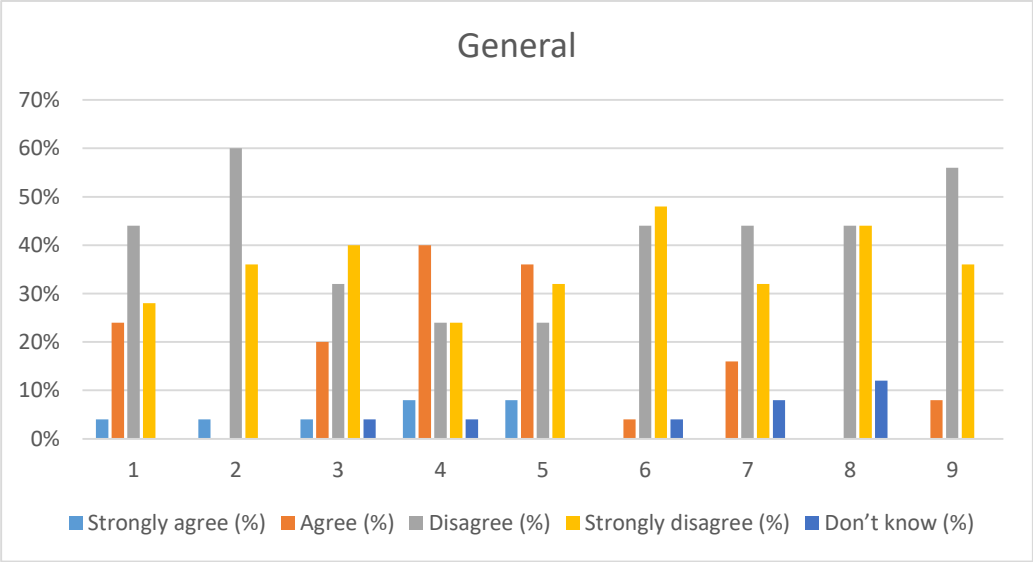



Figure 42. Staff survey (General) result chart.

The first question results go by a (44%) for disagree. Question two has a (60%) disagree. Then question three has a (40%) for strongly disagree. Question four, (40%) agree. After, question five has a (36%) agree. Question six goes by a (48%) strongly disagree. Question seven starts with a (44%) disagree. Question eight, (44%) for both disagree and strongly disagree. Finally, question nine has a (56%) disagree.

**Chapter Conclusion**

In the third chapter of the research, the two different types of satisfaction survey were identified and the results of each type were analyzed.

Starting with the patient’s satisfaction survey. Then analyze the satisfaction survey of the unit staff.

Each one was analyzed on a case-by-case basis by dividing each penalty according to the function and questions that were asked, and then a detailed analysis of the results of each part for each question was presented separately.

It can be noted from the results of the analysis in general that the satisfaction rate of the patients' survey is a little bit more than the percentage of their dissatisfaction. As for the satisfaction of the staff at the place of observation, the greatest proportion is their lack of satisfaction with unity by a large percentage.

At the same time, consideration must be given to the general educational difference of each type. The respondents 'education on patients' satisfaction surveys is much lower than the respondents of the staff satisfaction survey.

In this chapter, the results of the survey are presented in detail, but in the next chapter of the research, these results will be discussed, whether the results of the survey or the results of the architectural analysis of the unit. Also in the next chapter, some solutions will be developed and clarified through the methods used and the problems found in the unit.

# 4. DISCUSSION

Going through the two parts of the method that have been used in the thesis, the main points that have been drawn up, especially the basic problems that emerged through both the analysis and survey, were discussed.

## 4.1. Children's Unit Analysis

From the analysis, in general, it was noticed that the hospital is in need of renewal and architectural attention, especially from the inside, because of the many defects and shortage in design and treatments. As for the children's unit in the hospital, it is divided into two parts in terms of analyzing the problems that go through, the polyclinics and patients' room.

### 4.1.1. Polyclinics

The polyclinics which is in urgent need of renewal due to the many problems that are present. In the spaces and size condition, there are many clinics that need to expand in terms of area size, because there is no enough space to move for the patient, and staff to their work. The photo below shows a polyclinic used by two doctors and two Intern, and the space problems that are faced in the polyclinic Figure (43).

Figure 43. Shortage of space in the polyclinic.

Second, most of the furniture available in the clinics and waiting areas is very old and not suitable for children due to the non-consideration of materials used and sizes, or for the staff to move around them. And also it does not reflect safety, which is very important in terms of choosing the design and the material of the furniture itself, displays the waiting area furniture Figure (44).

Figure 44. Waiting area furniture example.

Among the public and private polyclinics in the children's unit, there is a problem that public polyclinics contain old, worn and unsafe furniture for use by the doctor on children, Figure (45) shows an example of the furniture used in the public polyclinics.

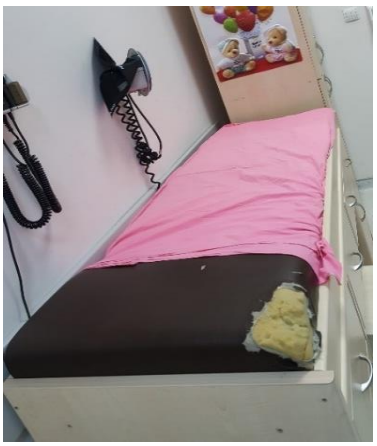


Figure 45. Example of the furniture used in public polyclinics.

As for the private polyclinics in the hospital, the doctor can provide their own furniture, which is a problem at the same time because of the lack of special furniture that takes into account the needs of children's use, Figure (46) an example of the furniture used in the private polyclinics.

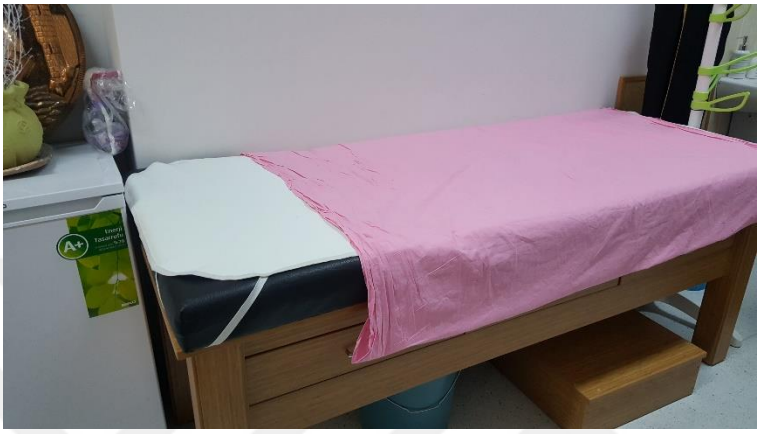


Figure 46. Example of the furniture used in private polyclinics.

Third, the treatments used in the unit should and must be suitable, but in this case, it's really poor, ruined and begun to fade because of the long-time without restoration and modification. The material used does not consider two important elements:

**A.** Quantity: The massive number of people that are using the space, therefore, the materials must be chosen carefully so that they are effective and have strong potential, but in the case of the children unit, the materials do not take into account the huge amount of users.

**B.** Safety: It is important in all circumstances, but in the case of the children's unit, it is considered more sensitive and important. Unfortunately, the safety of children is not taken into account in terms of choosing suitable materials, whether in space itself or the space supplement. The photos below the poor type of material and how they start to fade and become.

Figure (47) shows the poor condition currently presents in this penalty shows the child's unit, whether due to the bad choices of the materials used, or the lack of children's safety or unhealthy in terms of sterilization.

Figure 47. Example of the condition of the materials used in the polyclinic.

Finally, the colors, when talking about colors for children, it is considered a very strong and important link, but in this condition the colors used in the children's unit, it is not suitable at all because mostly, the colors used are either white and gray (cool colors) are dull colors and not suitable for children, which leads to the child's lack of contact with the surrounding area, and gives a negative result to communicate with a child with the space and staff to try the healing process for the child as quickly as possible, Figure (48) below shows the dull colors.


Figure 48. The colors used in the polyclinic.

### 4.1.2. Patients' Rooms Service

In this section, the biggest problems available was spaces, rooms are very small, it was designed to contain one patient, but two patients were placed in the room, causing discomfort to the patients, Figure (49) shows the layout plan of the room. Also, there is not enough space for the staff to work in the nurses' station, or to rest in the lounge area. Figure (50) shows how small the patient room could be.

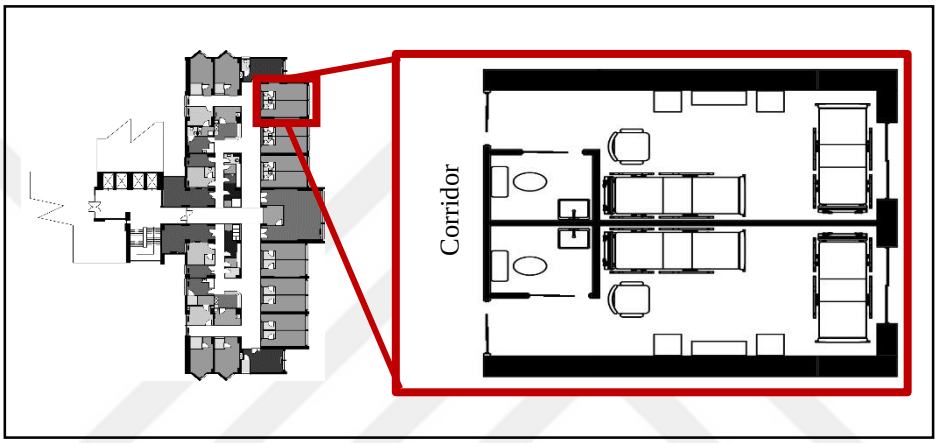



Figure 49. Patient's room existing layout plan.

Figure 50. Example of the patient's room

Most patients' rooms in the different variety of services which is nine-room in each service, within the unit contain mostly two patient, the Table (21) shows the numbers of patients in some of the bed service.

Table 21. Numbers of patients in some of the bed service

| Patients' Rooms Service | Number Of Rooms | Number Of Beds | Total Of Beds Number |
|---|---|---|---|
| Adolescent | 2 | 1 | 16 Beds |
| | 7 | 2 | |
| Infection | 8 | 2 | 17 Beds |
| | 1 | 1 | |
| Newborn | 9 | 18 | 18 Beds |

The problem of small space is not only within patient rooms but also in other areas within the service, the nurses' station is relatively small as it is a work area that needs fast movement by nurses and doctors, Figure (51).


Figure 51. Nurses' station space.

For the doctors' lounge area, it is very small and doesn't have enough space either for the movement or to contain an appropriate number of doctors or for a quick rest and search, Figure (52).

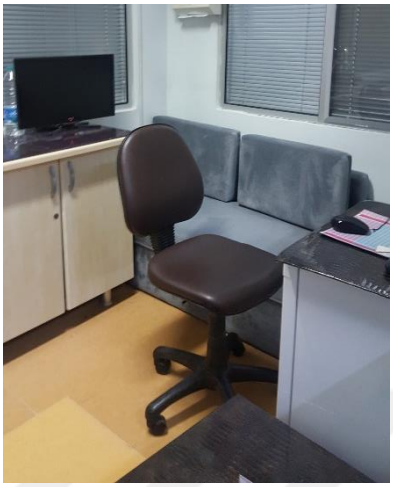


Figure 52. Doctors' lounge.

On the other hand, the problem of design and coldness for the fact that the service is special for children, the colors used are very cold and boring. It cannot be forgotten that the furniture used in this section does not take into consideration children, Figure (53).

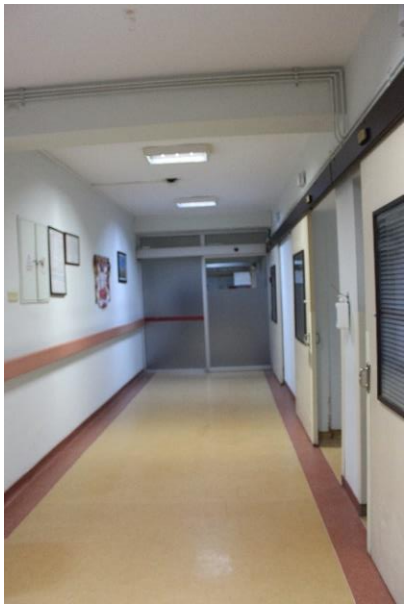


Figure 53. Colors used in the patients' room service.

Finally, the patients' room section does not contain many problems such as polyclinics but also its experiences common problems such as the materials used, which is not suitable for the safety of children, and the choice of suitable furniture for children in terms of the design of the piece while considering the size and function.

The children's unit in this hospital needs to be redesigned and arranged, with simple attention and consideration that the space is for children, and to try to meet the safety of children, the goal can be achieved to arrive at a suitable design for children while at the same time suitable for the staff to perform their work function well.

### 4.2. Children's Unit Survey

In the case of surveying, the basic divisions are two parts: the first one was aimed at the patients or their guardians that are visiting the unit, and the second targeted the staff of the unit. Based on the answers of the respondent it will be discussed.

#### 4.2.3. Patient Survey

Based on an average of all the questions, it was the result of the user satisfaction survey is that (33%) is Agree, (27%) Disagree, (19%) Strongly disagree, (12%) Strongly agree, and (10%) is Don’t know, Figure (54).

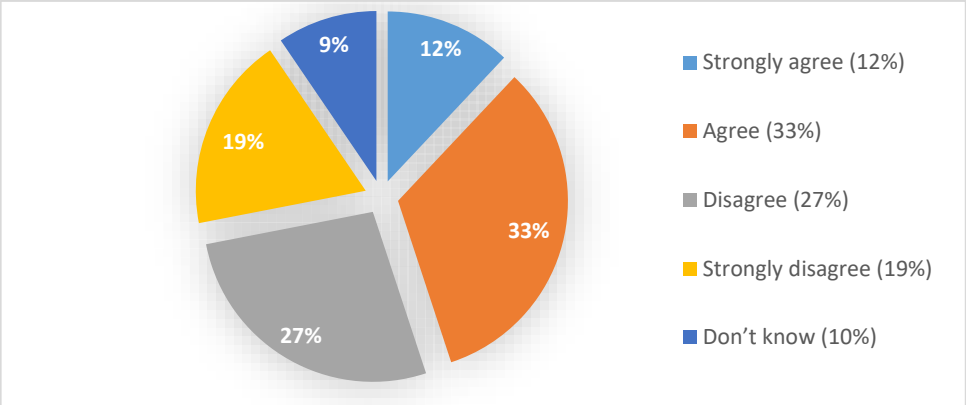



Figure 54. Patient survey average satisfaction overall results.

It can be noted that the strongest percentage varies between (33%) agree and, (27%) disagree, but is likely to be approved, which is considered a bad issue, because the unit contains many problems that must be solved, and many of the shortcomings that must be met, especially regarding the safety of children and, the mental and physical comfort. (27%) is also a good percentage of disagreeing, which confirms that the unit is not in good terms in case of the design.

Finding many problems in the unit is considered a type of obstruction that can confront patients and their guardians, this gives the pediatric unit in this hospital a bad reputation in terms of patients' satisfaction with the place. Although the hospital is considered as a university hospital, it should be a fully integrated hospital (especially by design) in order of being considered the main hospital in Trabzon city.

### 4.2.4. Staff Survey

As for the satisfaction percentage for the staff survey, it was more practical to agree on the problems in unit, and these percentages are, (47%) Disagree, (22%) for both Agree and Strongly disagree, (5%) Don’t know, and (4%) Strongly agree, therefore, the knowledge and sense of staff on finding the problems in the unit is considered strong, which confirms the approval of the need to try to solve them as soon as possible, The chart below Figure (55) shows the staff survey average satisfaction overall results.

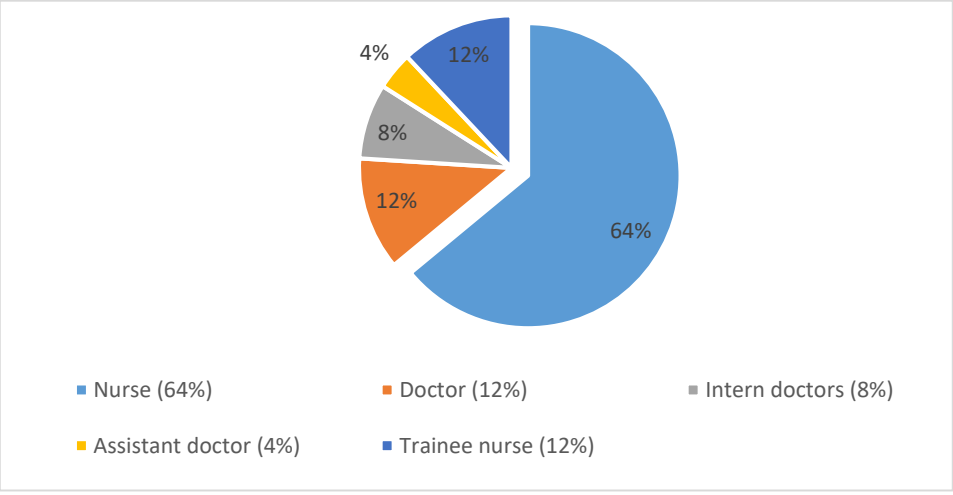



Figure 55. Staff survey average satisfaction overall results.

In terms of personnel survey, it is important to consider that the employee has used the unit space for a longer period of time than the patients, giving them a stronger credit. Their needs and knowledge of the problems of unity must be taken into account.

In the end, knowledge about the design problems of the children's unit is important in terms of identifying the type of problems facing the unit, and trying to renew the unit in the hospital to create a more suitable environment in the space for the child, to have more sense of comfortable, and the employee to perform their work clearly and correctly.

### 4.3. Solutions and Proposals

In this section, some new proposals have been made to solve some of the design problems of both polyclinics part and patients' rooms' part, by re-arranging some parts of the layout plan but at the same time, there would not be a significant change or variation in the design. And, presenting different suggestions about the colors and materials used.

#### 4.3.1. Polyclinics

By looking at the area of clinics, the big problem lies in the presence of many clinics (rooms) not used, especially in the private polyclinics area, or some polyclinics that need to re-arrange in terms of location and the space inside them, especially the location of the infection and psychiatry sections. Therefore, some suggestions were made to modify the location of some polyclinics, while at the same time arranging the interior of the clinic from the inside. The overall layout plan is in **Appendix 8,** shows the polyclinics new proposal.

The first section would be the Dental Polyclinic, which is originally taking more space than it is needed, so in this part, the location is a bit adjusted and the interior has been re-organized, Figure (56).

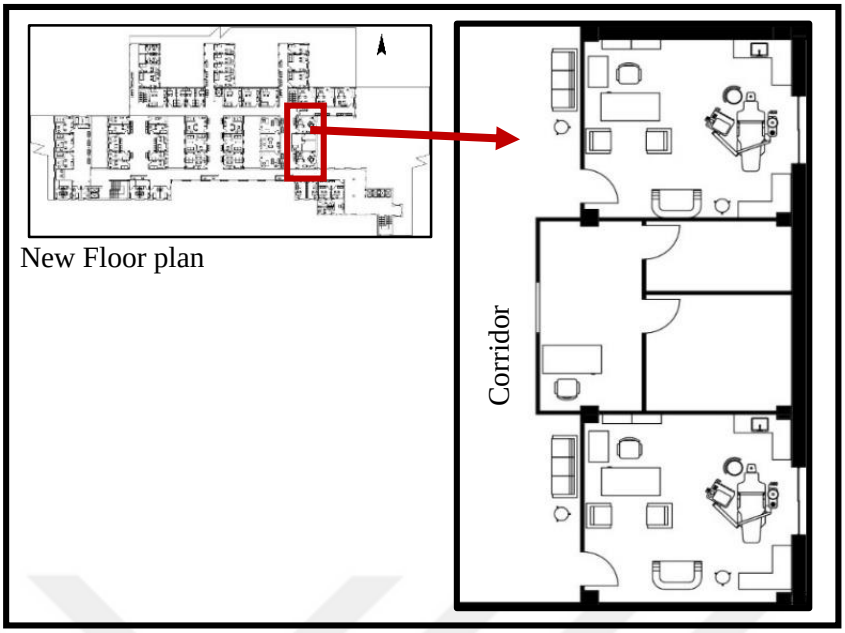



Figure 56. Dental Polyclinic new proposal by the author.

The second is psychiatry, in this section two suggestion has been proposed, so it will have as much as possible of privacy. The first one is shown in Figure (57), and the second in Figure (58).

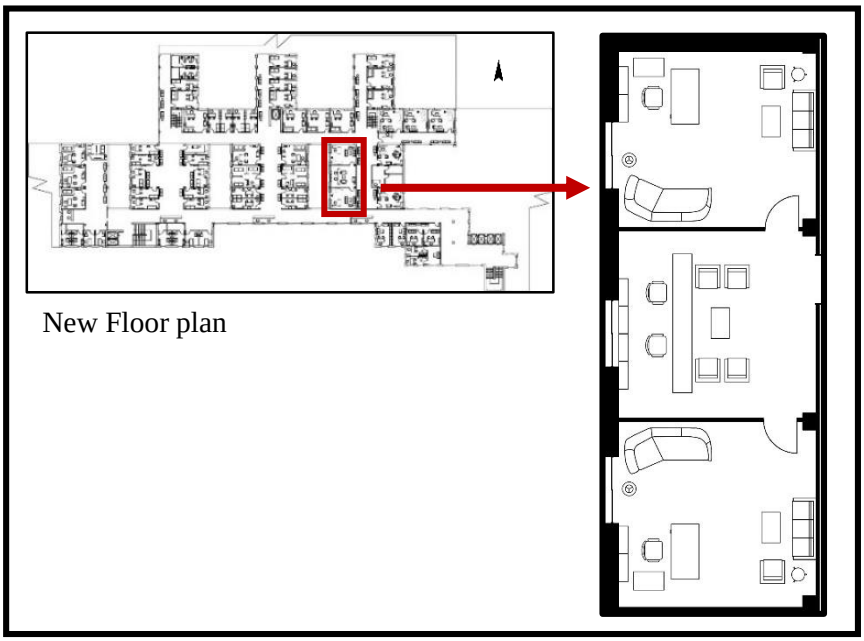



Figure 57. Psychiatry (No. 1) new proposal by the author.

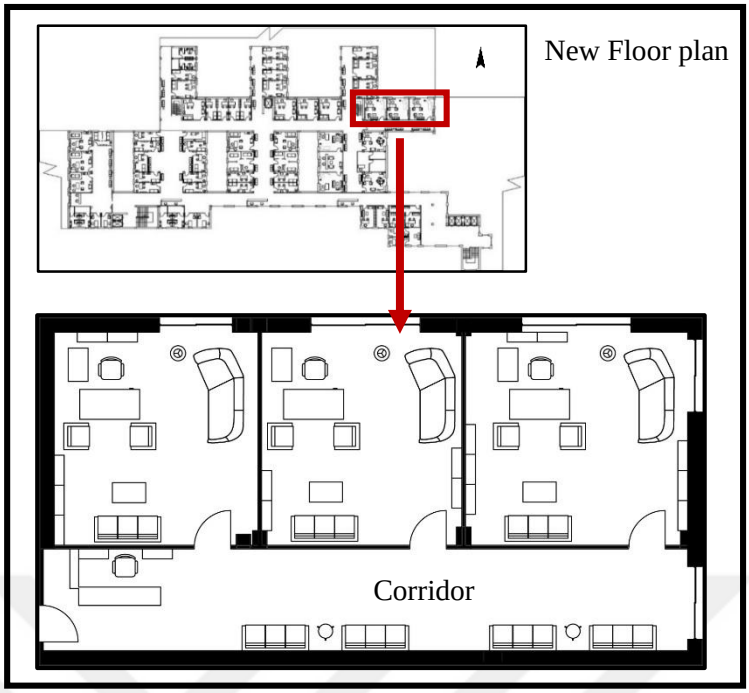



Figure 58. Psychiatry (No. 2) new proposal by the author.

Third, Nervous and Dermis disease, in these polyclinics, it has been mostly re-organized in term of the interior and locations of the clinics within itself.

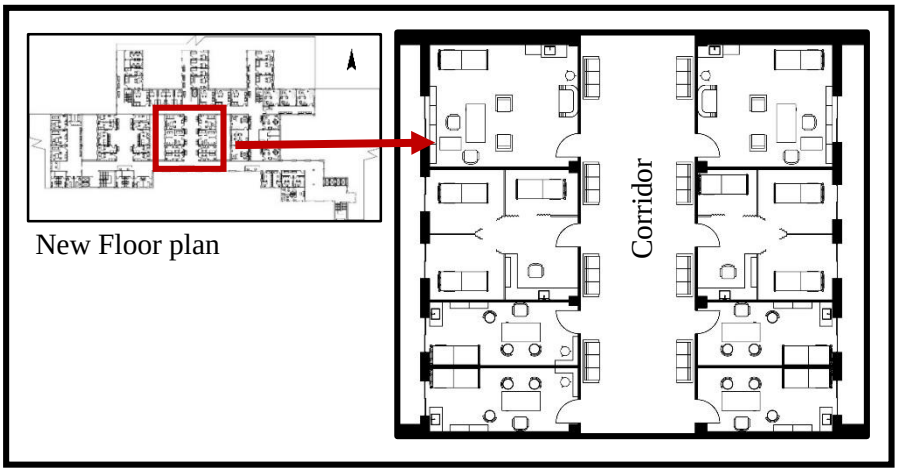



Figure 59. Nervous and Dermis Disease new proposal by the author.

Fourth, the Nontransaction (Non-Infections) disease, the same as the Nervous and Dermis polyclinic goes in this part, because it has the same problem, which is not well-organized spaces.

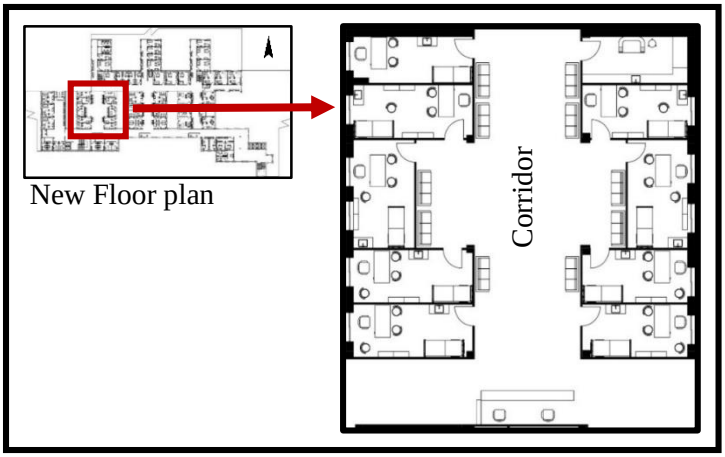



Figure 60. Non-transaction Disease new proposal by the author.

Fifth, the Infectious disease polyclinic needed more private sanction than before, the new suggestion provided an isolated space for this type of polyclinic with all the required and needed space, for example, individual bathrooms and blood test.

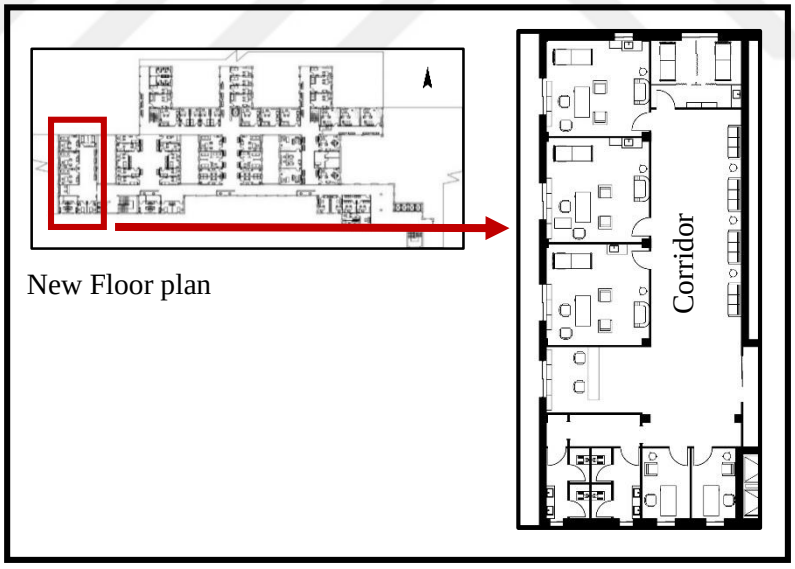



Figure 61. Infection Disease new proposal by the author.

Going to the private polyclinic, not so much of the changes have been done, mostly it was relocating the lavatory's, and adding a new elevator, also, reorganized the interior spaces inside the offices, Figure (62) shows the new location of the lavatory's and some suggestions

about the interior organized of the offices, and Figure (63) shows the new location of the elevator added.

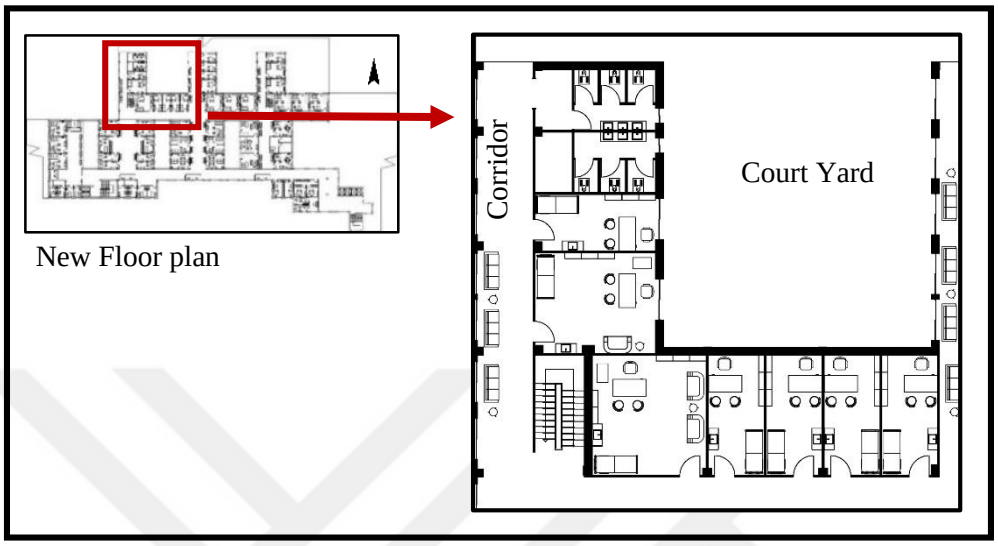



Figure 62. Private Polyclinic (No. 1) new proposal by the author.

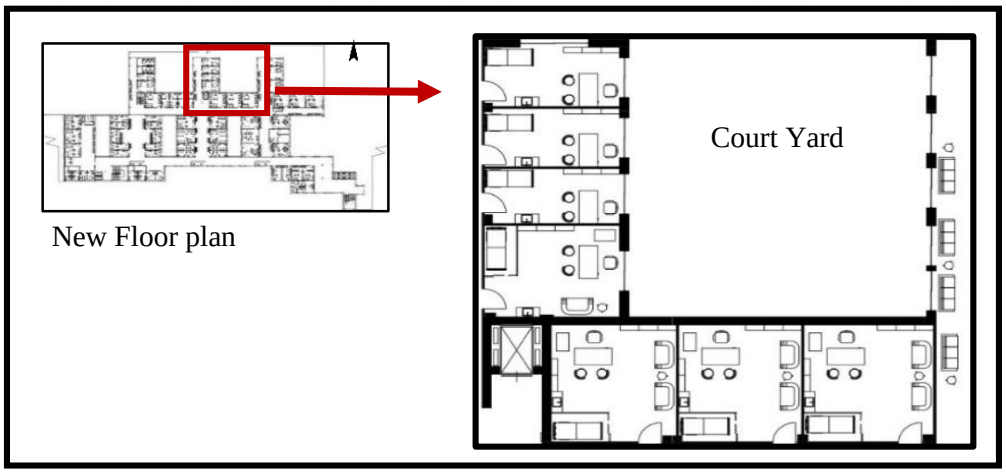



Figure 63. Private Polyclinic (No. 2) new proposal by the author.

For the overall theme design of the polyclinic tow, 3D design options have been proposed. The first one, in Figure (64) has more active vibes and colors which will activate the natural character of children, and that is to get rid of the overall stress that they have

when visiting the doctor. For the second options Figure (65) used more of relaxing colors to make it easy to communicate with the child.

Figure 64. Polyclinic new 3D. render theme proposal option (no. 1) by the author.

Figure 65. Polyclinic new 3D. render theme proposal option (no. 2) by the author.

### 4.3.2. Patients' Rooms Service

In the patients' rooms, many changes have not been made, either by rearranging the interior of the rooms or adding different suggestions. And rearranging the service compound spaces, **Appendix 9,** shows the Patients' Rooms Service Proposal,

Starting with the patient's rooms, the rooms were enlarged in the northern wing of the unit (upper part), by taking some space from the family room area, to provide extra space, through that space can be expanded patient's rooms, Figure (66).


Figure 66. Northern Wing patient's rooms new proposals options by the author.

At the first option design proposal, a Mid-board layout design was used. This is done by having a Back to Back toilets between every two rooms, which gives a rectangular shaped room with more space, maximum patient visibility. Also as it is presented in Figure (67), the room can take one to two patient. Also in this section one of the room placement was in a 45-degree angle to have more space for the movement around the bed.


Figure 67. Northern Wing patient's rooms new proposals option (NO. 1) by the author

At the second design proposal, an (Inboard) layout design was used, and that is basically by having the beds in the inside part of the room and the toilets in the outside, which gives the room better exterior views and more defined family space. The beds in this option are organized in a 45-degree angle, Figure (68).

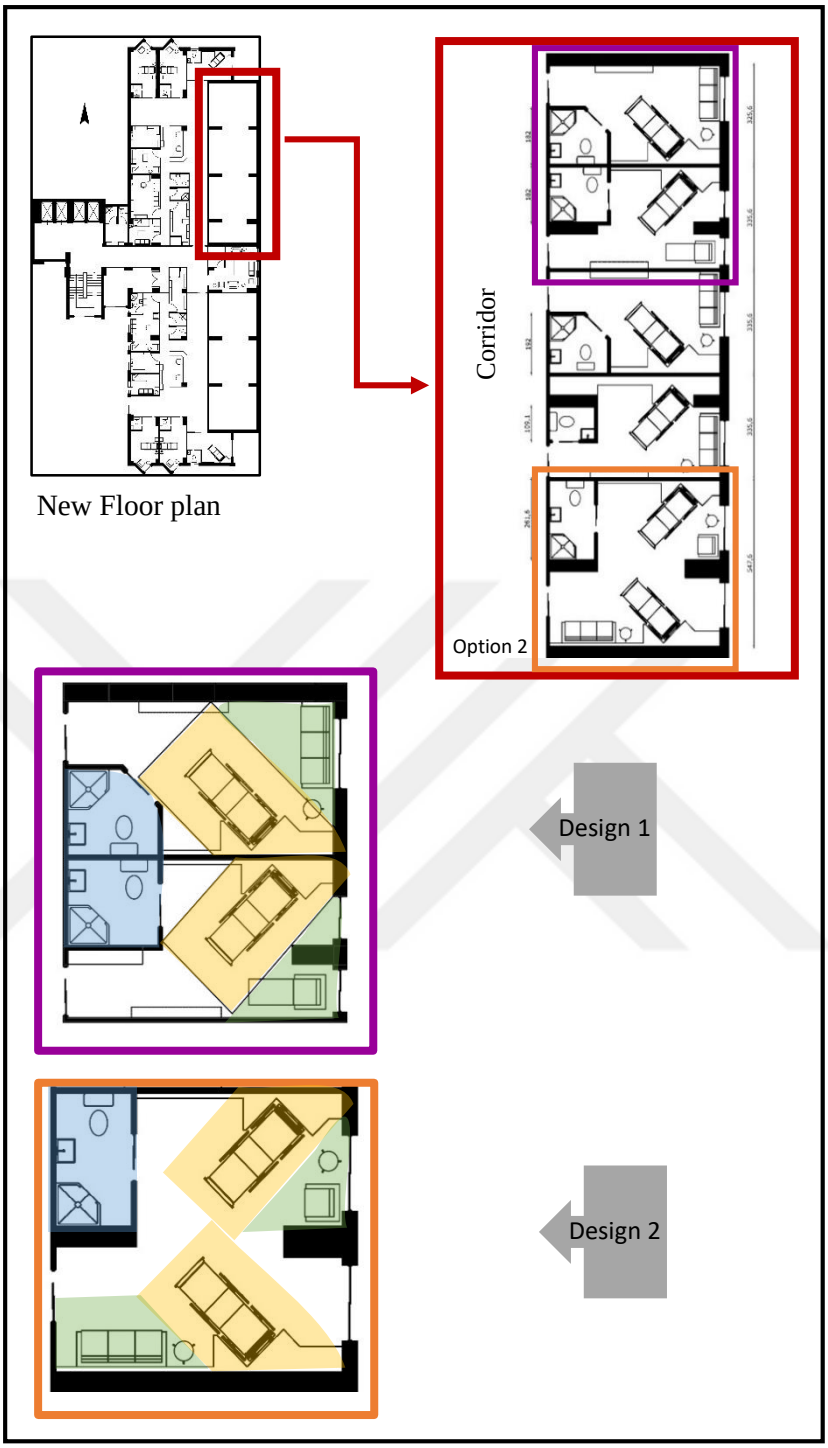



Figure 68. Northern Wing patient's rooms new proposals option (NO. 2) by the author.

For the southern wing (down part), of the unit, it has been arranged so that it is adequate and suitable for movement while maintaining the same layout sizes, Figure (69).

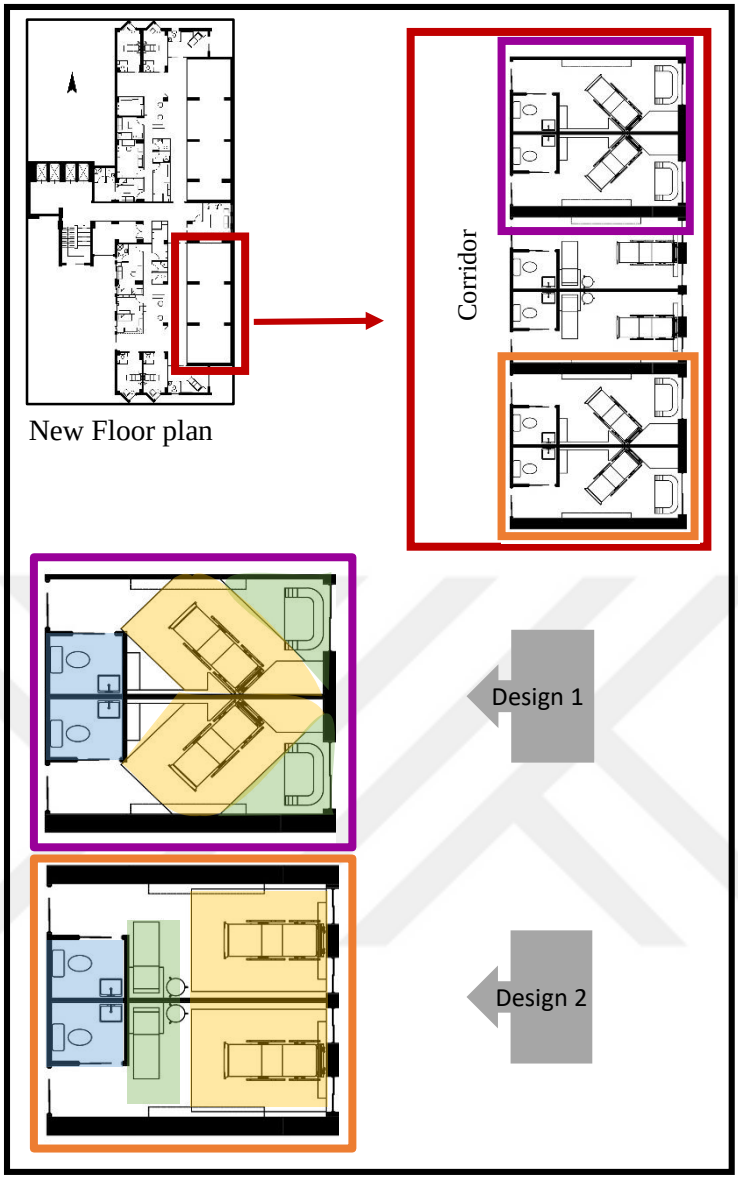



Figure 69. Southern Wing patient's rooms new proposals options by the author.

The theme design of the patient room basically used the colors through the accessories of the room, as it is shown in Figure (70) to make it more comfortable. And by adding these colors that will give a more suitable atmosphere which will provide a good environment for healing.

Figure 70. Patient's Rooms new 3D. render theme proposal by the author.

For the service compound, which has the nurse station -that is so small and not easy to move inside-, doctors and Intern doctors lounge, and so on, before it has a lot of negative spaces (immediate treatment, and extra lavatory's), and some of the range was too crowded -especially the nurse treatment room-, thus, the new suggestions by the author Figure (71) offers more organized spaces according to the needed spaces.

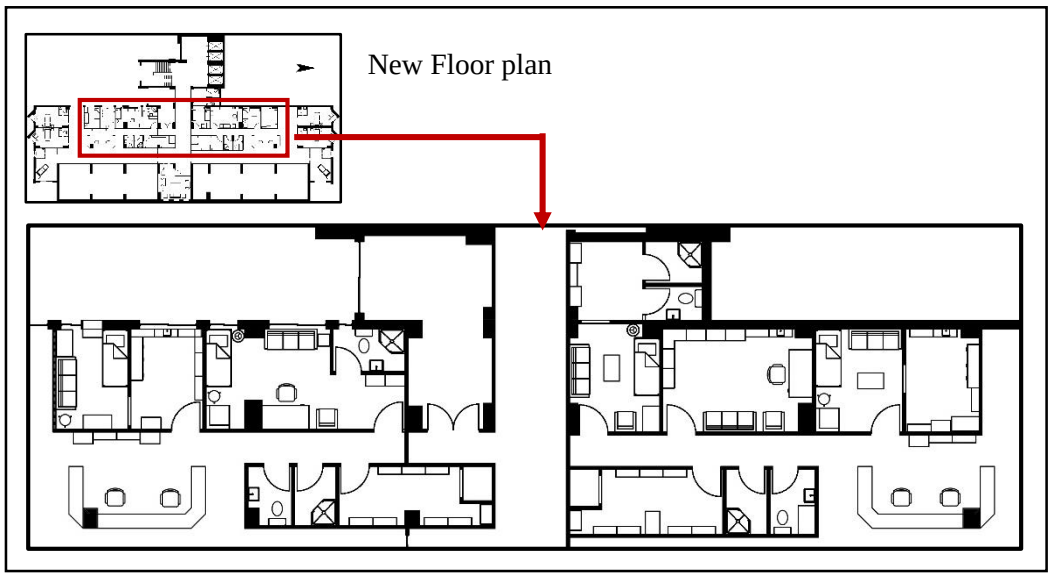



Figure 71. Patient Rooms Service Compound new proposal by the author.

For the design theme proposal in this part, more colors have been used to add a more welcome, lovable and enjoyable environment for the children, which will make it simple to communicate and make them feel more comfortable for them, Figure (72).

Figure 72. Patient's Rooms Service Compound New 3D. render theme proposal by the author.

A comparison of the layout plans was generally made between the existing design of the children's unit and the design that was proposed in this thesis, as it is shown in **Appendix 10**. A comparison between the existing design and the author proposal design was presented by the author In order to make a general clarification of the differences and changes that have been concluded and made with the new design proposal by the author.

Generally, for this new design proposal that has been presented, was merely an only one of the solution for the problems that have been observed in the children's unit by the methods used in this search. Therefore, different design proposals can be present for the children's unit in Farabi Hospital, in order to start a discussion. Furthermore, this design that has been shown in this thesis, is only one of the designs solutions that have been offered and suggested by the author.

**Chapter Conclusion**

In this chapter of the research, the most important problems found in the unit were discussed through the methods used, and a new proposal for redesigning the children's unit of Farabi Hospital.

First, a discussion of the most important problems that have been found in the architectural analysis of the unit, and that through solving these problems. Second, a discussion was conducted on the general results of the satisfaction survey of the unit, and what things can be considered through these results during the development of solutions.

At the end of this chapter, an architectural design proposal options were presented to each part of the unit, which is the Polyclinic and the Patient bedroom services, to try to solve the problems by fulfilling and taking into account the need of the patient and staff during the design of the new proposal of the unit.

The next chapter is the final chapter of the research, in which a general summary of the research on the children's unit of Farabi hospital. And also presented a future work that can support the research more strongly or can be a difference in terms of assistance to hospitals in general or children's unit in particular.

## 5. CONCLUSION AND FUTURE WORK

For the creation and production of health care and medical spaces, whether health centers, hospitals, units in hospitals and clinics for children, several aspects of the design must be considered to make an affirmative and responsive environment for children.

This study identified the basic steps and main points that must be considered during the design of an area dedicated to the medical care considered children, whether it is specific to the child itself or the space that will be created and designed.

It was clarified and defined several basic points that should be learned about the hospitals in general and about the health system in Turkey in particular. Then the design of the children's health care facilities, particularly the children's unit in a hospital was clarified. Most important factors and principles that can and should be reflected during the creation of a child-specific space structure, whether design factors in the place itself or important psychological factors that must be considered. Some of the fundamentals that could have a significant impact on the creation of an appropriate environment for children were also mentioned. Some of the psychological factors that may affect and should be taken into account in designing has been explained, which is important for creating a psychologically acceptable space for the child and other users.

The stages of the method used in this thesis were shown. As a first step, an analysis of the children's unit in the case study of the Farabi Hospital has been shown in several aspects of the design. In the second step, the stages and fundamentals of the users' satisfaction survey were clarified, by dividing it into two sections patients survey and staff survey, under each section there are several parts, the importance and reason of choosing each question in these parts have been demonstrating. Moreover, all the results of the users' satisfaction survey for patients and staff were explained in detail and accurately, by setting result tables and charts for each and all parts.

Through the method used in this thesis, it has been found many of the problems located in the children's unit in the Farabi Hospital, most of these problems focused on the design of the space and deficiency of the appropriate to the children and their safety.

Finding and identifying these problems in the case study was one of the main objectives, Farabi Hospital is usually is under restoration in some parts, during these different periods of redesigning, the children's unit is completely ignored, despite the new addition of some parts to the hospital. The Children's Unit needs some quick restoration and simple architectural additions to create an environment suitable for children, as this is the main University Hospital in Trabzon.

As mentioned above, identifying problems is the first important step in the way of renovating and caring for the children's unit in the hospital. The research can be followed up in many aspects and studies that have not been discussed in the thesis, which can help in the development of health care facilities in general and children's health care facilities in particular, such as:

- Trying to create a mock-up model in a 1:1 scale for some of the design spaces, to test and study the affection of it, and if it is good enough for the users.
- Creating design standards for the children's unit, and what steps should be taken during the design of any children's health care facility. By providing accurate details of all the spaces and zones that should be available in the unit, and details of the standards that must follow while designing and creating the spaces, such as the type of furniture, colors, materials, lighting, sizes and so on.
- Children's safety and security standards that should be available in any medical facilities, whether in the space layout design itself or the aesthetic design of the space.
- Refuting the rules, details and the most important elements that should and must be available while designing hospitals or any health facilities for children with special needs.
- The techniques of choosing the colors that fit the design of the health facilities that are designed for children, taking into account the effect of these colors on children in terms of aesthetic and psychological, also taking into account the rest of the people who use this area, both from the staff or children's guardians.
- The best layout plan designs examples that can be used during designing the children's unit, or any health carefacilities for children, whether for patients' rooms, clinics, operating rooms, and other spaces that must be available.
- Trying to focus on only one specific section or branches within the hospital, such as operating rooms, patient rooms, clinics, waiting areas, and others. Through the

knowledge and analysis of the selected section, detailed research was conducted on the design factors affecting the area, what should be available whether furniture, materials, spaces should be present in the selected area. This is because when choosing only one section, it will be more focused and more detailed will be available.

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## 7. APPENDIX

**Appendix 1:** Roads, Transportation, and the Parking of the Hospital, (Aerial photograph).

**Appendix 2:** Ground Floor Layout Plan.

**Appendix 3:** Children's Unit First Floor Layout Plan.

**Appendix 4-A:** Children's Unit Private & Public Polyclinics & Waiting area layout and Components.

**Appendix 4-B:** Sizes of the Children's Polyclinic.

**Appendix 5-A:** Bed Service Components and Spaces.

**Appendix 5-B:** Sizes of the Children's Bad Services.

**Appendix 6-A:** Patient Survey in English.

**Appendix 6-B:** Patient Survey in Turkish.

**Appendix 7-A:** Staff Survey in English.

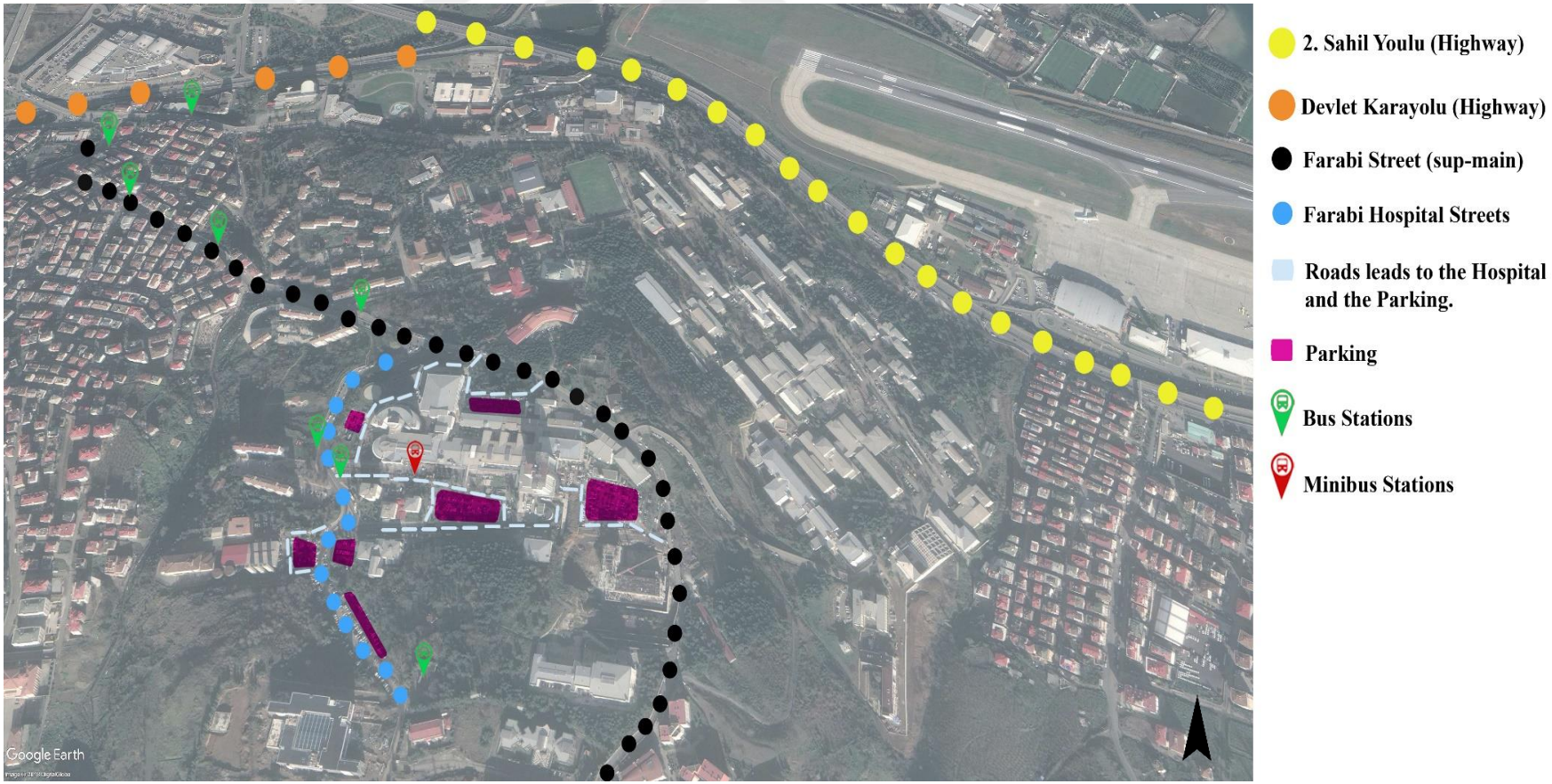
**Appendix 7-B:** Staff Survey in Turkish.

**Appendix 8:** Polyclinics New Proposal.

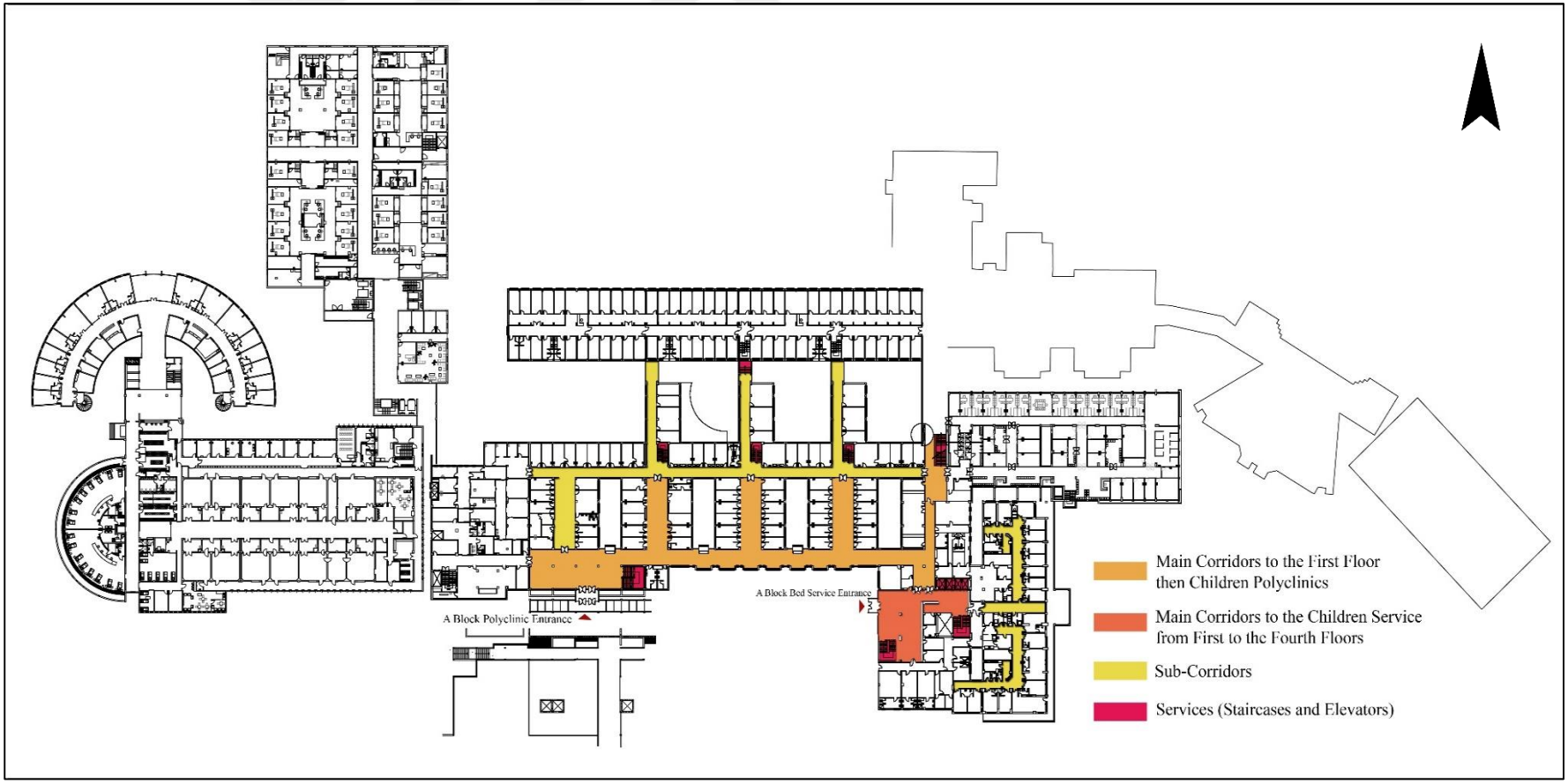
**Appendix 9:** Patients' Rooms Service Proposal.

**Appendix 10:** Comparison between the Existing design and the Author Proposal Design.

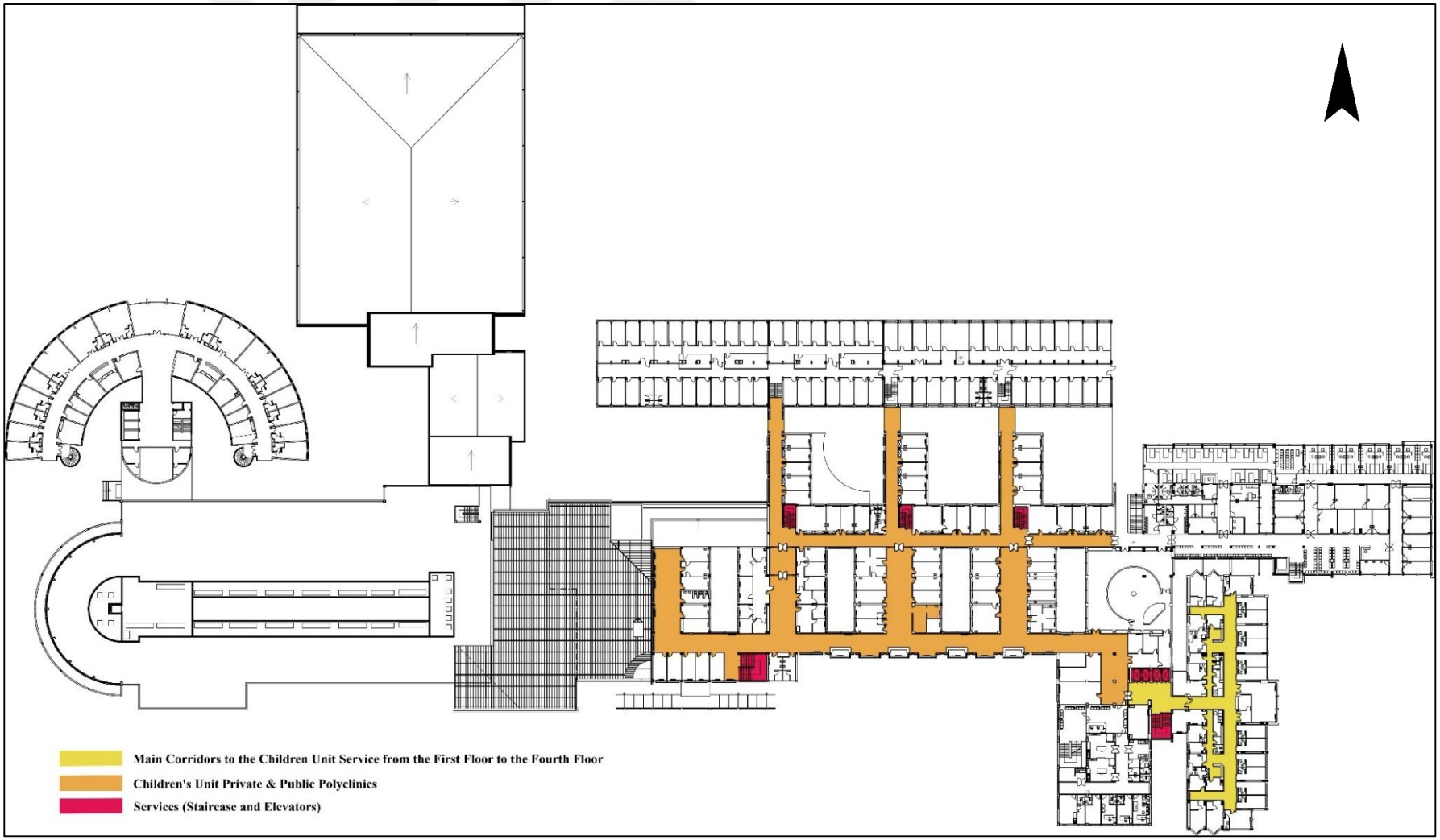
**Appendix 1:** Roads, Transportation, and the Parking of the Hospital, (Aerial photograph).



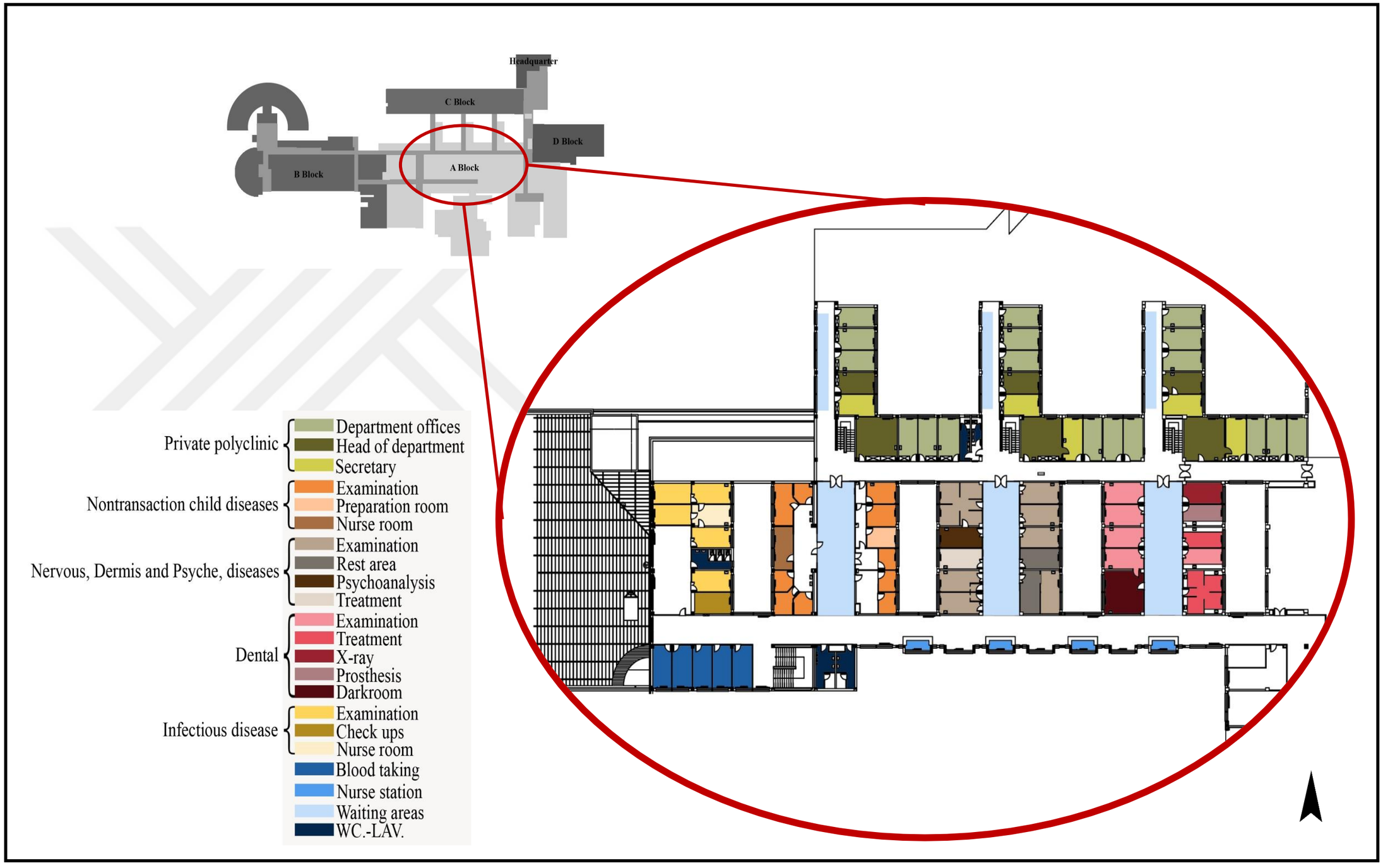
**Appendix 2:** Ground Floor Layout Plan.



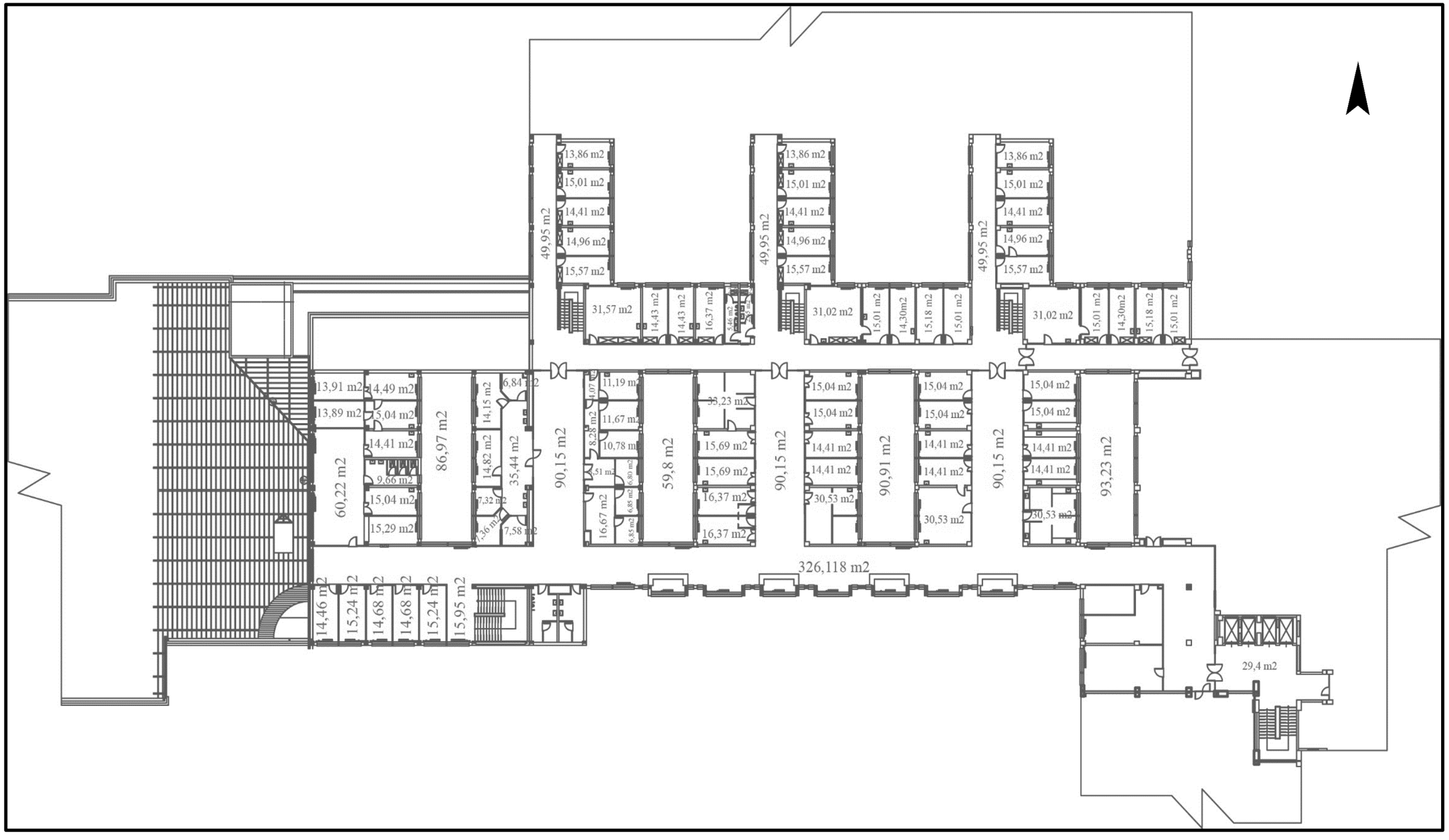
**Appendix 3:** Children's Unit First Floor Layout Plan.



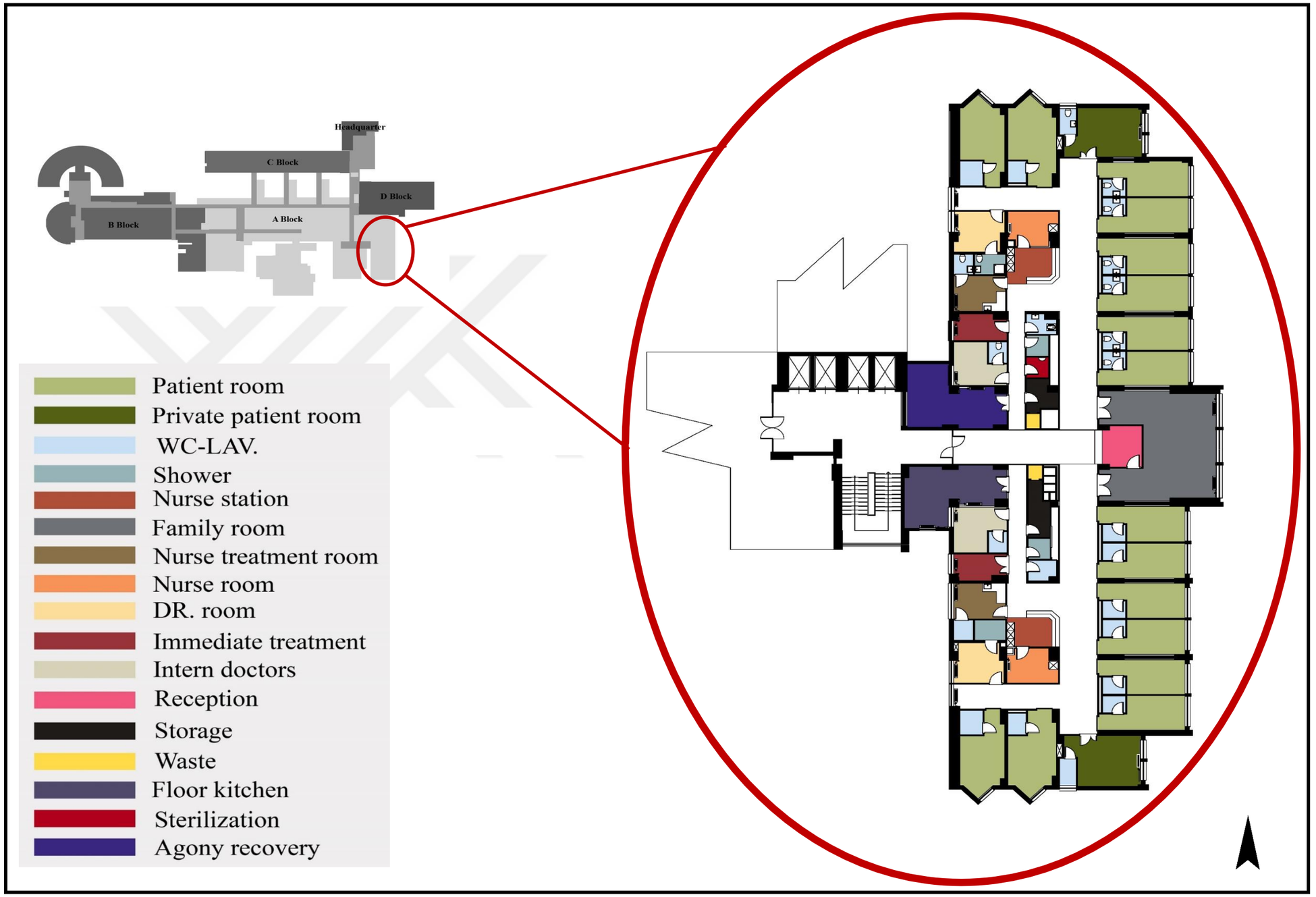
**Appendix 4-A:** Children's Unit Private & Public Polyclinics & Waiting area layout and Components.



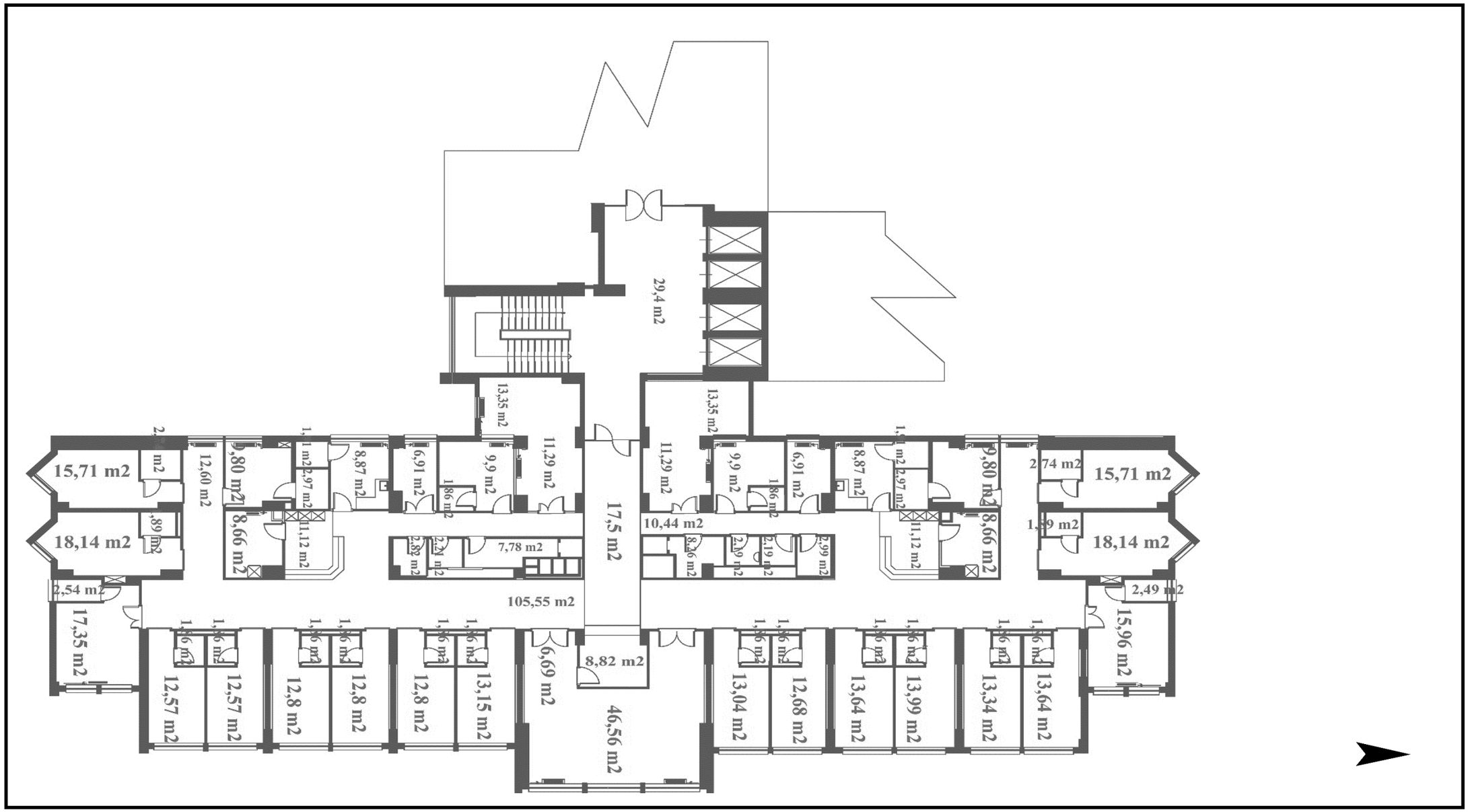
**Appendix 4-B:** Sizes of the Children's Polyclinic.



**Appendix 5-A:** Bed Service Components and Spaces.



**Appendix 5-B:** Sizes of the Children's Bad Services.



**Appendix 6-A:** Patient Survey in English.

**Children's Unit Satisfaction Patient Survey** **Today's Date / / 2018**

**How Old Are You: _____** **Gender: □ Female □ Male**

| | | Strongly Agree | Agree | Disagree | Strongly Disagree | Don't Know |
|---|---|---|---|---|---|---|
| **NURSING STATION:** | | | | | | |
| 1 | The station is directly visible from the entrance. | 1 | 2 | 3 | 4 | 5 |
| 2 | The station made it easy for private conversations with staff. | 1 | 2 | 3 | 4 | 5 |
| 3 | The station catchy and welcoming in terms of the design. | 1 | 2 | 3 | 4 | 5 |
| 4 | The station is safe and suitable for children. | 1 | 2 | 3 | 4 | 5 |
| **WAITING AREA:** | | | | | | |
| 1 | The patient waiting area was comfortable. | 1 | 2 | 3 | 4 | 5 |
| 2 | The noise level in the waiting area was appropriate. | 1 | 2 | 3 | 4 | 5 |
| 3 | The waiting area had a pleasing look. | 1 | 2 | 3 | 4 | 5 |
| 4 | The waiting area is safe and suitable for children. | 1 | 2 | 3 | 4 | 5 |
| 5 | The waiting area offers a play area for children | 1 | 2 | 3 | 4 | 5 |
| **CLINIC:** | | | | | | |
| 1 | The clinic made me feel private and my personal information is secure. | 1 | 2 | 3 | 4 | 5 |
| 2 | The clinic allowed easy communication with doctor. | 1 | 2 | 3 | 4 | 5 |
| 3 | The clinic is safe and suitable for children. | 1 | 2 | 3 | 4 | 5 |
| 4 | The clinic had a pleasing look. | 1 | 2 | 3 | 4 | 5 |
| 5 | The examination area in the clinic is suitable for children. | 1 | 2 | 3 | 4 | 5 |
| **PATIENT ROOM:** | | | | | | |
| 1 | The patient room was comfortable. | 1 | 2 | 3 | 4 | 5 |
| 2 | The patient room has a pleasing look. | 1 | 2 | 3 | 4 | 5 |
| 3 | The patient room is safe and suitable for children. | 1 | 2 | 3 | 4 | 5 |
| 4 | The nursing station is directly visible from the patient room. | 1 | 2 | 3 | 4 | 5 |
| 5 | (In the case of multiple patients room)The patient room made me feel private and my personal information is secure. | 1 | 2 | 3 | 4 | 5 |
| **MATERIALS, COLOURS AND LIGHT:** | | | | | | |
| 1 | Materials and color helped me find my way around. | 1 | 2 | 3 | 4 | 5 |
| 2 | The materials used were safe for children. | 1 | 2 | 3 | 4 | 5 |

**Appendix 6-A:** (Sequel) Patient Survey in English.

**Children's Unit Satisfaction Patient Survey** **Today's Date / / 2018**

| | | | | | | |
|---|---|---|---|---|---|---|
| 3 | The colors in the unit were suitable for the children. | 1 | 2 | 3 | 4 | 5 |
| 4 | The colors were over bright for the guardians of the children. | 1 | 2 | 3 | 4 | 5 |
| 5 | The natural light was available in the unit. | 1 | 2 | 3 | 4 | 5 |
| 6 | The artificial light was enough in the unit. | 1 | 2 | 3 | 4 | 5 |
| 7 | There is enough light in the waiting and examination areas. | 1 | 2 | 3 | 4 | 5 |
| **FURNITURE:** | | | | | | |
| 1 | The furniture in the unit were design in a safe way for the children. | 1 | 2 | 3 | 4 | 5 |
| 2 | The furniture in the unit were organized in a safe way for the children movement. | 1 | 2 | 3 | 4 | 5 |
| 3 | The size of the unit furniture were suitable for children. | 1 | 2 | 3 | 4 | 5 |
| 4 | The material of the furniture was good and safe for children. | 1 | 2 | 3 | 4 | 5 |
| **GENERAL:** | | | | | | |
| 1 | I found it easy to navigate around the unit. | 1 | 2 | 3 | 4 | 5 |
| 2 | The signs in and around this unit were easy to understand. | 1 | 2 | 3 | 4 | 5 |
| 3 | Corridors and spaces were well organized. | 1 | 2 | 3 | 4 | 5 |
| 4 | The air in the unit was fresh and clean. | 1 | 2 | 3 | 4 | 5 |
| 5 | The unit is safe and suitable for children. | | | | | |
| 6 | Overall, I was satisfied with the unit environment. | 1 | 2 | 3 | 4 | 5 |

**If you have additional comments regarding the design of the clinic (for example, how the Design can be improved, if at all), please write below or on the back.**

**Thank you.**

**Appendix 6-B:** Patient Survey in Turkish.

**Çocuk Birimi Hasta Memnuniyeti Anketi** **Anket Tarihi: / / 2018**

**yaş: _____** **Cinsiyet: □ Kadın □ Erkek**

| | | Kesinlikle katılıyorum | katılıyorum | Katılmıyorum | Kesinlikle Katılmıyorum | Bilmiyorum |
|---|---|---|---|---|---|---|
| **HEMŞİRE İSTASYONU:** | | | | | | |
| 1 | İstasyon doğrudan girişten görülebilir. | 1 | 2 | 3 | 4 | 5 |
| 2 | İstasyon personeli ile özel konuşmaları kolaylaştırıyor. | 1 | 2 | 3 | 4 | 5 |
| 3 | İstasyon tasarım açısından misafirperver. | 1 | 2 | 3 | 4 | 5 |
| 4 | İstasyon çocuklar için güvenli ve uygundur. | 1 | 2 | 3 | 4 | 5 |
| **BEKLEME ALANI:** | | | | | | |
| 1 | Hasta bekleme alanı rahattır. | 1 | 2 | 3 | 4 | 5 |
| 2 | Bekleme alanındaki gürültü seviyesi uygundur. | 1 | 2 | 3 | 4 | 5 |
| 3 | Bekleme alanı hoş bir görünüme sahiptir. | 1 | 2 | 3 | 4 | 5 |
| 4 | Bekleme alanı çocuklar için güvenli ve uygundur. | 1 | 2 | 3 | 4 | 5 |
| 5 | Bekleme alanı çocuklar için bir oyun alanı sunuyor. | 1 | 2 | 3 | 4 | 5 |
| **POLİKLİNİK:** | | | | | | |
| 1 | Klinik tasarımı kişisel mahremiyet sağlıyor | 1 | 2 | 3 | 4 | 5 |
| 2 | Klinik tasarımı hekimile kolay iletişime izin veriyor. | 1 | 2 | 3 | 4 | 5 |
| 3 | Klinik tasarımı çocuklar için güvenli ve uygundur. | 1 | 2 | 3 | 4 | 5 |
| 4 | Kliniğin tasarımını hoş bir görünümü vardır. | 1 | 2 | 3 | 4 | 5 |
| 5 | Klinikteki muayene alanı çocuklar için uygundur. | 1 | 2 | 3 | 4 | 5 |
| **HASTA ODALARI:** | | | | | | |
| 1 | Hasta odası rahattır. | 1 | 2 | 3 | 4 | 5 |
| 2 | Hasta odası hoş bir görünüme sahiptir. | 1 | 2 | 3 | 4 | 5 |
| 3 | Hasta odası çocuklar için güvenli ve uygundur. | 1 | 2 | 3 | 4 | 5 |
| 4 | Hemşire istasyonu hasta odasından doğrudan görülebiliyor. | 1 | 2 | 3 | 4 | 5 |
| 5 | (Birden fazla hasta odası olmasi durumunda) Hasta odası kişisel mahremiyet sağlıyor. | 1 | 2 | 3 | 4 | 5 |
| **MALZEMELER, RENKLER VE IŞIK:** | | | | | | |
| 1 | Renkler yolumu bulmaya yardımcı oluyor. | 1 | 2 | 3 | 4 | 5 |
| 2 | Kullanılan malzemeler çocuklar için güvenlidir. | 1 | 2 | 3 | 4 | 5 |
| 3 | Ünitedeki renkler çocuklar için uygun. | 1 | 2 | 3 | 4 | 5 |

**Appendix 6-B:** (Sequel) Patient Survey in Turkish.

**Çocuk Birimi Hasta Memnuniyeti Anketi** **Anket Tarihi: / / 2018**

| | | | | | | |
|---|---|---|---|---|---|---|
| **4** | Renkler çocukların velileri için parlaktır. | **1** | **2** | **3** | **4** | **5** |
| **5** | Doğal ışık ünitede mevcuttu. | **1** | **2** | **3** | **4** | **5** |
| **6** | Birimde yapay ışık yeterliydir. | **1** | **2** | **3** | **4** | **5** |
| **MOBİLYA:** | | | | | | |
| **1** | Birimdeki mobilyalar çocuklar için güvenli bir şekilde tasarlanmıştır. | **1** | **2** | **3** | **4** | **5** |
| **2** | Birimdeki mobilyalar çocukların hareketi için güvenli bir şekilde düzenlenmiştir. | **1** | **2** | **3** | **4** | **5** |
| **3** | Birimdeki mobilyaların hacmi çocuklar için uygunur. | **1** | **2** | **3** | **4** | **5** |
| **4** | Mobilya malzemesi çocuklar için iyi ve güvenlidir. | **1** | **2** | **3** | **4** | **5** |
| **GENEL:** | | | | | | |
| **1** | Birim içerisinde yönbulmak kolaydır. | **1** | **2** | **3** | **4** | **5** |
| **2** | Birim içinde ve çevresindeki işaretlerin anlaşılması kolaydır. | **1** | **2** | **3** | **4** | **5** |
| **3** | Koridorlar ve mekanlar iyi organize edilmiştir. | **1** | **2** | **3** | **4** | **5** |
| **4** | Birimdeki hava taze ve temizdir. | **1** | **2** | **3** | **4** | **5** |
| **5** | Genel olarak, Ünitedeki ortamından memnun kaldım. | **1** | **2** | **3** | **4** | **5** |

Kliniğin tasarımıyla ilgili ek yorumlarınız varsa (örneğin, **Tasarımın nasıl geliştirilebileceği**), lütfen aşağıya yazınız.

**Teşekkür ederim.**

**Appendix 7-A:** Staff Survey in English.

**Children's Unit Satisfaction Staff Survey** **Today's Date / /**

**How Old Are You: _____** **Gender: □ Female □ Male**

**Position: _____**

| | | Strongly Agree | Agree | Disagree | Strongly Disagree | Don't Know |
|---|---|---|---|---|---|---|
| **NURSING STATION:** | | | | | | |
| 1 | The station allows a sense of privacy for staff. | 1 | 2 | 3 | 4 | 5 |
| 2 | The station makes it easy for private conversations with patients. | 1 | 2 | 3 | 4 | 5 |
| 3 | The station have enough space to work and move. | 1 | 2 | 3 | 4 | 5 |
| 4 | The station have enough light. | 1 | 2 | 3 | 4 | 5 |
| 5 | The colors around the station were suitable for the children. | 1 | 2 | 3 | 4 | 5 |
| 6 | The colors around the station are over bright for me to work. | 1 | 2 | 3 | 4 | 5 |
| **CLINIC:** | | | | | | |
| 1 | The clinic location/design provides privacy and confidentiality. | 1 | 2 | 3 | 4 | 5 |
| 2 | The clinic allows an easy communication with patients. | 1 | 2 | 3 | 4 | 5 |
| 3 | The clinic is safe and suitable for children. | 1 | 2 | 3 | 4 | 5 |
| 4 | The clinic have a suitable furniture for children. | 1 | 2 | 3 | 4 | 5 |
| 5 | The clinic have enough light. | 1 | 2 | 3 | 4 | 5 |
| 6 | The materials used in the clinic were safe for children. | 1 | 2 | 3 | 4 | 5 |
| 7 | The clinic work area has pleasant features. | 1 | 2 | 3 | 4 | 5 |
| 8 | The clinic environment allows me to quickly locate equipment needed. | 1 | 2 | 3 | 4 | 5 |
| 9 | The colors around the clinic were suitable for the children. | 1 | 2 | 3 | 4 | 5 |
| 10 | The colors around the clinic are over bright for me to work. | 1 | 2 | 3 | 4 | 5 |
| **PATIENT ROOM:** | | | | | | |
| 1 | It is easy to move inside the rooms. | 1 | 2 | 3 | 4 | 5 |
| 2 | The room's layout is suitable for me to do my work. | 1 | 2 | 3 | 4 | 5 |
| 3 | Any equipment needed can be easily added inside the rooms. | 1 | 2 | 3 | 4 | 5 |
| 4 | There is a quick connection between the nurse's station and the rooms. | 1 | 2 | 3 | 4 | 5 |

**Appendix 7-A:** (Sequel) Staff Survey in English.

**Children's Unit Satisfaction Staff Survey** **Today's Date / /**

| | | | | | | |
|---|---|---|---|---|---|---|
| 5 | (In the case of multiple patient's room) it can be communicate with the patients in private and the personal information is secure. | 1 | 2 | 3 | 4 | 5 |
| **GENERAL:** | | | | | | |
| 1 | The noise level in the unit does not interfere with communication to patients. | 1 | 2 | 3 | 4 | 5 |
| 2 | The unit has a pleasing look. | 1 | 2 | 3 | 4 | 5 |
| 3 | The natural light was available in the unit. | 1 | 2 | 3 | 4 | 5 |
| 4 | The artificial light was enough in the unit. | 1 | 2 | 3 | 4 | 5 |
| 5 | The floor plan of the unit makes it easy for staff to move fast and easy. | 1 | 2 | 3 | 4 | 5 |
| 6 | Sufficient spaces are available to accommodate patients in various stages of unit visit (check-in, waiting, exam room, etc.). | 1 | 2 | 3 | 4 | 5 |
| 7 | I feel that the air in the clinic is fresh and clean. | 1 | 2 | 3 | 4 | 5 |
| 8 | The design of this unit makes it easier to use new technologies. | 1 | 2 | 3 | 4 | 5 |
| 9 | Overall, I am satisfied with the design of this unit in supporting my work. | 1 | 2 | 3 | 4 | 5 |

**If you have additional comments regarding the design of the clinic (for example, how the Design can be improved, if at all), please write below or on the back.**

**Thank you.**

**Appendix 7-B:** Staff Survey in Turkish.

**Çocuk Birimi Personeli Memnuniyeti Anketi** **Anket Tarihi: / / 2018**

**yaş: _____** **Cinsiyet: □ Kadın □ Erkek**

**Görev: ……**

| | | Kesinlikle katılıyorum | katılıyorum | Katılmıyorum | Kesinlikle Katılmıyorum | Bilmiyorum |
|---|---|---|---|---|---|---|
| **HEMŞİRE İSTASYONU:** | | | | | | |
| **1** | İstasyon, personel için gizlilik duygusu sağlıyor. | **1** | **2** | **3** | **4** | **5** |
| **2** | İstasyon hastalarla özel konuşmaları kolaylaştırır. | **1** | **2** | **3** | **4** | **5** |
| **3** | İstasyonda çalışmak ve hareket etmek için yeterli alan vardır. | **1** | **2** | **3** | **4** | **5** |
| **4** | İstasyonda yeterli ışık vardır. | **1** | **2** | **3** | **4** | **5** |
| **5** | İstasyonun etrafındaki renkler çocuklar için uygundur. | **1** | **2** | **3** | **4** | **5** |
| **6** | İstasyonun etrafındaki renkler çalışmam için çok parlaktır. | **1** | **2** | **3** | **4** | **5** |
| **POLİKLİNİK:** | | | | | | |
| **1** | Klinik konumu / tasarımı gizlilik sağıyor. | **1** | **2** | **3** | **4** | **5** |
| **2** | Klinik hastalar ile kolay iletişim sağıyor. | **1** | **2** | **3** | **4** | **5** |
| **3** | Klinik çocuklar için güvenli ve uygundur. | **1** | **2** | **3** | **4** | **5** |
| **4** | Klinik çocuklar için uygun mobilyaları vardır. | **1** | **2** | **3** | **4** | **5** |
| **5** | Kliniğin yeterli ışığı vardır. | **1** | **2** | **3** | **4** | **5** |
| **6** | Klinikte kullanılan malzemeler çocuklar için güvenlidir. | **1** | **2** | **3** | **4** | **5** |
| **7** | Kliniğin hoş bir görünümü vardır. | **1** | **2** | **3** | **4** | **5** |
| **8** | Ünite ortamı, ekipmanı hızlı bir şekilde bulmamı sağlıyor. | **1** | **2** | **3** | **4** | **5** |
| **9** | Kliniğin etrafındaki renkler çocuklar için uygundur. | **1** | **2** | **3** | **4** | **5** |
| **10** | Kliniğin etrafındaki renkler çalışmam için çok parlaktır. | **1** | **2** | **3** | **4** | **5** |
| **HASTA ODALARI:** | | | | | | |
| **1** | Hasta odalarının içinde hareket etmek kolaydır. | **1** | **2** | **3** | **4** | **5** |
| **2** | Hasta odalar düzeni işimi yapmam için uygundur. | **1** | **2** | **3** | **4** | **5** |
| **3** | Gereken herhangi bir ekipman hasta odaya kolayca eklenebiliyor. | **1** | **2** | **3** | **4** | **5** |
| **4** | Hemşire istasyonu ve odalar arasında hızlı bir bağlantı vardır. | **1** | **2** | **3** | **4** | **5** |
| **5** | (Birden fazla hasta odası olmasi durumunda) Hastalarla özel iletişim ve kişisel mahremiyet sağlıyor. | **1** | **2** | **3** | **4** | **5** |

**Appendix 7-B:** (Sequel) Staff Survey in Turkish.

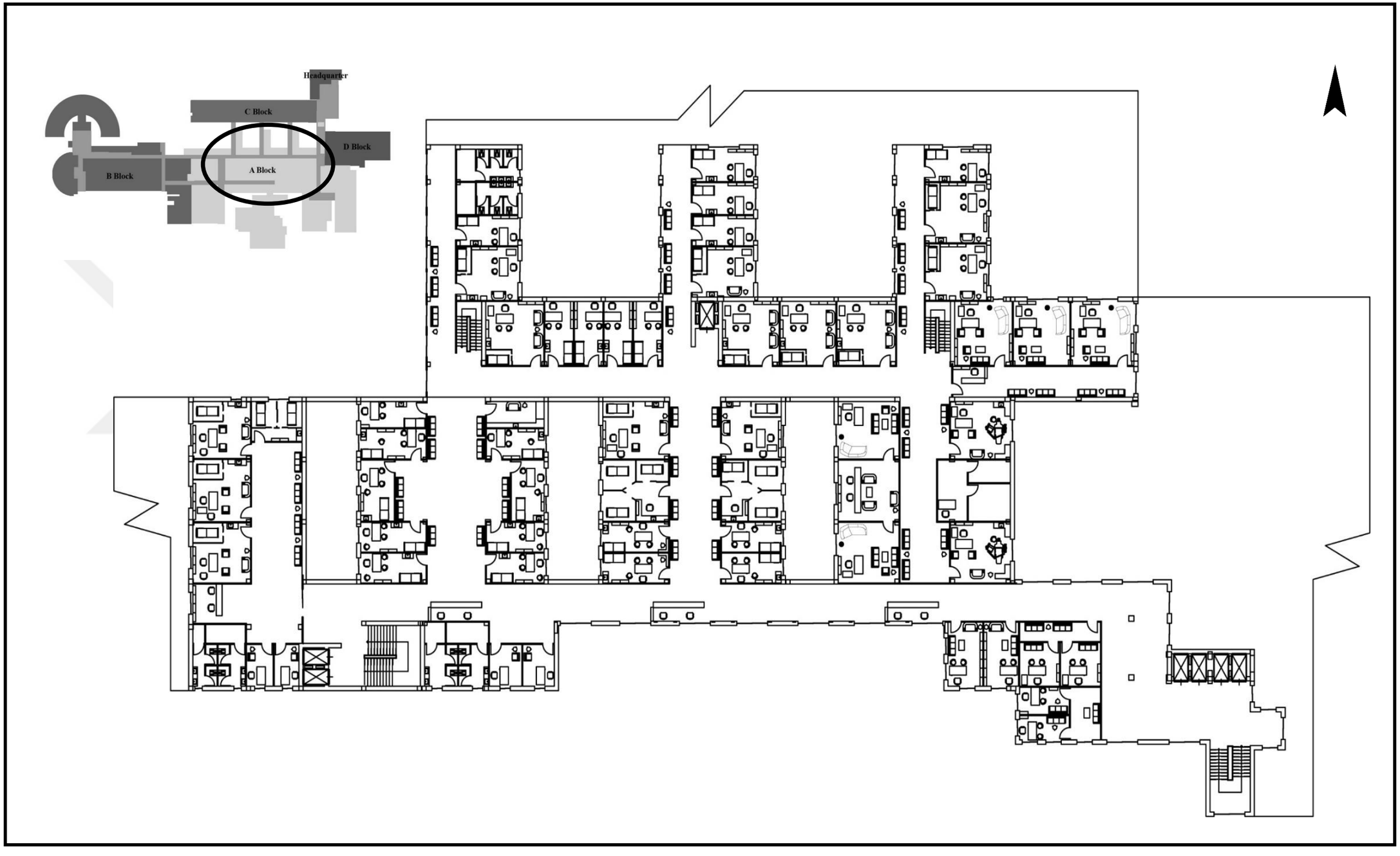
**Çocuk Birimi Personeli Memnuniyeti Anketi** **Anket Tarihi: / / 2018**

| **GENEL:** | | | | | | |
|---|---|---|---|---|---|---|
| **1** | Birimdeki gürültü seviyesi hastalarla iletişimi engellemiyor. | **1** | **2** | **3** | **4** | **5** |
| **2** | Birim tasarımı hoş bir görünüme sahiptir. | **1** | **2** | **3** | **4** | **5** |
| **3** | Doğal ışık ünitede mevcuttur. | **1** | **2** | **3** | **4** | **5** |
| **4** | Birimde yapay ışık yeterlidir. | **1** | **2** | **3** | **4** | **5** |
| **5** | Ünitenin kat planı, personelin hızlı ve kolay hareket etmesini kolaylaştırıyor. | **1** | **2** | **3** | **4** | **5** |
| **6** | Hasta ziyaretinin çeşitli aşamalarında (check-in, bekleme, muayene odası vb.) Hastaları barındıracak yeterli alan mevcuttur. | **1** | **2** | **3** | **4** | **5** |
| **7** | Birimdeki hava taze ve temizdir. | **1** | **2** | **3** | **4** | **5** |
| **8** | Bu birimin tasarımı, yeni teknolojilerin kullanılmasını kolaylaştırmaktadır. | **1** | **2** | **3** | **4** | **5** |
| **9** | Genel olarak, bu birimin tasarımından memnunum, benim işimi kolaylaştırıyor. | **1** | **2** | **3** | **4** | **5** |

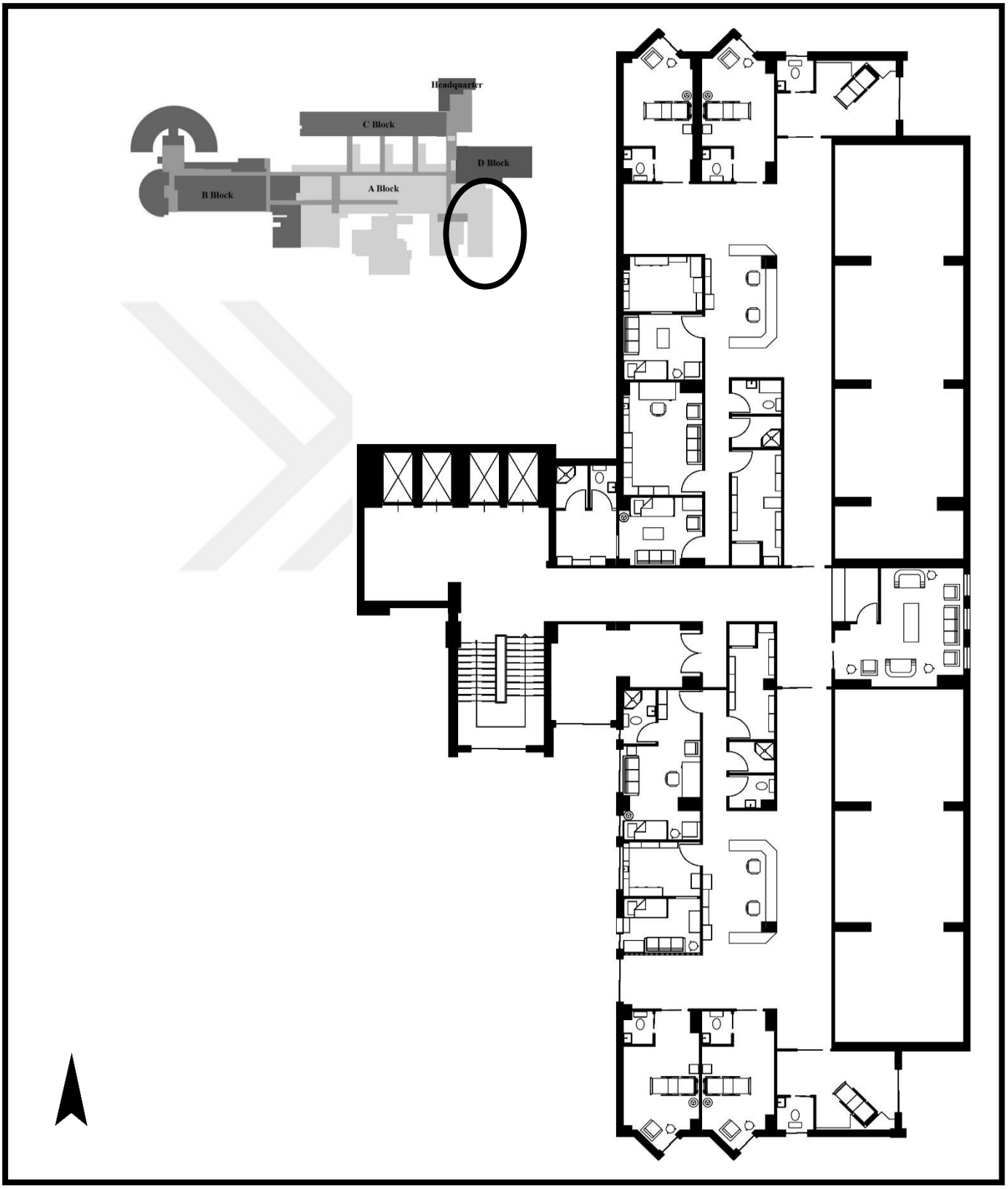
Kliniğin tasarımıyla ilgili ek yorumlarınız varsa (örneğin, **Tasarımın nasıl geliştirilebileceği**), lütfen aşağıya yazınız.

**Teşekkür ederim.**

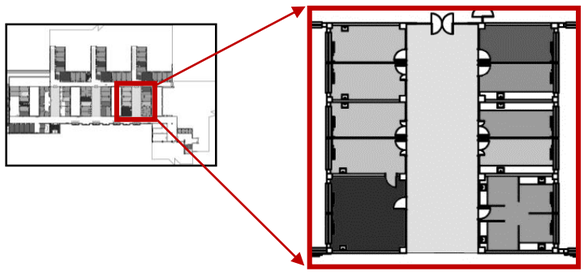
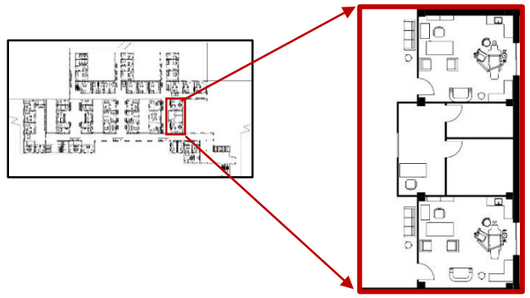
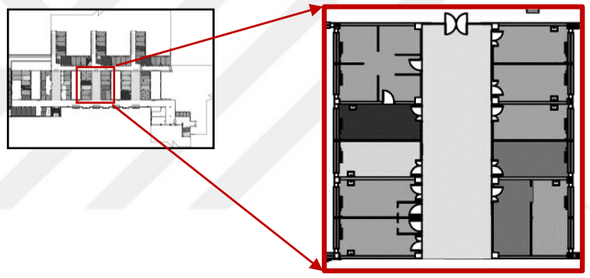
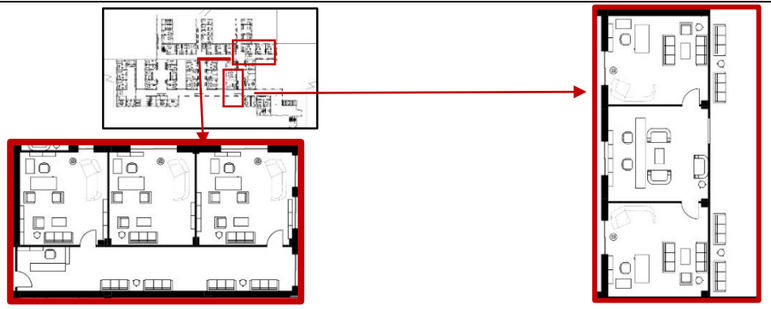
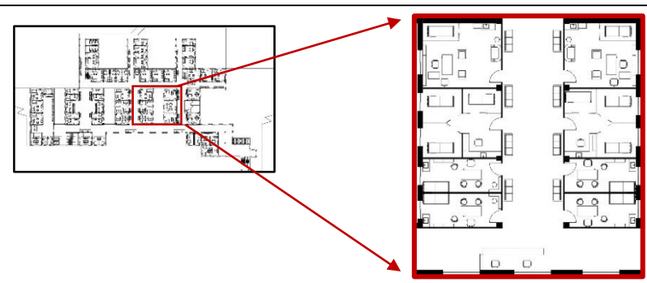
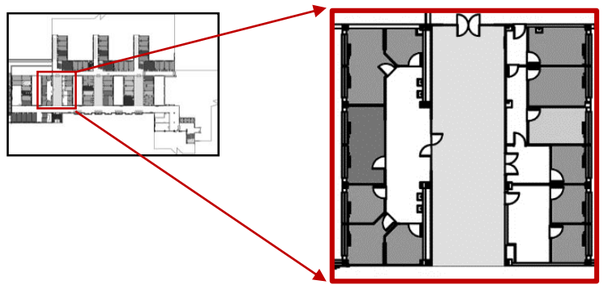
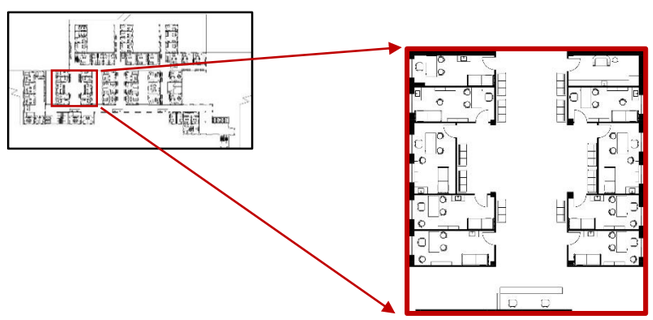
**Appendix 8:** Polyclinics New Proposal.



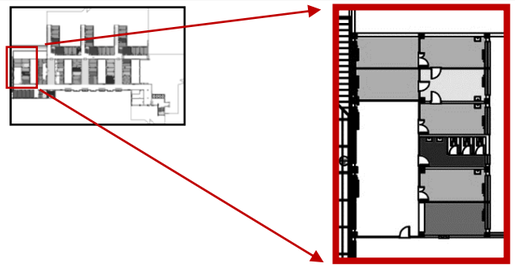
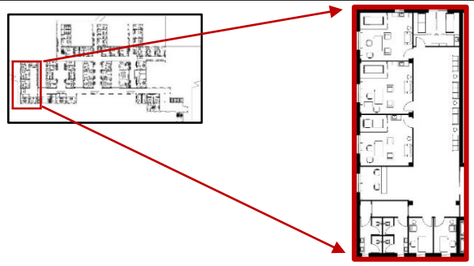
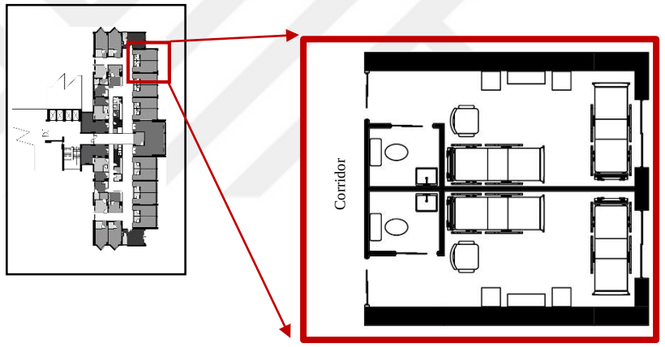
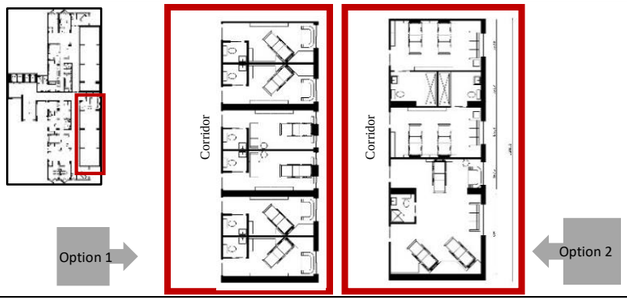
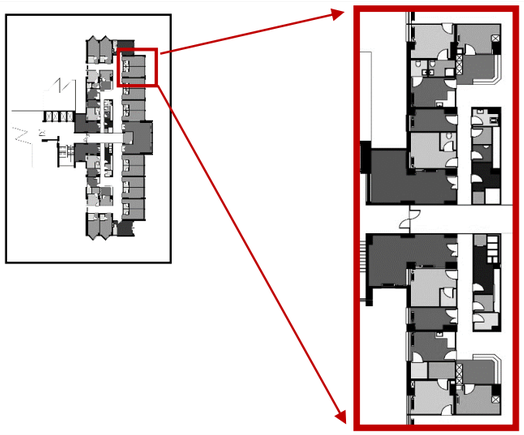
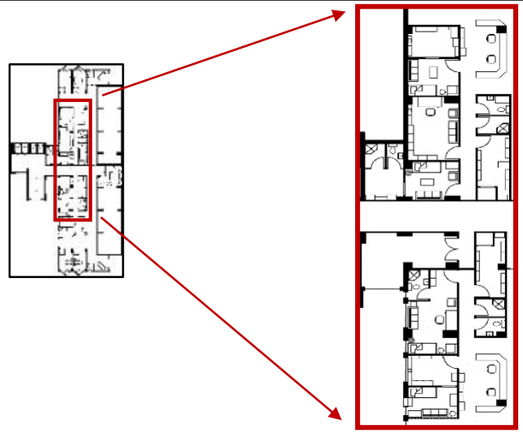
**Appendix 9:** Patients' Rooms Service Proposal.



**Appendix 10:** Comparison between the Existing design and the Author Proposal Design

| Existing layout plan | New layout plan | Space | |
|---|---|---|---|
| **Polyclinics** | | | |
|  |  | | Dental Polyclinic |
|  |  | Psyche Polyclinic | Nervous, Dermis and Psyche Polyclinics |
| |  | Nervous and Dermis Polyclinics | |
|  |  | | Nontransaction Polyclinics |

**Appendix 10:** (Sequel) Comparison between the Existing design and the Author Proposal Design

| Existing layout plan | New layout plan | Space |
|---|---|---|
| **Polyclinics** | | |
|  |  | Infectious Polyclinics |
| **Patients' Rooms Service** | | |
|   |   | Northern Wing Patient's Rooms |
| |   | Southern Wing Patient's Rooms |
|  |  | |

Patients' Rooms

# CURRICULUM VITAE

My name is Tasnim NAJI HATEM, I was born in Taiz in1991 and I am from Yemen. I have graduated from High School in 2008 from Jeddah, and, in 2009 started to study Interior Architecture Department at the University of Science and Technology Sana'a, where I got my Bachelor degree in 2014. After that, in the same year I started working as an assistant for Special Needs student of Interior Design Department in Azal University of Human Development. In 2015 I won a scholarship from YTB within the Turkey Scholarship program, to pursue my Master Degree in Karadeniz Technical University (KTÜ) Then, started with studying the Turkish language for one year, thereafter, in 2016 I began taking the courses under The Graduate School of Natural and Applied Sciences Architecture Graduate Program in KTÜ. I also speak English, Turkish and Arabic as my mother tongue.