DESIGN EVOLUTION OF HEALTHCARE BUILDINGS: CITY HOSPITALS AS A NEW BUILDING TYPOLOGY IN TURKEY

A THESIS SUBMITTED TO
THE GRADUATE SCHOOL OF NATURAL AND APPLIED SCIENCES
OF
MIDDLE EAST TECHNICAL UNIVERSITY

BY

SELİN NEVRİM

IN PARTIAL FULFILLMENT OF THE REQUIREMENTS
FOR
THE DEGREE OF MASTER OF ARCHITECTURE
IN
ARCHITECTURE

JANUARY 2020

Approval of the thesis:

DESIGN EVOLUTION OF HEALTHCARE BUILDINGS: CITY HOSPITALS AS A NEW BUILDING TYPOLOGY IN TURKEY

submitted by **SELİN NEVRİM** in partial fulfillment of the requirements for the degree of **Master of Science** i**n Architecture, Middle East Technical University** by,

Prof. Dr. Halil Kalıpçılar
Dean, Graduate School of **Natural and Applied Sciences** _____

Prof. Dr. F. Cânâ Bilsel
Head of the Department, **Architecture** _____

Prof. Dr. Celâl Abdi Güzer
Supervisor, **Architecture, METU** _____

Examining Committee Members:

Prof. Dr. F. Cânâ Bilsel
Architecture, METU _____

Prof. Dr. Celâl Abdi Güzer
Architecture, METU _____

Assoc. Prof. Dr. Lale Özgenel
Architecture, METU _____

Assoc. Prof. Dr. Mehmet Halis Günel
Architecture, METU _____

Assoc. Prof. Dr. Adnan Aksu
Architecture, Gazi University _____

Date: 30.01.2020

I hereby declare that all information in this document has been obtained and presented in accordance with academic rules and ethical conduct. I also declare that, as required by these rules and conduct, I have fully cited and referenced all material and results that are not original to this work.

Name, Last name : Selin Nevrim

Signature :

ABSTRACT

DESIGN EVOLUTION OF HEALTHCARE BUILDINGS: CITY HOSPITALS AS A NEW BUILDING TYPOLOGY IN TURKEY

Nevrim, Selin
Master of Architecture, Architecture
Supervisor: Prof. Dr. Celâl Abdi Güzer

January 2020, 182 pages

After the year 2014, a new and alternative model of healthcare services had been introduced to reorganize the contribution of the private sector on healthcare investments in Turkey. The essence of this new model was creating healthcare centers established in various provinces under the title of the "city hospital". City Hospitals have radical differences when compared with traditional health care buildings. Furthermore, how the projects have been achieved and the investment model have not previously been implemented in Turkey. Differences in scale caused by the increase in bed and patient capacities inevitably reflect the physical environment effects of buildings not only on the architectural scale but also on the urban scale. Architectural forms cannot evolve independently of their context. In this study, healthcare buildings constructed in the period included city hospitals and the period before, are approached with a historical perspective, the transformation of these buildings' typologies and the factors which took an important role in the architectural design of healthcare structures are searched. The study aims to reveal the architectural dissimilarities between the other hospitals and the city hospitals, to search the urban impact of the city hospitals and try to describe the investment model of these hospitals.

Keywords: City hospital, Hospital, Healthcare building, Design evolution

ÖZ

SAĞLIK YAPILARININ TASARIM EVRİMİ: TÜRKİYE'DE YENİ BİR BİNA TİPOLOJİSİ OLARAK ŞEHİR HASTANELERİ

Nevrim, Selin
Yüksek Lisans, Mimarlık
Tez Yöneticisi: Prof. Dr. Celâl Abdi Güzer

Ocak 2020, 182 sayfa

2014 yılında, özel sektörün Türkiye'deki sağlık yatırımlarına katkısını yeniden düzenlemek için yeni ve alternatif bir sağlık hizmeti modeli ortaya çıkmıştır. Bu modelin özü, çeşitli illerde "Şehir Hastanesi" adı ile kurulan sağlık merkezlerini oluşturmaktır. Şehir Hastaneleri, geleneksel sağlık binalarına kıyasla radikal farklılıklar göstermektedir. Projelerin gerçekleştirilme şekli ile yatırım modeli hastane projeleri için Türkiye'de daha önce uygulanmamıştır. Yatak ve hasta kapasitelerindeki artışın neden olduğu ölçek değişimi, kaçınılmaz olarak, binaların fiziki ortam etkilerini sadece mimari ölçekte değil, aynı zamanda kentsel ölçekte de yansıtmaktadır. Mimari, içinde bulunduğu bağlamdan bağımsız bir biçimde evrilememektedir. Bu çalışmada, Şehir hastanelerini kapsayan dönem ve öncesindeki dönemde yapılan sağlık yapıları, tarihsel bir bakış açısıyla ele alınmış, bu yapıların mimari tasarımlarında gerçekleşen değişimler ve yapıların tasarımlarında rol oynayan faktörler araştırılmıştır. Çalışmanın amacı; şehir hastaneleri ile diğer hastaneler arasındaki mimari tasarım farklılıklarını ortaya koymak, bu hastanelerin kentsel etkisini araştırmak ve yatırım modelini tanımlamaya çalışmaktır.

Anahtar Kelimeler: Şehir hastanesi, Hastane, Sağlık yapıları, Tasarım evrimi

to Prof. Dr. Celâl Abdi GÜZER

ACKNOWLEDGEMENTS

I would like to express my deepest gratitude to my supervisor Prof. Dr. Celâl Abdi Güzer for his never-ending support and encouragement since the beginning of my academic life. He was not only an advisor but also an important supporter. He always believed me even when I did not find the force.

My adventure had seen bad days and good days and mostly hard days. I could not have completed this dissertation without the insights and helps of my family, some friends, and colleagues.

A heartfelt thank you to my dear, lovely friends Ayça Nilüfer Çalıkuşu and Nazelin Pişkin. I feel always lucky to have them and thankful for all the help and support.

I would like to express my heartfelt gratitude to my mother Serpil Nevrim, my father Hakkı Nevrim, my sister Pelin Oğuzhan and her husband Fatih Oğuzhan who are always with me with all their love and support. I would like to express my deepest heartfelt gratitude to my cute, sweet, handsome nephews; Orhan Oğuzhan and Hakkı Oğuzhan who let me breathe in this process,

I would like to thank, my luck Vahap Fidan, which I came across at the end of the process, but on time, and I know that he did his best to support me with all his positive energy and patience.

I would like to thank my colleagues; Bahar Şanlı, A. Seval Yılmaz, Esra Özdüzgün, Gülcan Burhan, Sema Çavdar and Ümmihan Ayaz Calap, Ayfer Kavak and İlkay Cankurtaran for their collaborative approach, sensibility, and support.

I would like to thank my aunt Sema Şenay, who has always kept her love and support and thank my deceased uncle Erdal Kulahçıoğlu, who could not write, but read a lot and inspire me to write and unfortunately unaware of it.

I would like to thank Seher Çaylan and Zeynep Sezer who are not only a friend but also like a member of my family, for their love and support.

I would like to express my gratitude to Mithat Özen, my primary school teacher for his trust and Mustafa Yılmaz, who always supports my academic process and always advises me to continue.

I would like to thank Yalçın Esen and Tolga Cengiz, who share my joy and sadness and always support my academic process.

I am also deeply grateful to the examining committee members; Prof. Dr. F. Cânâ Bilsel, Assoc. Prof. Dr. Lale Özgenel, Assoc. Prof. Dr. Mehmet Halis Günel and Assoc. Prof Dr. Adnan Aksu for their kindly approach and wonderful comments and suggestions.

I would like to thank Prof. Dr. Şebnem Yücel and Associate Prof. Dr. Tuğçe Kazanasmaz who has supported me since the beginning of this adventure.

I would also like to thank Prof. Dr. Güven Arif Sargın, Prof. Dr. Jale Erzen, Prof. Dr. Mualla Erkılıç, and Prof. Dr. İnci Basa, who I love to attend their classes, for their precious contribution to me.

Finally, I would like to express my gratitude to every person whose name is not included here and does not have any contribution to the thesis but caused me to start the process and write this thesis.

TABLE OF CONTENTS

LIST OF TABLES

TABLES

LIST OF FIGURES

FIGURES

CHAPTER 1

INTRODUCTION

1.1 Problem Definition

After the year 2017 the new hospitals named “city hospitals” in Turkey started to take their place in city centers or peripheries with their high bed capacities and inevitably huge masses. These buildings are separated from other state health care buildings not only by their bed capacity and size but also by their investment model. These buildings’ typologies, which are presented with the contribution of the private sector to the health care service, are made with the model called the public-private partnership model as the investment model. These enormous healthcare structures, which have never been designed before in Turkey, have included many diagnostic and treatment units in one and a large center while adding a new terminology in healthcare buildings in Turkey. These hospitals are large-scale structures due to high bed capacities. In addition to the urban impact of scale and possible problems in itself that arise from the typology, these hospitals are implemented with a different investment model, the public-private partnership, which adds another unknown and untested input to other possible problems. Large-scale structures have an urban effect regardless of their content. It was started to be discussed in the 1940s, the hospital structures were causing problems in itself as the scale grew, it was not found sustainable as a result of further researches.

1.2 Aim of the Study

In order to put forward the city hospitals that arises in Turkey as a new building typology, the transformation of hospital types in Turkey should be examined. While examining the transformation of hospital types, it is necessary to reveal the

typological development and transformation of the healthcare structures from the past until the beginning of the 21st century when city hospitals were built and understand the approaches to health concept and patient from a historical perspective. The aim of this study is to understand the transformation of healthcare buildings with their contextual frames, define the investment model of the city hospitals while revealing the architectural differences of these hospitals from other hospitals. And based on the large scale of city hospitals, it is aimed to search the urban impact of these hospitals. In addition, while revealing the process, features, advantages and disadvantages of the investment model in the study, it is aimed to reveal whether this typology has a parallel design approach for its contemporaries' design approach or not.

1.3 Limitation of the Study

Due to spatial reflections of the occurrence of common concepts and their cause and effect relationships to healthcare buildings were examined in the study, the study consists of the pioneer or the most reflective architectural products. The transformation of healthcare structures in Turkey was evaluated on health policy and health reforms. There are two types of city hospitals in Turkey. One of them is the hospitals built with the public-private partnership model and the other is built as state hospitals. The city hospitals mentioned in this study include the city hospitals built with the public-private partnership investment model. Although there are small-scale hospitals such as psychiatry and rehabilitation hospitals on the campuses of some of the city hospitals, these hospitals are not mentioned within the scope of this study. Planning data obtained from the archive of the Ministry of Health was used in the calculations of the density of people and vehicles for city hospitals. The actual data could not be accessed from the hospitals. Since the city hospitals were very new at the time of this study, there has not been enough time for the results to be experienced yet. For this reason, the thesis tries to reveal the main spatial and operational features that distinguish the city hospitals from the hospitals obtained by the classical method.

1.4 Methodology

The provision of health services has found spatial responses (mental health treatment, improvement in war wounds or shelter of poor people, etc.) to solve the problems needed, and these spatial reflections have also varied between regions according to the specific circumstances. The architecture of the healthcare structures is affected and continues to be affected by the changes in the need and the situation of the medical approach brought to the fore. But what is aimed and what was the background situation are the main question as a starting point of this study for the city hospitals.

As a great source of information for comprehensive search written documents such as books, articles, thesis, newspapers, regulations in medical and legislation documents, governmental reports, archives, reports of international organizations and also interviews with architects, videotapes of some panels are gathered. This information was classified together with the structure of the thesis. Since it was a very new subject, it was seen that a few academic studies had been done in the related architectural field.

In this study, the factors affecting the emergence of form typologies investigated together with a historical evolution process for healthcare buildings. The study consists of five chapters. The first part is the introduction part and includes the definition of the problem, the aim of the study, limitation of the study and the method. The second chapter tried to reveal the historical evolution of hospitals by investigating the spatial reflections of scientific, technological and medical and economic developments in the historical process. Economical decisions, technological developments, industrialization, urbanization, and changing medical approaches were introduced which triggers the new architectural typologies and design approaches throughout the main historical events. In the third chapter, the architectural reflections were searched within the framework of Turkey's economic and healthcare policies on healthcare buildings. In the fourth chapter city hospitals were discussed for their distinguishing architectural features and investment model.

Selected examples were introduced with their lay-outs, numeric information and architectural specifications. Chapter five is the conclusion and discussion section. In this chapter, the contemporary common concepts in the world and the city hospitals are discussed together with design approach and economic concepts.

CHAPTER 2

ARCHITECTURAL TRANSFORMATION OF HEALTHCARE BUILDINGS

2.1 Introduction

Public health issues in a broad sense are defined as a systematized struggle to enhance the general conditions of an individual or overall population. The health-related procedures aim procedures is to keep people away from sickness and heal the diagnosed illness as quickly as possible throughout people's life span. Thus, every aspect including the design and establishment of the hospital, medical institutes and related places must serve to this universal aim.

Explicitly, health-based activities can be defined as a cooperative and combined notion of the administration and society itself. These activities focused on the protection and endorsing healthy conditions of the entire population. Therefore, public health is mostly defined as the collective type of techniques and science of avoiding illnesses and extending human life. The physical health status of the individuals is endorsed and functional effectiveness is achieved through the controlled public efforts to keep the environment clean and hygienic. Thus the removal of public based infections and educating the people relied on the philosophies of individual sanitation is vital for the overall health status of the entire community. In this context, the association of the medical staff such as doctors and nurses works intending to achieve the quick diagnosis and precautionary action against the sicknesses. Therefore, the signs of progress have to be concerned and handled as a social aspect which all persons inside the society must access an average level of health services (Baggot, 2000).

The evolution of healthcare buildings' design through the world's history started with the adaptation of the other buildings' forms usually as an annex to them and after, search for new forms has begun. This study examines this process under 2 main headings. These are:

- Adaptation of other buildings' forms,
- Modern hospital.

Due to the modern era continues, different design approaches for healthcare buildings are placed under the title of the modern hospital.

2.2 Adaptation of Other Buildings' Forms Introduction

The definition of the hospital can be done as a set of rooms or structures precisely built and used for the examination and sustained cure of diseases. The roots of the words hospital, hotel, spatial and hospice are entirely originated from the *hospitium*, which is a Latin initiated word. *Hospitium* denotes a room or location of entertaining for foreigners, accommodation, a pension or a safe place for a guest (Lewis and Short 1958).

As the Christian culture started using the Latin terms in later times, the word of *hospitia* was frequently used to describe the monastery buildings in which travelers are accommodated inside the building. Currently, the term of hospice is generally utilized as a place or resting location for the fatally sick people. On the other hand, the word hotel is a French originated word which is a precursor of the current usage referring to a place for the housing of guests with payment. The term hotel has no relation to sickness currently (Aitken, Fuller, Johnson, 1984).

The progression of the hospital structures in an architectural wise can be followed back to its primary use in the antique Mesopotamian civilizations. The estimated time zone for its initial usage is around the end of 2000 B.C and almost to the late middle ages. The organized health care buildings and activities were seen as prompt

as the fifth century B.C in India. The health care activities and religion functions were tightly connected. Thus as Buddhism is spread towards the East of Asia, the healing buildings were seen in Far East areas such as Sri Lanka and China. On the western side of the world in Greece area, the modern type of hospitals was popped up through the fourth century B.C. In the Greco-Roman time, the origins of rational and scientific medicine were developed. However, as the Hippocratic cures were applied in houses, the temples of Asclepios have used for healing techniques such as incubation sleep and religious-based treatment (Cilliers and Retief, 2002).

2.2.1 Ancient Greek and Rome

In the ancient Greeks, healthcare was handled in its entirety. Structures for treatment are more comparable to wellness centers of current understanding. In Ancient Greece, Asclepios was called the god of health and medicine. Asclepions were the healing centers dedicated to Asclepios established in ancient Greece, for the treatment of diseases, and medical education as well. These places were founded as healthcare complexes with various entertainments such as the theater, walking areas, etc. and planned together with the temples. In this era, Greek medicals presumed that music, poetry, arts, and good cuisine must be included in the natural and appropriate healthcare treatment (Valins and Salter, 1996).

The campus-like areas that were considered to be the initial samples of medical schools were established by the Greeks on the island of Cos and Cnidos (in Datça in Turkey now). Hippocrates (BC. 460-375) as a medical student at the Cos school, for the first time until then, had the natural causes of diseases and the famous Hippocratic Oath. Until the Hippocrates, diseases were deliberated as the punishment of God was a dominant belief. Because of that, Hippocrates significantly contributed to contemporary medicine practices by stating that medical treatments had to rely on detailed observation, reasoning, and experience so that well-discussed diagnosis, prognosis, and treatment could be established. Apparently, after Hippocrates there was no longer a mixture of superstition, magic, religious views

and empirical treatments inspected by priest-physicians, and medicine became a real science through accumulating experience (Diamantis, 2008). In ancient Greek, medical practices before Hippocrates was progressed under the influence of mythology, religion, and philosophy. However, after Hippocrates had performed a novel perspective for medical aspects, it became a secular state by getting rid of the influence of these myths (Doğan, 2013). Before Hippocrates, blood draw and laxatives were applied in specifically established temples and non-severe patients were treated in these places. Hippocrates wrote the oath of physicians which is currently employed and introduced ethical rules that marked the history of medicine. Although in this period external factors were known to be effective for sickness, body organisms and blood parameters were examined for treatment. While Roman medicine was used in a very primitive way, it was developed with the arrival of Greek physicians (Güntöre, 2005).

Next, after Hippocrates' empiricism school was established by Philunus in Cos, the development of medical practices was affected by philosophy. Medicine interrelate philosophy directly with Galen who was educated in the Pergamon (Bergama in Turkey) Asclepion in the Roman era. According to Galen clinical medicine was based on observation and experience (Nutton, 2005). An integrated and comprehensive system that offers a complete medical philosophy dominated medicine throughout the middle ages and until the beginning of the modern era (Loudon, 2002).

Between 500 B.C and 475, the Romans had acquired the health culture in their places, and health care was provided in the community as in the Greeks. Since Roman power was taken from healthy slaves, gladiators and soldiers, there were institutionalized treatment centers for them. Roman hospitals were based on a military regime that had a strict structure. The origins of the first institutionalized health centers are based on these Roma military organizations. Primitive health care associated with the temples of Asclepios is considered by many to have been the forerunners of hospitals as we know them today (Thompson and Goldin, 1975).

The Asclepion which is a cult revolved around temple complexes, usually built at scenic and wooded sites with an abundant water supply. Asclepion was later built all over the Roman Empire and flourished up to 391 when as pagan temples were officially closed by the Christian emperor Theodosius I. Their structure was fairly standardized, usually consisting of large rooms, closed on three sides, orientated to the sun and opening to the south with a row of pillars in the form of a Greek stoa (portico). Immense Asclepion, like that at Pergamon, encompassed treatment halls, libraries, a stadium, baths, and latrines. These temples of Asclepios did, though, not have facilities for the long-term treatment of sick, and should rather be seen as the equivalent of modern-day hydropathical establishments. Patients normally entered the temple for incubation sleep in the stoa. Their dreams were then interpreted by priests, who also suggested therapy (Thompson and Goldin, 1975). Asclepion in Pergamon was constructed in a structure for worship and curing center during the Hellenistic era. In the architectural wise this site included widespread cleaning areas for the sick people and the enclosure was achieved using the model of Pantheon. In this structure, the half-circle arena and a round two-story curing area were located external place of the field as seen from Figure 2.1 (Akurgal, 1980).

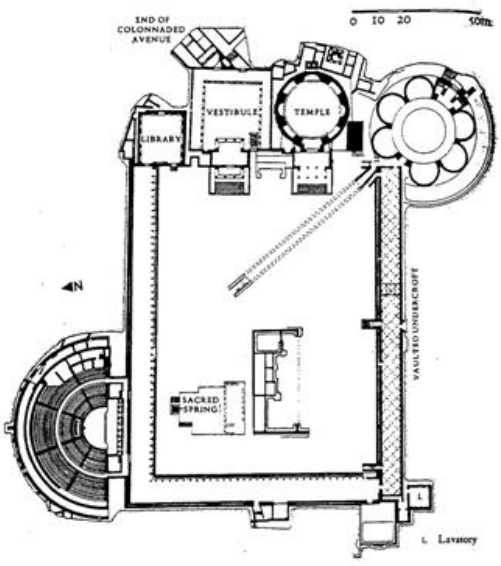


Figure 2.1 Asclepios Soter (Savior Asclepios), Pergamon

(Source: https://quadralectics.files.wordpress.com/2013/09/333.jpg, accessed on 30 October 2019)

Christian civilization turned these temples and religious-based places to the basis of the current hospital image. Hospices were originally constructed to protect pilgrims and messengers among distinct clergymen who were under the control of Christianity. These buildings then progressed into the hospitals as the modern time (Cilliers and Retief, 2002).

The construction of hospital buildings had appeared from the beginning of the fourth century AD. The eastern part of the Mediterranean region can be stated as the starting point of these construction activities. In this area, the concept of *valetudinarium* was introduced as a novel intelligence of civilization. These were used for sick people. These buildings then turned into the model of *xenodocheions* under monasteries which were institutions for the explorers, travelers, and poor people (Thompson and Goldin, 1975). It is an institution that was appended of the church and provincial examples were found in Byzantium (Risse, 1999). It can be seen from Figure 2.2 and 2.3 that two parallel structures were located perpendicular to the central construction.

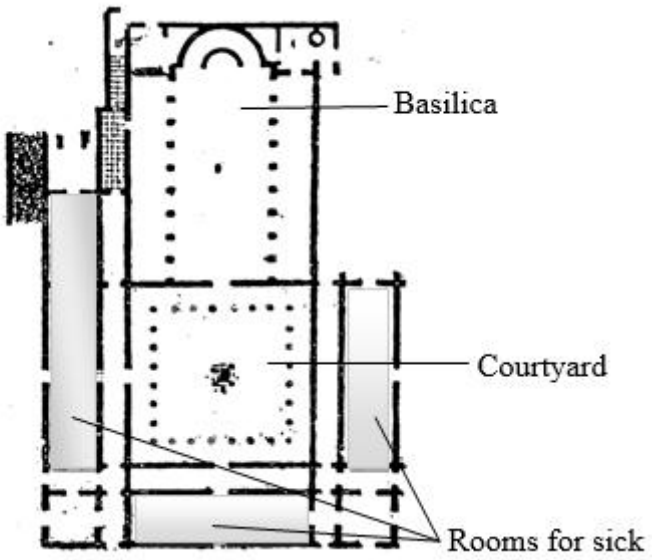


Figure 2.2 Xeonodochium, Pammachius, Porto

(Source: https://quadralectics.files.wordpress.com/2013/09/334.jpg, accessed on 30 October 2019)

Figure 2.3 Xenodochium, Emerita Augusta, Spain

(Source: https://www.artstation.com/artwork/nKEO6, accessed on 30 October 2019)

In Christian world St. Basil of Caesarea in Cappadoccia (Kapadokya in Turkey) was the first person who established a hospital included many wards and also a leper part in it in 369. It was for disabled and sick and also had parts for medical staff, travelers and poor. St Ephraim founded a 300 bedded hospital in Edessa (Şanlıurfa in Turkey) in 375 after an epidemic. These hospitals were based on monasteries and in following centuries a lot of hospitals were founded in Rome, in Constantinople, and Jerusalem by wealthy philanthropic people especially women (Aitken et al, 1984:9-11; Allan 1990:452-454).

2.2.2 Islamic Bimaristans

The hospital design and the introduction of the health care system in the Islamic world are started by the Abbasid caliphate of Harun el-Rashid (786-809). The initial Islamic hospital is converted from a preceding Christian hospital. The motivation for this healthcare building was a former complex which had been founded by East Syrian Christians in Jundi-Shapur in Khuzistan by the Sassanian period (224-651). In this construction, the concept of Islamic civilization is reflected by building the structure as a hospital and medical school together functioning. The critical breakthrough for the Islamic health care revolution was the transferring of knowledge and practice from other parts of the world. For instance, medical

knowledge of Alexandria along with other Greek sciences was moved to East throughout the sixth century by the movement of Eastern Christians into Syria (Dols, 1987).

In the Islamic world, there have been great developments in the field of health compared to medieval Europe. Meningitis, which differentiates infectious brain inflammation from other acute infections, could be diagnosed and treated. For the first time, the most important development in this field was made by Avicenna (İbn-i Sina) (Goichon, 2000) who wrote the book Canon of Medicine which was the most important book of the medical faculties in Europe especially between 13th and 17th century (Najmabadi, 1963).

Islamic hospitals which are called bimaristans were built as the beginning of the middle ages. The primary suitbale Bimaristan in Islam history was constructed in Damascus, Syria by al-Walid bin Abd el-Malik in 707. The main target of this construction was handling sick people and healing the patients infected from chronic diseases such as lepers or disabled people such as blind people, etc. The leprosy patients cared without any cost demanding and charities were giving money to survive their life. In these bimaristans, more than one physician was treating the patients (Noushirawy, 2004).

The bimaristan construction was handled considering two major aspects. Primarily, the treatment of the patients is followed by the physician consistent with the modernized methods of medical healing. Secondly, bimaristans were utilized for practicing medicine training to the recently graduated physicians in charge to care for the patients effectively. Therefore, the bimaristans in Islamic history tracked all the practical procedures that satisfied both of these aims together (Khayrallah, 1946). The preferred architecture for bimaristan is complex with the medical training area called madrasa.

The architectural decision behind the location of bimaristan was choosing the best place to improve the health conditions of the patients. Thus bimaristans were generally built over hills or near the rivers. For instance, the Al-Adhudi’s Bimaristan

in Baghdad by the River Dejlah (Tigris) is a sample of this structure in which the river water has flowed through the Bimaristan' s yard and wards, then the sewage was poured back into the river Dejlah. In the Islamic culture, since the location-based separation between men and women is important, the design of Islamic hospitals was founded on the requirement of dedicating parted wards for men and women. For that reason, the architectural plan of the bimaristan was divided into two units, one for males and the other for females. Thus each unit was independent and containing large halls for the patients (Al-Ghazal, 2007). In the design of hospitals, specialties of the diseases were considered as well. For instance, one hall was dedicated to internal diseases, an additional one was for immobilized patients such as trauma or fractures and another hall for transfer of patients and medical tools, finally a different hall for various types of diseases containing infectious diseases. In every hall, physicians, nurses and a chief doctor were serving the patients. Moreover, an adjoining apothecary was placed to the bimaristans with the purpose of distributing the drugs given by the physician's prescriptions (Ragab, 2015). The bimaristans in Islamic history can be categorized under the following specialties:

- Mental disease bimaristans,
- Leprosy bimaristans,
- Road bimaristans,
- Prison bimaristans,
- Mobile bimaristans (Al-Ghazal, 2007).

Throughout the fourth century, the growing figure of population and declining wealth of the eastern Roman Empire known as Byzantine Empire formed perfect circumstances for the aid organizations of the recently tolerated Christian societies and their missionary actions. Afterward, extensive communal activities were introduced and spread by the Byzantine Church in coordination with the administration for providing help to pilgrims, voyagers, widows, orphans, elder, sick and disabled people (Constantelos, 1968). The combination of this constructional

movement across Anatolia with the transfer of knowledge from Ancient Greek and Egyptian civilizations created the foundations of healthcare activities in Anatolia.

The Anatolian Seljuks constructed around twenty-five hospitals during their reign in various places of the Anatolia (Acıduman, 2010). These hospitals are:

- Amasya - Anber Bin Abdullah Hospital/Bimaristan, built-in 1222-1232
- Sivas, Divriği, Turan Melek Hospital, built-in 1228
- Sivas, Izzeddin Keykavus I. /Şifahiye Hospitals, built-in 1217
- Kayseri Gevher Nesibe Hospital/ Çifte Medrese, built-in 1205 - 1206

The view of Izzeddin Keykavus I Hospital and its site plan is given in Figure 2.4. The enclosed structure of the hospital can be observed and the heating of the building is provided with baths located close to the building (Çelik, 2017).

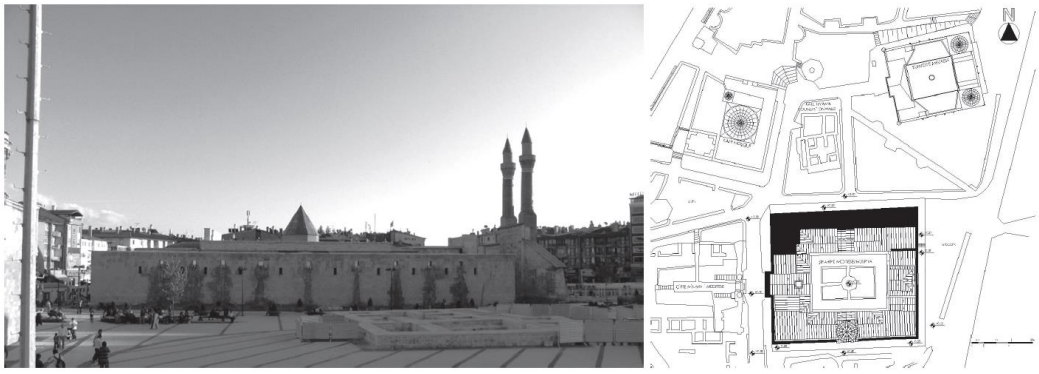


Figure 2.4 Sivas, Izzeddin Keykavus Hospital

(Dişli and Özcan, 2016)

In the design and construction of healthcare buildings in Anatolia, the hospital building and the training building called Madrasa were in most designs attached by a corridor. For instance, in Kayseri Gevher Nesibe Hospital, the madrasa in which medical education was given was named as *giyasiyye*. It was dedicated to the Seljuk sultan who ordered the construction. Then the healing and hospital part of the complex was called *şifaiye* which the medical students were practicing on their topics

(Yılmaz, 2013). The adjoining structure of the hospital and medical madrasa was built in a single-floor plan type with open courtyards and courtyards in four directions with porches. There were nine patient wards of equal size with a rectangular plan which were placed around the hall. That design was almost identical to the current layouts of the hospital design (Cantay, 1992). The hospital was constructed using stone-based material from the stereobate to the cone of the roof. It was built of 4 separate portions as the crown door, madrasa part (Giyassiye), hospital part (*şifaiye*) and the tomb (Tekiner, 2006).

The design principle of Kayseri Gevher Nesibe Hospital and medical madrasa were designed to serve an educational and practical treatment purpose together. Thus the cooperation of medical madrasa with the hospital can be stated as the initial samples of today's medical faculties in Turkey (Doğan, 2013). The adjoining constructional design of the hospital is given in Figure 2.5.

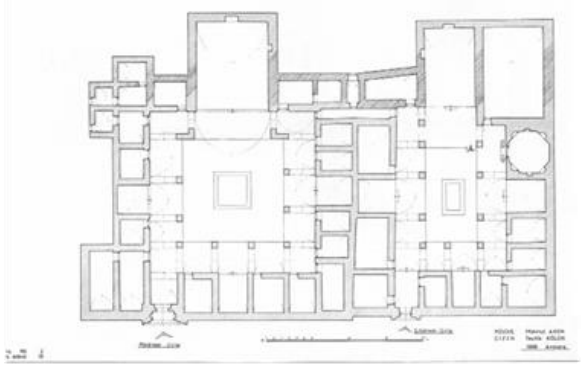


Figure 2.5 Plan of Gevher Nesibe Hospital, Kayseri

(Source: http://3.bp.blogspot.com/ accessed on 9 November 2019)

In the Islamic and Ottoman cultures, the hospitals have been called Bimaristan, Maristan, Darussihha, Darulâfiye, Me'menul-istirahe, Daru't-tibb, Darulmerza, Sifaiye, Sifahane, and Bimarhane (Cantay, 1992). The Islamic culture was mostly influenced by the Ancient Greek civilization in the fields of positive science. The golden age of Islamic philosophy between the 9th and 13th centuries was shaped according to the knowledge of science and philosophy. In the Ottoman era, the healthcare institutions and hospitals were frequently comprehended by donations and

of the society in which the Sultans were leading donors, the dignified families, high position government bureaucrats such as generals, politicians, etc. and the upper level of the society. This sort of tradition was pursued until the early 19th century, and then these foundations and institutes were transformed under state-control, and novel types of hospitals compliant to the modern medication notion in the west were initiated (Fişek, 1971).

The Ottoman Empire constructed dar al-shifas in various regions of its territory starting from its first capital city of Bursa. The dar al-shifa complexes which were built to treat sick people were the centers for medical training. One of the most important samples of the Ottoman dar-al shifas is the Süleymaniye Complex with health care, medical practicing, and science education services. It was constructed by Sinan the Architect and bestowed by Sultan Suleyman. The construction pursued between 1551 and 1557. The complex includes a mosque, madrasa, library, infant education places, baths, and imarets, fields for burial and commercial areas. Suleymaniye complex was known for its training and social based services more willingly than its spiritual characteristics. The Suleymaniye Dar al-shifa, which is a division of Suleymaniye Complex, conversely, appeared as a foundation for providing community-wide health care services and medical science training (Benli, 2016).

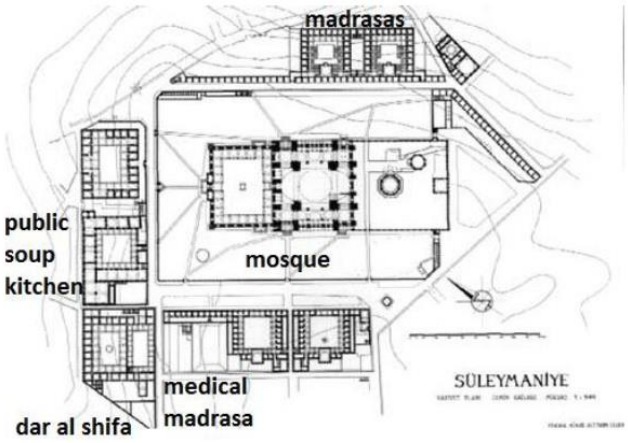


Figure 2.6 Ground Floor Plan, Suleymaniye Complex

(Benli, 2016)

The compact form of Suleymaniye Complex includes the patient wards, physician rooms, bathing area, bakery, and drug house independently. The medical madrasa building was positioned close to *darl-al shifa* for further training in a separate building from the hospital itself. This implies the significance of medical training and its planning in architectural wise through the Ottoman policy (Benli, 2016).

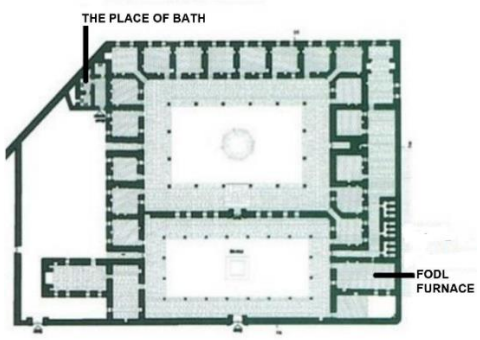


Figure 2.7 Bath and Fodl Furnace in Süleymaniye Complex

(Eyüpgiller and Özaltın, 2007)

The central plan scheme in the darussifas of the Ottoman period has found its application in itself and has had an improvement in itself. The facade was built with stone and brick rows starting from the early period examples, and the brick ornament was used in the wall texture, plaster ornament or even tile ornament was used in the spaces. Heating was provided by the furnaces in the spaces and the furnaces were the elements which were given importance (Terzioğlu, 1992).

2.2.3 Europe

People who wanted to be trained and study medicine in the ancient civilizations were educated in the local places of physicians and promoted from the experience of their teachers. On the other hand, the escalation in the figure of patients with the spread of diseases over time had led to the requirement of constructing novel structures in which patients could be kept together to provide medical education and patient care (Foucault, 1963).

Throughout the end of the Middle Ages around the tenth century, monastic sanatoriums sustained to increase, on the other hand, communal hospitals were functioning as well. The hospital construction was planned and financial resources were given by the city administrative, church and other private foundations. Thus most of these constructions were built with the structure of religion-based plans (Cilliers and Retief, 2002). After the development of structural and architectural techniques in the middle ages, healthcare complexes became more sophisticated and beneficial. Parallel to the prompt expansion of monasticism starting from the tenth century, the constructions were more dedicated to caring for the disadvantaged people. After that, in these complex places; guests, pilgrims, voyagers, and needy people were located. In the middle ages, a common caring approach developed into a portion of the public life for the monks and hermits (Thompson and Goldin, 1975).

Hôtel Dieu was one of the oldest examples of French hospitals built in the seventh century. France reorganized ancient hospice, the *Hôtel Dieu* in Paris in 1217 according to Jerusalem Hospital (Miller, 1978). The crowd in medieval hospitals in France were a fact that shared beds were used in hospitals. In the 1200s at Saint-Pol Hospital, there were only six nursing sisters for sixty sick in Northern France. Similarly, at the *Hôtel Dieu* in Paris, there were shared beds and were not a good heating system. Until later reforms, hospitals in medieval were like death corner (Miller, 1985).

The buildings that helped the sick, the poor as a shelter had different names before they took the name of the hospital in Europe. In the year 1200 Holy Spirit Hospital was founded in Rome. The overall shape of the complex was in the form of a Greek cross with one arm missing as seen in Figure 2.8.

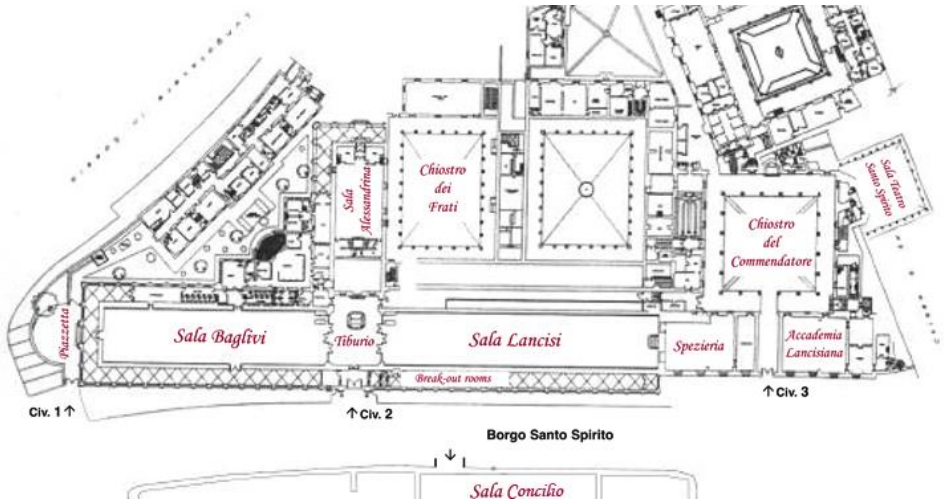


Figure 2.8 The Layout of Holy Spirit Hospital in Rome

(Source: http://www.abcvox.info/2016/03/24/ospedale-santo-spirito accessed on 30 October 2019)

The *Domus Dei*, God's House was the first hospital in England funded by bishop Peter De Rupibus in 1212. In 1247 Bethlem Royal Hospital was founded in London which was used for people with mental disorders (Valentinuzzi and Leder 2009).

The Renaissance era of the 15th and 16th centuries was the period for merging of treatment and medical observation. Throughout the Renaissance age, there had been excessive improvements in medical science such as anatomy and treatments. In the course of this time, medical training was given in numerous universities and private clinics were founded to treat the sick. This enhancement had great echoes on the construction techniques of the medical buildings and huge hospitals were built in Italy, Spain, and Germany (Wall, 2010). The cross formed hospital and health care center plans turned out to be a widely held architectonic tool with the Renaissance era. The cross-shaped design was selected for various reasons such as spiritual purposes, supporting air ventilation and easiness of supervising the patients (Thompson and Goldin, 1975). Thompson and Goldin mention about the cross shape as:

> The cross form was exploited for religious purposes or hopefully to assist ventilation. A third virtue of the form was discovered: ease of supervision. In a cross, looking goes both ways. If in a cross ward four

> times as many patients can look into the crossing to receive religious consolation from an altar there, four times as many patients can be watched from the crossing by the nursing staff. The cross form was a natural for prisons and insane asylums and was enthusiastically adopted in what was called panoptical institutions (Thompson and Goldin, 1975, p37).

Hôtel des Invalides in Paris can be denoted as a gigantic construction associated with the literature of hospital design. The original building of *Hôtel des Invalides* was constructed for accommodating the invalid armed forces in 1676. This enormous hospital complex includes 17 separate areas and was bounded via a moat. The building was able to care for up to 4000 patients simultaneously. In addition to the hospital building, the church is attached to the southern part of the hospital, which was followed by the conventional three partitions of the nave and a ceiling with nine arches. As seen in Figure 2.9. the construction involves a Greek cross with four separated chapels (Thompson and Goldin 1975).

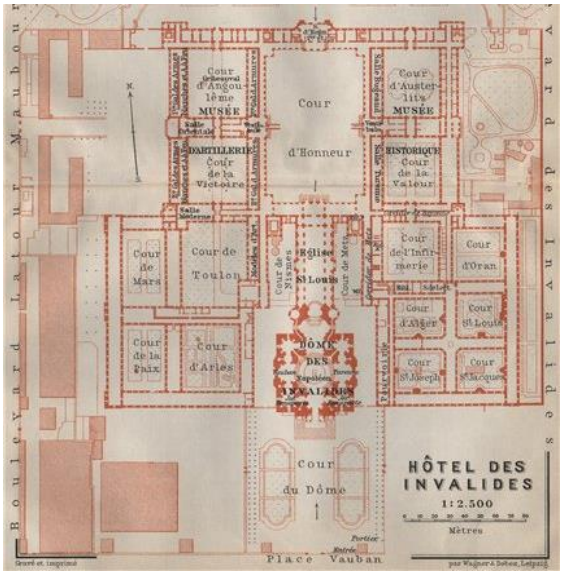


Figure 2.9 Layout of the Hôtel des Invalides

(Source: https://www.antiquemapsandprints.com/hotel-des-invalides, accessed on 5 November 2019)

Scientific research had accelerated and enormous advancement had been made in medicine and health care with growth on the number of physicians with the

Renaissance. Until the end of the 17th century, clinical studies were carried out on animals or the cadavers; however, it took so much time to fully understand and treat the diseases. The initial clinical study by the Dutch scientist Sylvius (1622-1675) was proposed by examination of the disease on the human body itself and carried out by paving the way for significant improvements in the field of anatomy (Nasuhioglu, 1974). This period is the first period when hospital structures started to institutionalize. Despite this, hospital-specific spatial features are not revealed. The places are constructed with schemes such as a cross plan and the hospital is more like an institution that undertakes care.

The hospitals are mostly utilized as shelters of sickness until the beginning of the industrial revolution. After the modernized techniques had been discovered and the novel methods of sickness cures were developed, the hospital constructions and structures had been turned into its current status. Thus, shelters caring for the sick that are mostly annex to religious structures have become spatial organizations where diseases are cured.

2.3 Modern Hospital

Starting from the beginning of the eighteenth century, professionalization in medical fields and health professions and specialties had started. Depended on rapid developments, the requirement to bind occupations with some regulations had emerged and organizational groups to regulate the health care sectors had popped up (Foucault, 2006).

Along with the changing and developing medical science, developments in technology and architecture were experienced in this period. Especially with the development of technology, the concept of urbanization emerged. The bourgeois class has been formed in society. Changes in both the social structure and technological developments have caused the population to increase in the cities. Along with the changes in the economic structure, some segments of society suffer

from epidemics and deaths due to the difficulty and poor quality of their living conditions. The number of patients in hospitals has increased due to these conditions and the necessity of physically changing hospitals has been discussed especially in the medical environment.

In this period when air pollution and water pollution increased the impact of ventilation and sanitization was first expressed by Doctor John Pringle who was a Scottish Physician and head of the Army Medical Service. Pringle formed the Miasma Theory which notices the importance of fresh air in 1752. It is accepted for historians of hospitals that were the beginning of the modern hospital (Gaudin, 2006; Thompson and Goldin, 1975). John Pringle noted in his book that:

> A corruption of the air, pent up and deprived of its elastic parts by the respiration of the multitude … and pestilential infection (was caused by) the poisonous effluvia of sores, mortifications, dysenteric and other putrid excrements…. It is common to look out for close and warm houses, and therefore to prefer a peasant's house to his barn; but experience has convinced us that air more than warmth is requisite (Pringle, 1810).

Understanding the effects of physical conditions on human health has led designers, managers and healthcare professionals to develop new design approaches for healthcare structures starting in the 18th century.

2.3.1 New Forms for Sanitation

Mortality rates in hospitals increased as the living conditions of society and sanitation conditions deteriorated in the big cities and their hospitals because of the urbanization and population growth caused by the economic transformation with the expanded industrial revolution. In France, crowded urban areas were created by industrialization, epidemics and contagious diseases were emerged in high-density urban regions (Weir, 1997). For *Hôtel Dieu,* in Paris, a city hospital with a large number of beds, French chemist Antoine Lavosier wrote the clearest explanation about the hospital conditions of that period in participation in a study for evaluating

the *Hôtel Dieu* in Paris. The study was directed by French surgeon Jacques Rene Tenon (1724-1816). Report mentioned about the crowd in hospital wards, its lack of space and lack of sanitary conditions and report concluded *Hôtel Dieu* needed to be reformed in a large new building on a larger site (Poirier, 2019).

After a fire in *Hôtel Dieu* in 1772, an architectural competition was promoted in 1774. In the projects proposed for this competition, doctors and scientists participated in the design process. Daisy plan form which can be called panopticon model draws attention in these competitive projects although the panopticon plan was introduced in 1791 by Jeremy Bentham after this competition. As seen in Figure 2.10 Antoine Petit Lavosier proposed a circular plan with radial wings. As seen in Figure 2.11 and 2.12 Bernard Poyet also proposed a similar layout for this hospital, so-called daisy plan. Surgeon Tenon and Poyet worked together and designed the proposal according to the principles of sanitation, ventilation, and separation for the new four-floor 5,200-bed hospital (Gaudin, 2006). Lavosier participated in the design of the hospital project as a chemist. In this period, as the purpose of the hospitals was to provide fresh air and ventilation, scientists related to this field played an active role in the projects. The competition had not concluded and *Hôtel Dieu* was not rebuilt until 1878 because of the French Revolution (Richardson, 1998).

Throughout the eighteenth century, the clinical and anatomical investigations had given accurate results to diagnose diseases. And towards the end of the century, it was seen that scientists unite at some point in medical subjects by making on-patient researches in hospitals (Casey, 1987). The medical buildings and clinics were renewed and the hospitals were employed literally and fully during the eighteenth century. In this period, it was seen that semi-specialization was established in various branch hospitals such as ear-nose-throat, gynecological diseases, mental health, fighting against epidemics, military-based hospital, etc. (Foucault, 1963).

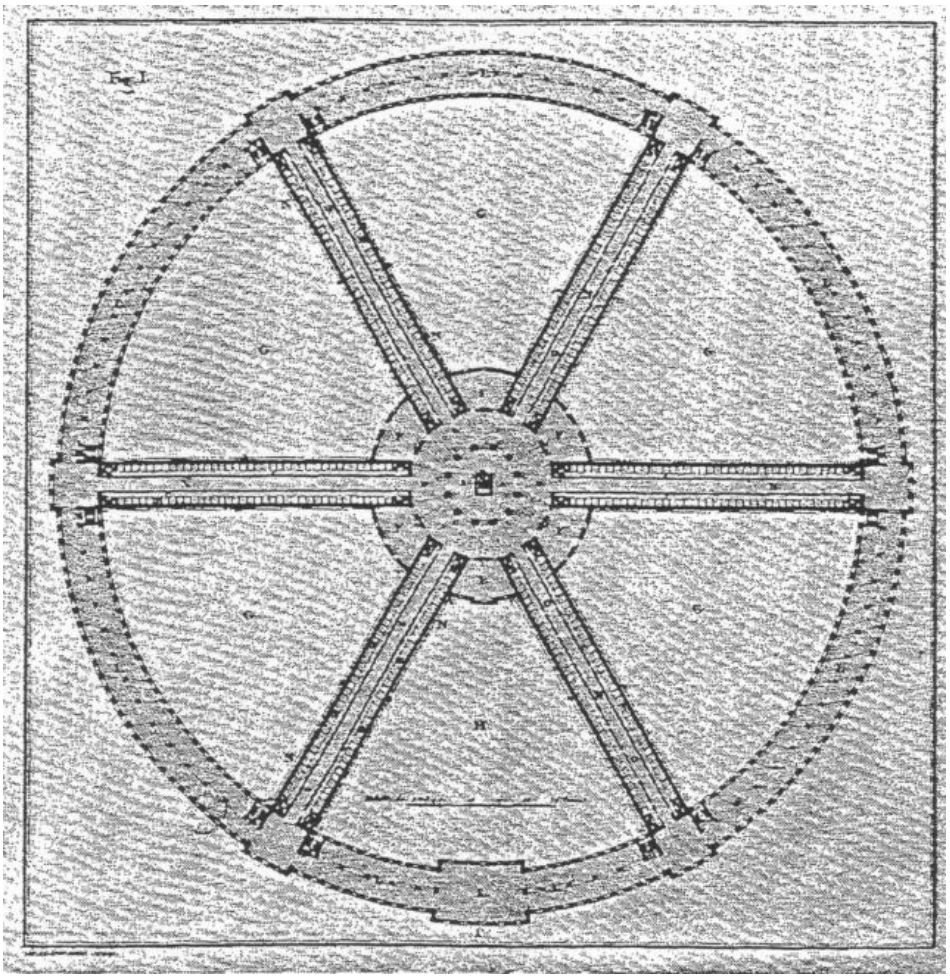


Figure 2.10 The project for a new *Hôtel Dieu* by Antoine Petit, 1774

(Source: https://quadralectics.wordpress.com/3-contemplation/3-5-hospitals, accessed on 15 October 2019)

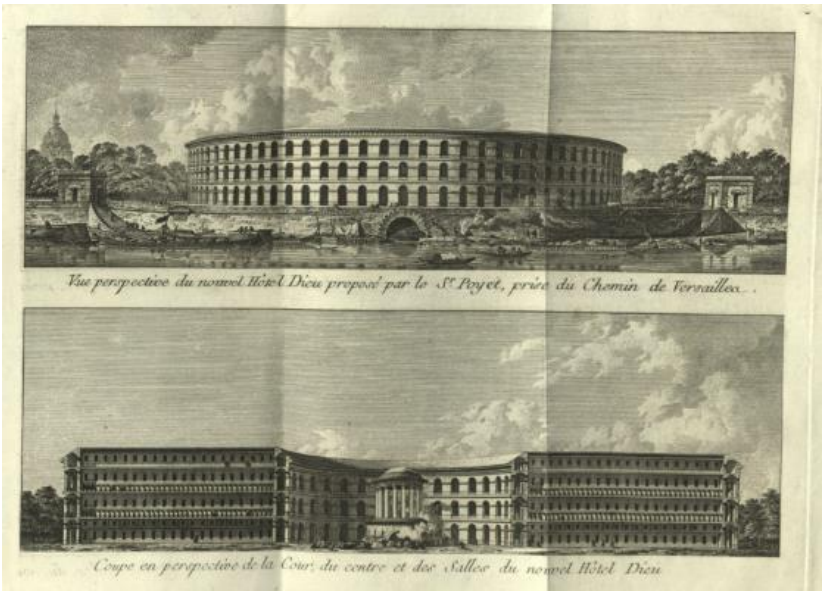


Figure 2.11 New *Hôtel Dieu* Project, Paris, Bernard Poyet, 1785

(Source: https://openbook.lib.utah.edu/wp-content/uploads/2019/01/Memoire-VuePerspective.jpg accessed on15 October 2019)

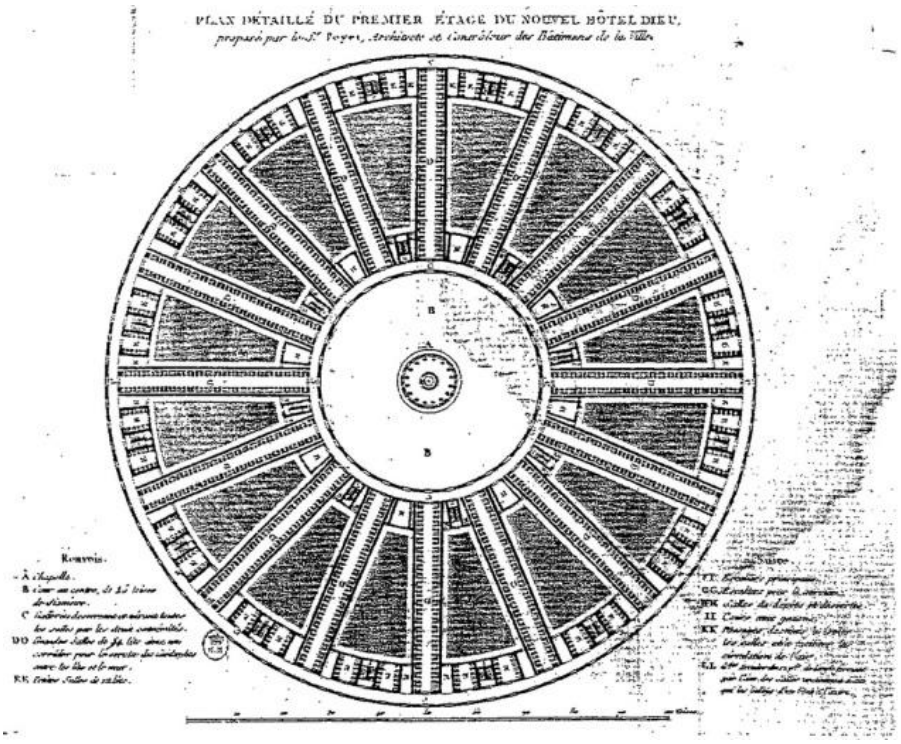


Figure 2.12 New *Hôtel Dieu* Plan, Paris, Bernard Poyet, 1785

(Source: https://quadralectics.files.wordpress.com/2013/09/348.jpg, accessed on15 October 2019)

In addition to understanding the effects of physical conditions on human health, it is also understood that building design according to ergonomics is economically beneficial. Criteria such as the space around the patient's bed and the space that must be on 3 sides to interfere with the patient have become important for the hospital design. While the design of the space contributes to the patient's healing, it is also intended to be ergonomic for the healthcare staff, and the health care structure has started to take shape according to these functions from the end of the 18th century.

A pioneering example of scale and dimension in hospitals in addition to ventilation and sanitation is the Frederik Hospital in Denmark. The architect of the hospital was Nicolai Eigtved. It was designed in 1750. In this hospital, the dimensions were designed according to the basic data of a hospital, the size of the sickbed. This was 6 x 3 feet. The beds were placed side by side on both walls. There were six feet between the beds. It was possible to reach the beds from both sides and also the bottom of the bed. The rooms' one dimension was eighteen feet that were the sum of the bedsides and six feet between them. A window was placed on the top side of the beds. The factor that determines the size and proportion of the space is not the aesthetic proportions but the bed that determines the basis of the hospital (Rasmussen, 1959).

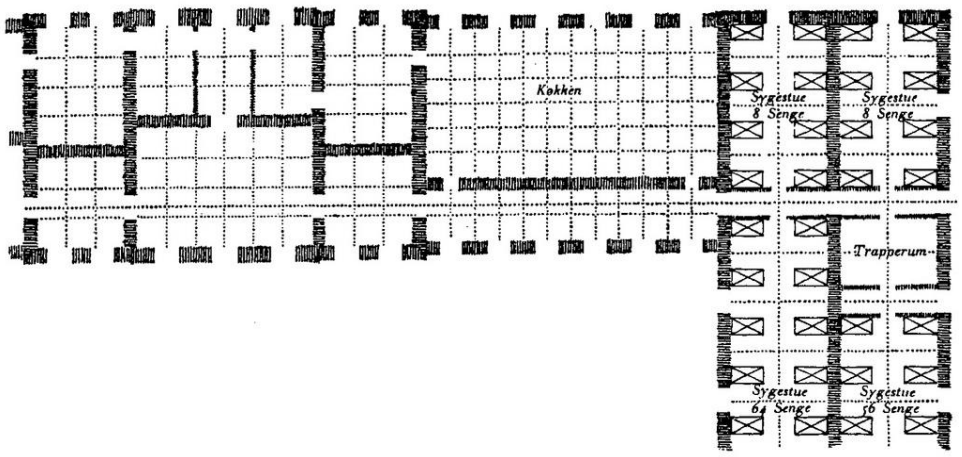


Figure 2.13 The proportions of the rooms in Frederik's Hospital, Copenhagen

(Source: https://quadralectics.wordpress.com/3-contemplation/3-5-hospitals, accessed on 12 November 2019)

Publications on hospital planning emerged during the late decades of the eighteenth century. *Thought on Hospital* in England in 1771 by John Akin and *Memories sur Les Hôpitaux De Paris* (A Compilation of Five Memoirs) in 1788 by J.R. Tenon in France was published. There was the concept that the design played a role in the treatment of the patient and it was necessary to add to the hospitals program the function of treating for the first time. In his written work, *Mémoires sur Les Hôpitaux De Paris* (A Compilation of Five Memoirs), Tenon presents several proposals for healthcare buildings including the layout, relation with the urban and its place in the city (Thompson and Goldin, 1975 p. 142).

New Lariboisiere Hospital, (Paris, 1846–54) which can be seen in Figure 2.15 designed by Martin Pierre Gauthier, the Hôtel Dieu, (Paris, 1878) and the Johns Hopkins Hospital, (Baltimore, 1890) designed by John S. Billings was impressed by Tenon and Poyet's daisy plan (Rosenfield, 1937, p. 25.). While the search for new planning for hospitals continues, English reformer John Howard (1726 – 1790) refers to the Royal Naval Hospital in Plymouth (1758 – 1762) which is shown in Figure 2.14 as an appropriate example and the right approach in design (Kuilman, 2011).

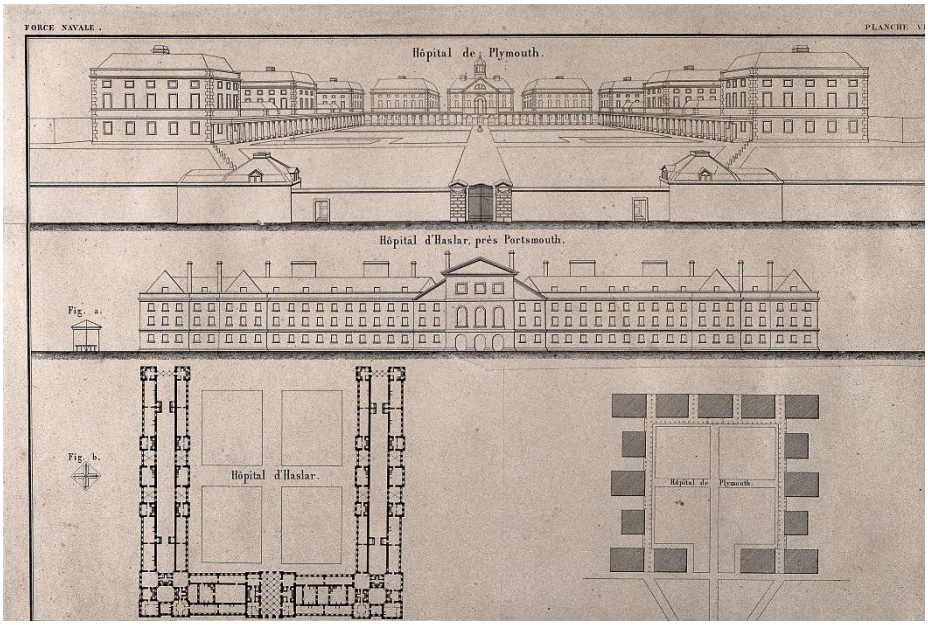


Figure 2.14 Naval Hospital at Plymouth, Facades and Plans

(Source: https://wellcomecollection.org/works/ka3be7d5 Wellcome Library no. 23650i)

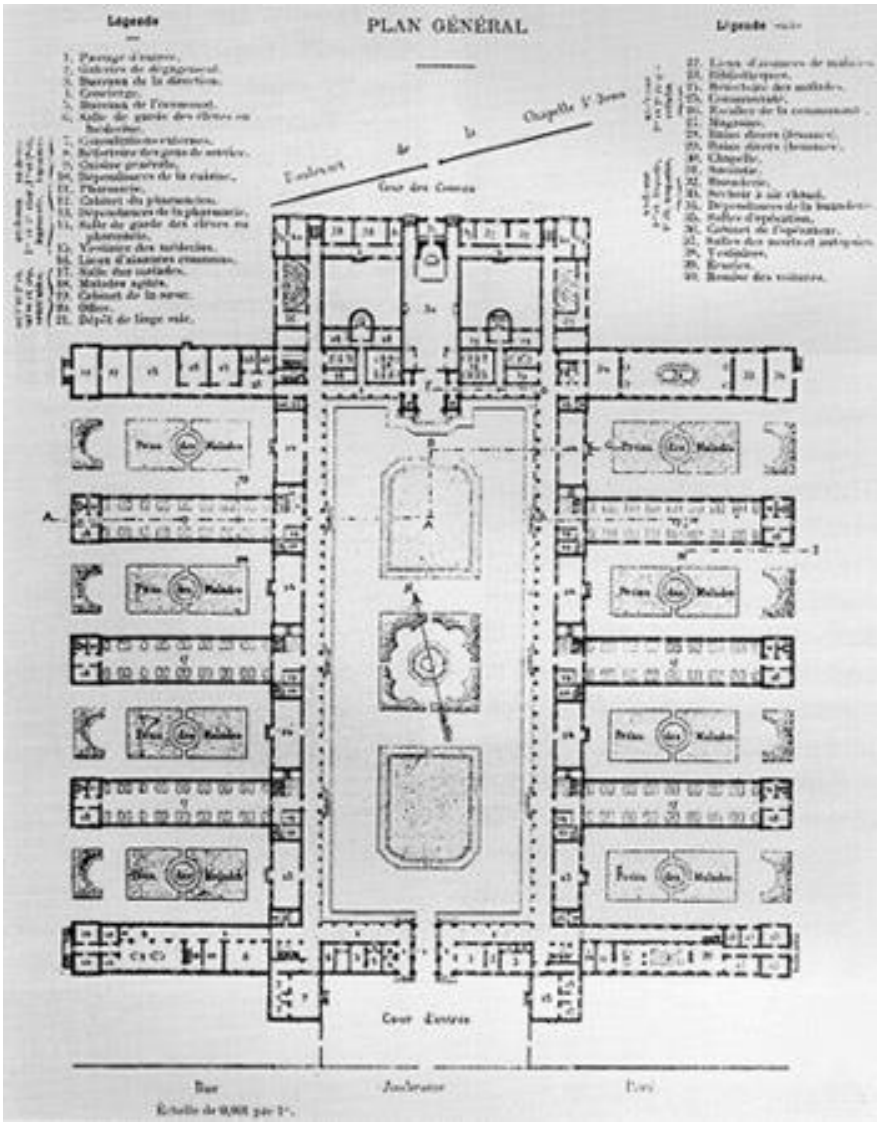


Figure 2.15 Plan of *Hôpital Lariboisiere*, (1839 – 1854)

(Source: http://healtharchitecture.wikifoundry.com/page/Pavilion+Concept%3A)

The role of the Crimean War (1853-1856) in the history of hospital design is important. With the Crimean War, many technologies that were new at that time had the opportunity to test themselves. Developments such as railways, steamboats, telegraphs, photography and sanitary hospitals have been tried and transformed with new needs. Many people lost their lives in the Crimean War, but most of the deaths were caused by diseases such as typhus, typhoid, cholera, and dysentery due to lack of hygiene and sanitation (Bektaş, 2016).

Based on the theory that the deaths would be reduced by providing good ventilation conditions in the hospitals, the British who are fighting outside their borders decides to build a temporary hospital in the Dardanelles (Çanakkale in Turkey) and build a prefabricated hospital. Isambard Kingdom Brunel designed the Renkioi (Erenköy) Hospital which was a set of prefabricated building modules, built-in Britain and transported to Dardanelles. The hospital complex consists of 36 main buildings and other service buildings. Each building had 26 bedrooms, a nurse's room, an operating room, bathrooms, and toilets. Apart from natural ventilation, each room was ventilated by a small fan and a rotary air pump. In the spring of 1856, the complex was ready with mechanical ventilation to serve 2200 patients.

Before the hospital was closed in July 1856, a total of 1,408 patients were admitted and only 50 of them died. This was a huge improvement in mortality rates by ten times compared to other hospitals. After the war, the complex was dismantled and most parts sold in the field, but some parts and tools were returned to England. In its scale and design, Brunel's hospital has become an exemplary hospital in the history of architecture and the British army as an innovation in engineering and hospital construction (Bektaş, 2016). This example is both a leading example of the prefabricated building construction technique and a hospital design planned to reduce mortality rates.

The hospital scheme, which is formed by placing the two patient beds with the feet facing each other, with the windows placed on the bed heads' side, whose width varies approximately 6 meters, the length of which varies according to the bed capacity, and where the patient bed wards are connected by the corridors, is named as a pavilion type hospital for hospital plan typologies.

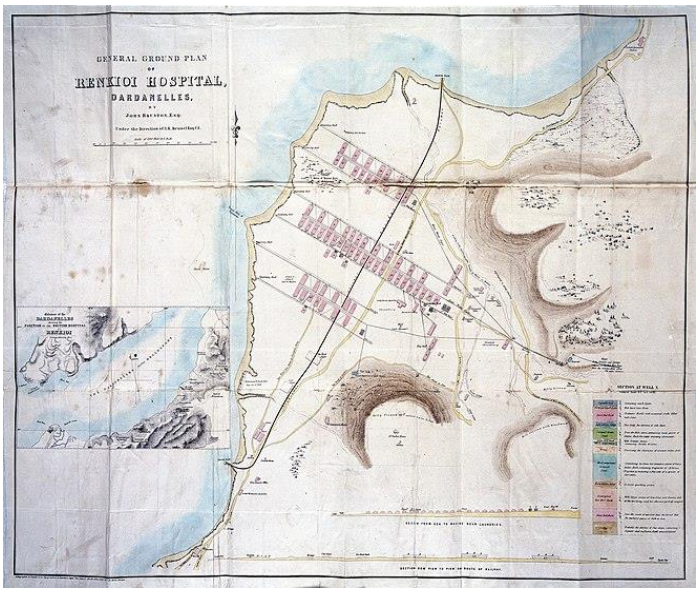


Figure 2.16 Site Plan of Renkio Hospital, Mark Isambard Brunel

(Source: https://www.revolvy.com/page/Renkioi-Hospital, accessed on 20 September 2019)

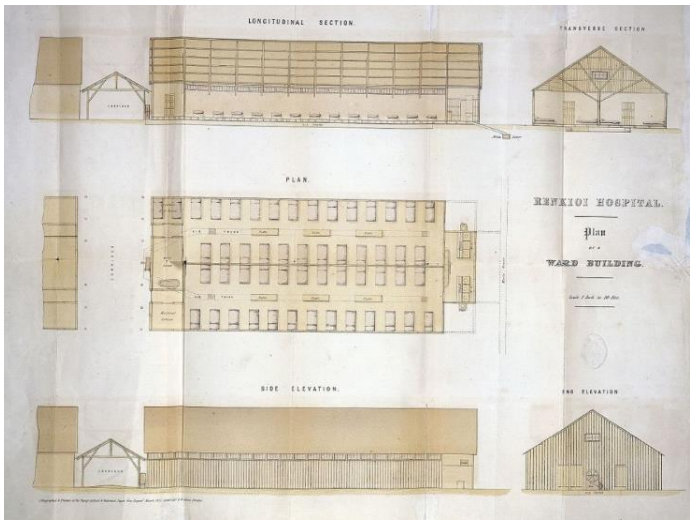


Figure 2.17 Modules, Renkioi Hospital

(Source: https://jmghistory.com/crimean-war/ (Wikitours), accessed on 20 September 2019)

Florence Nightingale (1820–1910) is an important figure for the pavilion type, the chronicle of healthcare buildings also in Renkioi hospital. In Crimean War (1853-56) she was assigned as a nurse with a group of thirty nurses at The Barracks Hospital at Scutari (Üsküdar), in Turkey. Nightingale wrote her experiences in Scutari, in her

text, Notes on Hospitals (1859). Although this building in Scutari is mentioned as a hospital in her text, this building is the Selimiye Barracks. The building that inspired her book with its bad conditions was built as a barracks, not a hospital but used as a hospital during the Crimean War. In this way, she saw more clearly how the hospital structure should be with efforts to improve the spatial conditions. In Notes on Hospitals, she describes Tenon & Poyet's Lariboisiere Hospital as the "finest hospital in the world" (Seymer, 1954). About the hospitals with pavilion principles; Royal Victoria Hospital, Netley, Herbert Hospital, Woolwich, and Vincennes Military Hospital were mentioned in her notes as the most proper examples. In Notes on Hospitals, Nightingale defined the pavilion rules which were based on fresh-air, natural light, cleanliness, and improved sanity conditions. Nightingale was very accurate in defining the principles of the ward arrangement which can be outlined as a merging of the miasma theory and ergonomics (Anon, 1983). Florence Nightingale inspired the wards to be designed to receive light from both sides connected by a long low-rise corridor. In this period, wards are rarely divided according to diseases and are usually divided according to the physician and the gender of the patients (Jones, 1992). Nightingale's book, which was written on the hospital design criterion, effected the spread of this typology. This book, which also includes statistics that reduce mortality rates with improving spatial conditions, is actually the beginning of evidence-based design.

The Herbert Military Hospital, Woolwich, 1861–5, by Captain Douglas Galton in association with RO Mennie, Surveyor of Works to the War Office, as the exemplar of Nightingale's principles (Taylor, 1997).

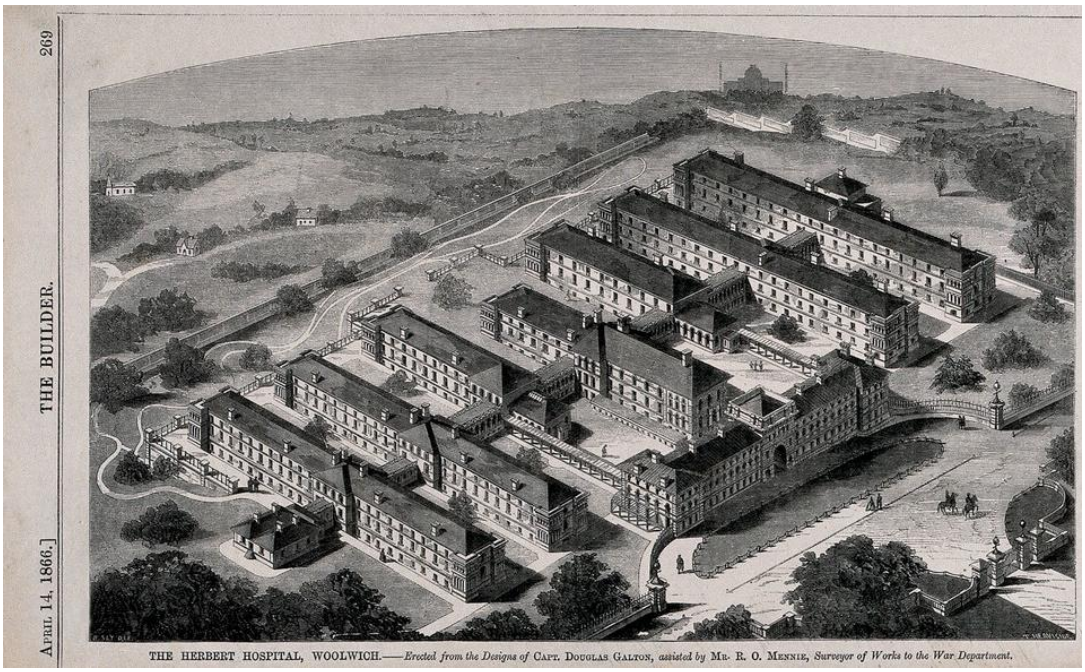


Figure 2.18 The Herbert Military Hospital, Woolwich, 1866

(Source: https://wellcomecollection.org/works/yka7hvhp, accessed 8 November 2019)

Other notable British examples of the pavilion plan were St Thomas' Hospital, London 1868–71 by Henry Currey, and Derbyshire Royal Infirmary 1891–99 by Young and Hall (Taylor, 1997). The other examples of pavilion planned hospitals in England were Blackburn Infirmary by the architect James Turnbull and the Royal Marine Barracks Hospital, Woolwich, by Captain Douglas Galton (Cook, 2002). These architectural designs were spread across Europe in a very rapid manner. Since the novel concept was improved to provide lodgings for various types of patients. The chief design consideration in these buildings was the separation and cross ventilation which turned in to the motto of hospital architectural plans afterward (Richardson, 1998).

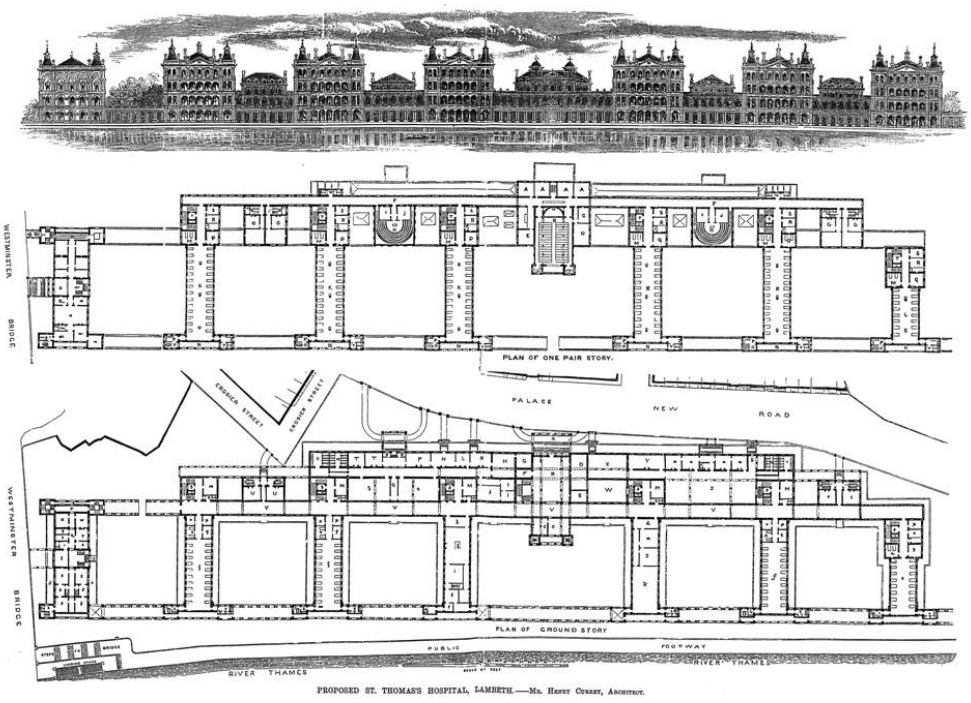


Figure 2.19 St Thomas's Hospital, Plan and Facade

(Source: https://pmj.bmj.com/content/78/920/352 accessed on 25 December 2019)

At the beginning of the design of the pavilion type, patient beds were located as in pairs between the windows of wards. Nevertheless, in the later designs, a single bed placed the window dock, and hygienic services such as bath, sinks, and toilets turned out to be gradually isolated from the wardroom itself. In this design, ventilation, sanitation, and heating of the wards were provided successfully. The fires were utilized to create air drafts to remove toxic vapors or mists throughout the wards. Sanitation and fire avoidance were as well introduced as important aspects of the hospital design agenda (Stevenson, 2000).

The principle underlying the pavilion plan was the Pringles' s Miasmatic Theory of the disease. Doctors who believed in the Miasma Theory believed that the division of the hospital structure into several independent departments would solve the problems in hospitals.

The introduction of the pavilion principle in hospital design led to a sharp drop in the figure of hospital death rates and a vital influx of inpatients. These advantages

supported the increase of specialist based hospital establishment which augmented throughout the end of the nineteenth century (Cook, 2002).

During the Crimean and American Civil War, it was obligatory to design the wards which were cleaner, hygienic, disciplined and appropriate for medical enhancements. (Valins and Salter, 1996). The medical theory of the 19th century defined hospitals as places where miasmas and filth could be driven out by the assistance action of air, water, and sun (Goubert, 1986).

2.3.2 Modern Hospital as a Machine

The word “machine” was first used for hospitals in the 18th century. French physics scientist Jean-Baptiste Le Roy (1720-1800), described the hospital wards as "machines in which patients are treated". In the same period, science and philosophy saw the human body as a machine and both modern architecture and medical practice were shaped by this principle (Darton, 1996). In Jacques Tenon’s text, *Mémoires sur Les Hôpitaux De Paris*, 1788, (A Compilation of Five Memoirs) Tenon suggests several solutions for modern hospitals comprised the arrangement of the hospital, its location in the city and its relation to the system of urban (Thompson and Goldin, 1975, p.142). In this wise, he used “machine for healing” (‘machine a guerir’ phase then revived by Michel Foucault, *Les Machines a Guerir*, *Institut de l’Environment*, 1975) phase giving evidence of his intention to design a beneficial and efficient and functional hospital (Gaudin, 2006 p. 115). Studies on the role played by the spatial organization of the hospital in treatment began in the 18th century and beyond.

Since the 1890s, the hospital has evolved from a public charity to an environment that supports very complex medical technologies. By the 1900s, the nineteenth-century’s scientific discoveries had revolutionized the whole concept of general hospitals which had expanded to begin to be complex facilities for clinical care, research, and teaching (Thompson and Goldin; Richardson and Rosenfield). The concept of General Hospitals in these eras afterward forced to propose their specialist

sections (Cook, 2002). It can be stated that the nineteenth century is the most important era for the transformation of the modern hospital design concept.

Early 20th century, the pavilion type planned hospitals consequently converted into the comprehensively recognized architectural designs for hospitals throughout the continents and certainly created the initial forms of today's hospital presence (Richardson, 1998). While the tradition of building the hospital in pavilion-type plan typology continues, the hospital spatial organization was inevitably affected by the developments in science, technology, medicine, and new spatial solutions were required with increasingly complex function schemes.

Until the 19th century, patients suffered from their illnesses and suffered greatly during their treatment. The term "patient" was invented from the concept of "being patient under surgery without any anesthesia" (Valins and Salter, 1996). According to the online etymology dictionary, the meaning of the word "patient" means (mid-14c.) "enduring without complaint". Pain control for patients was started after the discovery of morphine in 1844 and anesthesia in 1846, it was introduced with chloroform and ether by two dentists, Horace Wells and William Morton Hoff (Hoff, 1947). At the end of the century, antiseptic medical techniques were found by Pasteur and Lister, and surgery was turned out to be a preferred operation type, surgery operations were presented as a last alternative for patients before these inventions. Pasteur found microbiology in the 1860s and realizes the Germ Theory of Disease or pasteurization. This was the idea that infectious diseases are caused by germs, and then spread about by people. In 1871, he proposed to boiling surgical instruments and bandages to prevent infection, and design an oven for this. The principle of asepsis for health discovered in 1865 by Joseph Lister. In 1876 Robert Koch discovered that different kinds of microbes cause different kinds of diseases. Sterilization of surgical instruments and dressings shown up by Ernst Von Bergman in 1886 (Valins and Salter, 1996). Bio-chemical and pathology laboratories emerged with definite locations and prerequisites within hospitals. The first laboratory in the hospital was designed in Paris in 1893 (Thomson and Goldin, 1975).

All these developments required new spaces to be added to the hospital building program and revealed the dirty clean material separation. This dirty and clean separation has led to the inclusion of another workflow in the program of the hospital, other than the patient, staff, linens and meal flow. In this period, the hospital evolves into a spatial environment that must be operated like a machine.

The formation of different departments has led to the necessity of different specialties in medicine. During this period, the lack of trained physicians and other lack of health staff had negative impacts on the overall health care system and weakened both the medical education and the treatment services. Thus private health schools, in which candidates of physicians and healthcare staff completed their training by practicing in hospitals, were established. In this way, it is aimed to advance medical education by making public-private partnerships. Accordingly, in 1910, the Flexner report was prepared by the Carnegie Foundation in the United States to provide medical training in connection with hospitals. In this way, scientific knowledge and theory were integrated with clinical practice. The regulation and licensing of hospitals and health-related professions transformed again at the beginning of the twentieth century. The rapid boost in the figure of patients with the spread of diseases over time, the necessity of the establishment of structures that combine medical training and patient care held together, had been emerged and formulated on the novel hospitals (Foucault, 1963). The operating room, designed as an amphitheater for education is shown in the Figure 2.20.

Figure 2.20 Boston City Hospital, Operating Theater, 1890

(Source: https://daily.jstor.org/inside-the-operating-theater-surgery-as-spectacle/ accessed on 15 Jan 2020)

In 1895, Wilhelm Konrad Rontgen discovered the X-rays (the X to designate their unfamiliar origin). Rontgen was awarded the first Nobel Prize in Physics and started to use it in the field of medical images. It was a crucial contribution to the emerging new healthcare buildings' technologies (DiSantis, 1986). Thus as the additional diagnostic methods were created, the conditions applying appropriate health care operations had required more complex architectural structures (Valins and Salter, 1996). In 1928, American architect and author Edward Stevens detailed exact requirements for the Rontgen Department at the Thorndike Laboratory as:

> The basement and first floor was reserved for the Rontgen ray and X-ray equipment. There was a light-proof maze above each window and ample ventilation. All rooms were surrounded with one-eighth inch (.4mm) sheet lead lining to the height of seven feet (2.1m). In the deep therapy room, the ceiling and walls are of one-half-inch lead (1,2mm). In it, no machine furnishes power to more than one room, and each room is wired separately to the main switchboard so trouble with one machine will not affect any other. All doors are sliding, not swinging (Stevens, 1928, p. 318).

The identification of bacteria by Louis Pasteur, Germ Theory was the end of Miasma Theory. In spite of the consciousness that cross-ventilation would kill germs, the

pavilion plan continued well into the early twentieth century. William Pite' s New Kings College Hospital, London, 1913 is shown in Figure 2.21 was still according to the pavilion plan. JJ & EJ Clark's Melbourne Hospital, Australia, 1910–16 and Doncaster Royal Infirmary by WA Pite, Son & Fairweather, 1926 were planned according to pavilion layout (Taylor, 1997; Lewis, 1985). Pavilion plan was one of the great enduring architectural typologies, with longevity and influence that stretched from the late 1850s to the 1930s (Taylor, 1997, p. 9).

Figure 2.21 King's College Hospital, London, W. Alfred Pite, 1913

(Source: https://manningfineart.co.uk/shop/william-alfred-pite-design-kings-college-hospital-london/, accessed on 12 November 2019)

The deficiencies of the pavilion plan were started to be mentioned in the 1920s and 30s. Doctor Harper's 'Today and Tomorrow: The Architectural View' in *The Architects' Journal*, June 1937, and Edward Stevens's *The American Hospital of the Twentieth Century*, 1928, reported that pavilions were expansive and needed large region of land. With long connecting corridors between pavilions, the distance and the climatic conditions made the movement of patients, staff, and food unsustainable. There were heating problems in the large open wards and the plan did not allow flexibility (Harper, 1937; Stevens, 1928).

As the critics continued and there was justification by architects and employers, different alternatives began to emerge to the pavilion plan. After the pavilion-type hospital plan that has been used for many years, a block-type hospital emerges. The block typology was welcomed in Europe, Britain, the United States of America and

Australia in the 1920s, 1930s. According to Annmarie Adams it was a gradual shift (Adams, 1999). Block typology transformed hospitals by rationalizing hospital services under one roof (Rosenfield, Harper, and Stevens). It was, in fact, the packing of Nightingale's pavilions one above the other and provided the circulation from horizontal to vertical with elevators (Rosenfield, 1937).

During this period, doctors continue to participate to the design processes. Doctor Albert Ochsner designed the vertical multi-floor block hospital in the year 1905 for its efficiency in heating, cleaning, supervision, space and staff's energy efficiency (Ochsner and Sturm, 1907). Albert Ochsner and Meyer Sturm found that air is less polluted at higher levels than ground level. Based on this finding Doctor S. S. Goldwater, the American hospital consultant suggested the vertical multi-floor block in 1910 as a solution to the speedily rising land values in American cities (Rosenfield, 1937). Columbia University Presbyterian Medical Centre built-in 1928 in New York was the first skyscraper hospital, James Gamble and Rogers were the architects. It was composed of twelve institutions with 1499 beds (Pevsner, 1970, Bollinger, 1976). McKim, Mead and White's Bellevue Hospital in New York built in 1933 and the Cornell Medical Centre, designed in New York by Coolidge, Shepley, Bullfinch, and Abbot are the other pioneer examples for multi-floor block typology.

Figure 2.22 The Columbia-Presbyterian Medical Center

(Source: http://theconversation.com/from-army-barracks-to-shopping-malls-, accessed on 13 November 2019)

Figure 2.23 The Columbia-Presbyterian Medical Center

(Source: http://blogs.cuit.columbia.edu/hslarch/wilcox-exhibit/ accessed on 22 January 2020)

At the beginning of the 20th century, especially in America, the multi-storey hospital design, where patient wards, medical and surgical departments and service areas were gathered vertically, was harmonized with the different approaches brought by modern architecture between 1950 and 1960 (Hughes, 2000). American multi-storey hospitals inspired deep-space planning hospitals. This medical planning aims to shorten long corridors while centralizing the services (Richardson, 1998:37). In order to ensure the compactness in medical planning, daylight and access to external environments were abandoned. In this planning, clinical functionality has been superior to human experience. There were negative reflections about this planning, the quality of the architecture and the satisfaction of the patient negatively affected this planning. (Ulrich, 1984:420-1). Despite the negative feedback many twentieth-century hospitals were formed upon the 'deep-spaced plan' model.

In Europe, the block typology was convenient for the freshly appearing small private hospitals evolved for the wealthy patients searching for treatment in hospitals instead of at home as well. Empire Hospital (Vincent Square, Westminster, 1912) was the first British private hospital by architect, WE Hazell (Richardson, 1998). The private

hospital depicted an important change in public trust in hospitals. However, no authority has given how the block hospital in actuality displayed. Rosenfield, Thompson, and Goldin pass directly to the block typology after the pavilion plan (Rosenfield, 1937).

Healthcare structures have changed in line with current events and developments. One of the most important events of them is maybe tuberculosis disease. This disease's treatment needs special architectural environment and design specifications and had crucial impacts on modern architecture (Ryan, 1994).

Tuberculosis was related to urbanization conditions such as overcrowded living spaces, working in unhealthy conditions. The research of the disease and searching for its treatment had coincided with the modernist movement. This modernist cultural movement was a social movement as well as architecture. It aimed for a classless and hygienic society with a socialist perspective (Bryder, 1988). The powerful connections between hygiene, functionality, and modernism came together clearly in the hospitals and it was not long before the ideals of Modernism found expression in health-related architecture (Bardon, 1981).

Hospitals where tuberculosis diseases are treated are called sanatoriums. This word is of Latin origin the adjective *sanitorius* which means "health-giving" and started to be used in 1839. The sanatoriums and their properties, which are hospitalized branches for the treatment of tuberculosis, have affected modernism more than anything else. Prior to the introduction of medication, sanatorium buildings were consciousness of the valuable matter of modernist visions and dictates as southward orientation, large windows, terraces, and balconies, the strict separation of sanatorium functions, trying to get maximum fresh air and light into the building (Eylers, 2014). As can be seen the layout in Figure 2.25, Alvar Aalto's Paimio Sanatorium (Finland, 1929–33), has the characteristics of the block typology and the European new modernist aesthetic (Colquhoun, 2002). Inside of the sanatorium consisted of smooth-surfaced and unornamented materials such as glass and tiles and specially designed furniture for not to absorb humidity (Eylers, et al., 2016).

Figure 2.24 Paimio Sanatorium

(Source: http://kvadratinterwoven.com/paimio-sanatorium accessed on 20 January 2019)

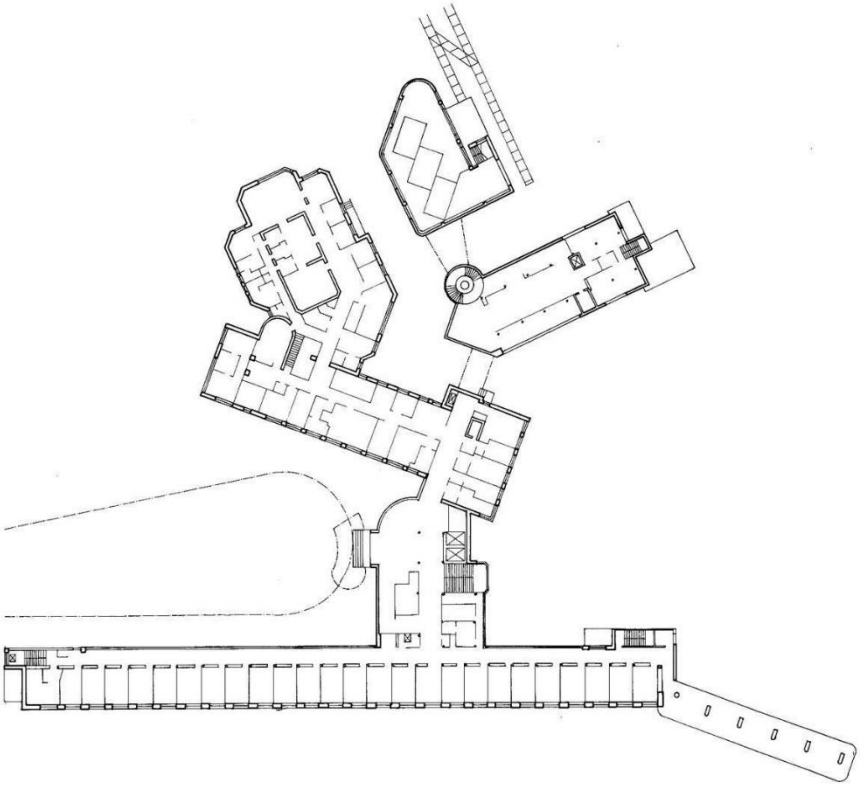


Figure 2.25 Paimio Sanatorium, Ground Floor Plan, 1929-33

(Source:https://www.architectural-review.com/buildings/revisit-aaltos-paimio-sanatorium-continues-to-radiate-a-profound-sense-of-human-empathy/10014811.article accessed on 15 Jan 2020)

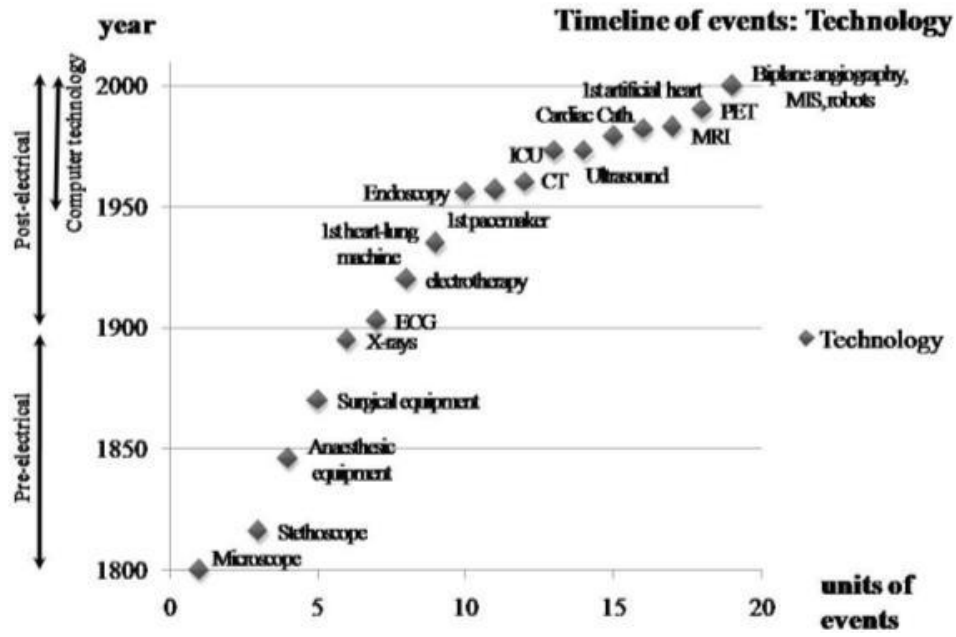
Paimio Sanatorium's multi-floor design supported the thought for efficiency and reducing distances. Patients' movement between the floors was made by elevators, stairs (Quecedo, 2012). With the sunlight gaining importance for the treatment of tuberculosis, the orientation of the hospitals has become important. Fresh air has gained importance with the transmission of tuberculosis disease caused by air. After learning of the benefits of fresh air and sunlight in the 1940s, balconies, verandas, solarium terraces became essential in sanatoriums and hospitals. In modern discourse light is represented as a construction material in modernism for a new, democratic, rational and healthy design (Volf, 2013). Aalto's architectural design approach is modernist and functionalist as the following of modernist motto stated by the American architect Louis Sullivan (1826-1924) "form ever follows function" and also it was flexible. According to Aalto, there is a need to be as flexible as standardization in the machine age (Pearson, 1978:150). Aalto saw the contradiction of standardization with individualization and diversification as creating diversity and richness from the standards (Reed, 1998). Despite this, the modern hospital later turned into a machine where medical function was valued but neglected the psychological aspects of the human and evolved into a structure that was subject to criticism with these aspects.

While the Miasma Theory affected the scheme of the hospital, the germ theory did it to the departments. The addition of new departments affected the program of the hospital and changed the flow charts of hospital planning. The role of the hospital scheme in treatment has ceased to be the main factor affecting the design, so that the hospital plan scheme has been diversified with the technological and architectural effects of the period.

Medical technology has developed rapidly in the 20th century. It can be seen in Table 1. (Burke, 2014). Medical technology includes medicines, instruments, surgical methods and medical care (Gelijins and Halm, 1991). Many methods have been used in the treatment of diseases from past to present. The methods applied in the treatment of diseases are shaped according to the understanding of that period and the state of scientific and technological development. Hospital technology is

understood when it comes to medical technology. Because, the most comprehensive health service is provided by hospitals, therefore, the institution where the medical technology is reflected first and intensely is the hospitals. New medical technologies in hospitals are classified as; new diagnostic and treatment equipment, new techniques (such as transplantation), medicines (such as new drug production or developing genetic engineering) and supporting technology (hospital information systems) (Gelijins, 1992).

Table 1 Chronological List of Medical Technology Inventions (1800-2010)

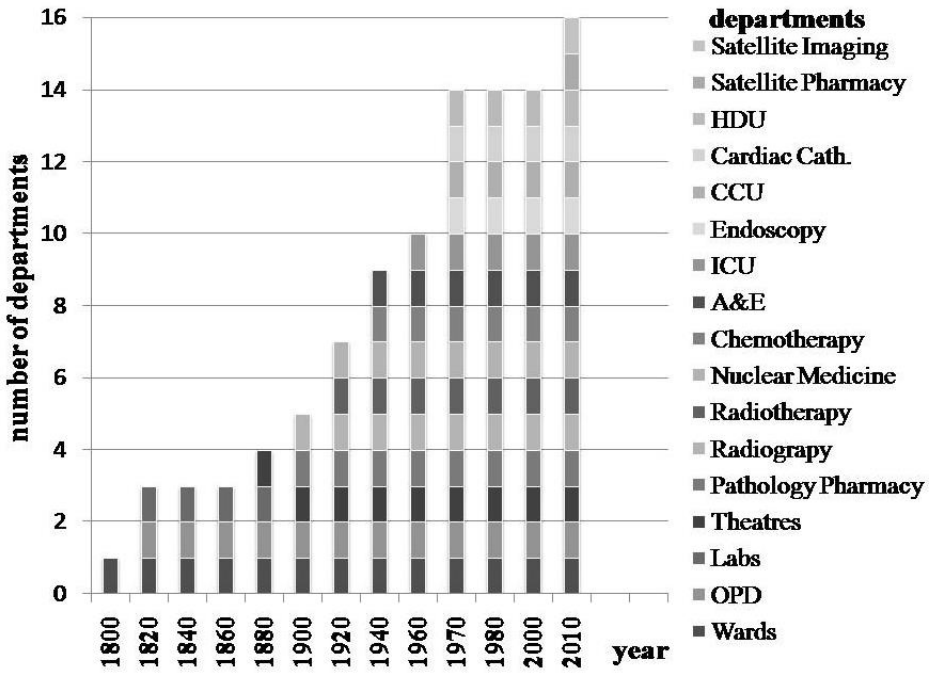


(Burke, 2014)

Simultaneously, through improved technology in construction methods and expansion of mass production of steel and glass, the medical profession institutional authorities were embedded in monolithic mega-hospital forms for replacing the new medical technologies (Richardson, 1998:11; Miller & Swensson, 2002:39). As technology advances, the departments that should be in the hospital started to increase in number and grow in departmental as shown in Table 2. (Burke, 2014). In the 1960s, a considerable number of urban replacement mega hospitals were built. These were very large-scaled hospitals. The function of high technology as a decisive

form was a major difference. Technological advances led to the need to place independent inpatient units on a high-tech platform or base (Verderber and Fine 2000).

Table 2 Hospital Departmental Growth (1800-2010)



(Burke, 2014)

This new approach that emerged in the development phase of mono-block hospitals; a horizontal building block and a monolithic block rising from its base are named as "matchbox on a muffin" (Hughes, 2000). In this new approach, the vertical block, the matchbox included inpatient care units, horizontal block, muffin, included diagnostics and treatment services such as laboratories, radiology, and clinics. (Matchbox on a muffin term is known to belong to Richard Llewelyn Davis) Freie University Hospital Center at the University of Berlin (1966-70) is an example of that form of towers and a base. Its designers were Arthur Davis, Nathaniel Curtis and Franz Mocken and it was 1416 bedded and free-standing urban machine. The University of Göttingen Germany is another example of this mega-hospitals, designed by Neue Heimat (1967-71), it has 1920 beds and had a podium plan or a

matchbox on a muffin (Verderber and Fine 2000). In these hospitals, inpatients and outpatients are separated from each other. Today, it is seen that this type of hospital is being used to a great extent.

Figure 2.26 Freie University Hospital, Berlin (1966-70)

(Source: https://commons.wikimedia.org/wiki/File:Charite-Campus-Benjamin-Franklin-Klinikum-Steglitz-Berlin-10-2018c.jpg accessed on 20 Novvember 2019)

Figure 2.27 Freie University Hospital Center, Berlin (1966-70)

(Source: https://www.morgenpost.de/bezirke/steglitz-zehlendorf/article215270519/Benjamin-Franklin-Klinikum-ist-ein-Vorbild-fuer-ganz-Europa.html accessed on 20 Novvember 2019)

Figure 2.28 Veterans Administration Medical Center in Houston

(Source: https://www.houston.va.gov/about/history.asp accessed on 20 November 2019)

With the modern motto and technological developments, machine aesthetics has become widespread in spatial design. In 1950s criticism against functionalist determinism and specialization has begun to develop in urban-scale design practices. The functionalist city stands at the target of criticism. Team established by the young wing of C.I.A.M. (*Congrès Internationaux d'Architecture Moderne*, International Congresses of Modern Architecture), especially Team 10, raises the strict boundaries between scales and functions and defended that individual and social freedoms were damaged by these strict boundaries. Themes that Team 10 presents: in-between, organic integrity, cluster, mobility, growth and change, urbanization and habitat (Mumford, 2001, p53). During these periods, United Kingdom entered the search for health regulations and structures. John Weeks, the architect, designed a flexible hospital project in U.K. John Weeks is the first person to use the uncertainty that lies at the heart of post-war functional flexibility strategies (Forty, 2000:142). Although Weeks's notion of "indeterminency" started to come to the agenda in British avant-garde groups trying to produce flexible supplies for the changing demands of the consumer society in the 1950s, it came to life with the design produced by Weeks for the Northwick Park Hospital, which was first implemented in 1961. Weeks develops its uncertainty strategy as a precaution against the rapid growth, change and thrown out hospital departments. The hospital program marks an 800-bed complex with numerous laboratories and research units **(**Hughes, 2002:96).

According to Hughes, there are two reference projects for this design. The Crystal Palace (1851), which allows flexibility inside a huge structure, the other is the Renkioi Hospital, which is formed by the combination of prefabricated modules. As a result of this combination, the main units that are attached to a corridor with an unknown length and a hospital complex where the lengths and internal divisions of the volumes within these main units are uncertain are revealed. The sizes of these units have not been finalized; their width is fixed, their height is not determined like "street", they are left unchanged **(**Hughes, 2002:97).

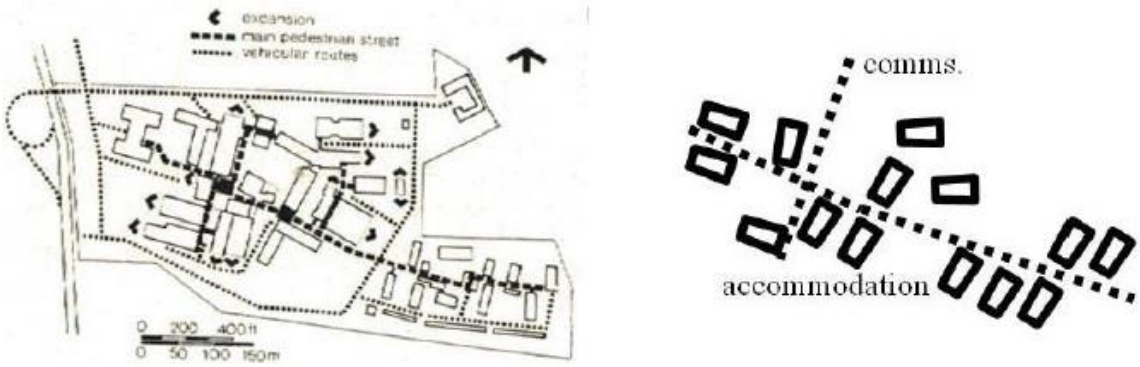


Figure 2.29 Northwick Park Hospital Site Plan

(Weeks, 1966:338-9 in Burke, 2014 and right: Burke, 2014)

Continuous changes in the hospital program have led architects to flexible building designs. As a design approach, flexible design has been tried to be applied in hospital architectural projects. Le Corbusier designed Ospedale Civile, a hospital in Venice in 1965 and the design was a low-rise horizontal typology over three floors. It was an unbuilt project of him. As a difference in hospital design, there were many different functions from medical spaces in the hospital. There were shops, restaurants, conference rooms, a school of nurses, two hotels (for the doctors and relatives who come to visit due to congresses). The patient entering the hospital would not have the impression that he entered a closed world, but on the contrary, he would continue to participate in daily life. Commercial activities and general services (administration, library, kitchen, personnel housing, etc.) were gathered on the ground floor. There were consultation and examination services on the first floor

and admission halls on the second floor. In the middle of the hospital mass, there were patios, gardens, and promenade places for patients in the convalescent period. Le Corbusier divided the second floor into many treatment units (small 23-bed units will be able to work autonomously under the supervision of a chief assistant). One-fifth of its surfaces were allocated to a hall with all the necessary medical supplies. For each patient there were one room, the walls were moved and opened and facilitates the supervision of patrols at night. The patient rooms received light from the skylights. Corbusier described the hospital as a self-contained city (Zegel, 1965).

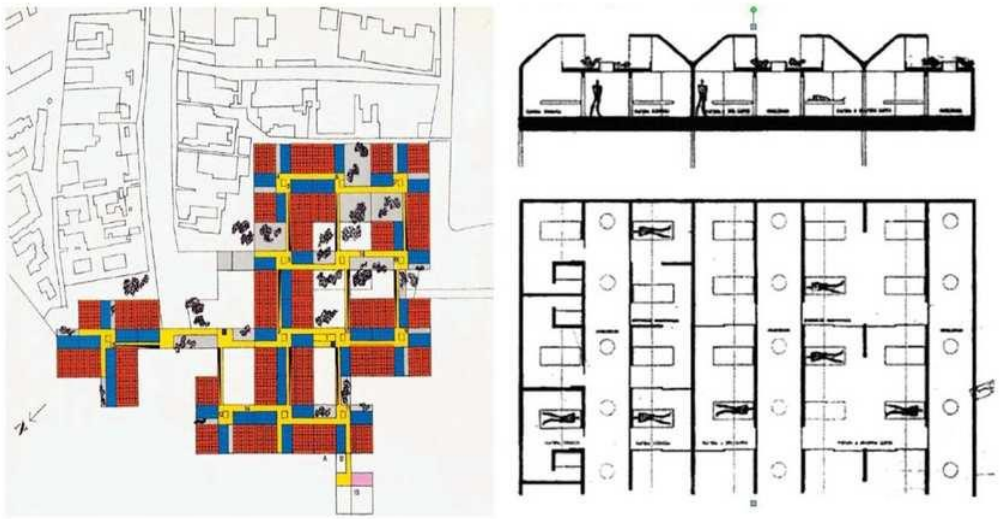


Figure 2.30 Venice Hospital, Le Corbusier

(Source: https://www.researchgate.net/figure/Le-Corbusier-project-of-Venice-hospital_fig3_318607772)

In the 1980s, hospitals became very central, relatively autonomous organizational and self-contained buildings, but was subjected to a radical transformation in the late 1990s. In the late 1980s, the mega hospitals came to its culmination in the large forming hospitals. 1050 bed Veterans Administration Medical Center in Houston is one of the examples. These and similar enormous, free-standing medical buildings were turned into anachronisms when they come into service in an era of a reestablished a community-based managed care of the healthcare system. Therefore, these hospitals have criticized everything incorrectly about the health system in

advanced industrialized countries (Verderber and Fine 2000). Many managers realized that the -bigger is better- is no longer useful (Verderber and Fine 2000).

It is not possible to formulate a single lay out for hospitals from the beginning of the 20th century. Multi-storey block type, horizontal block type, match box on muffin plan type or deep-spacing hospital types are ongoing. In the late 1960s, there were a small number of 3 different counter hospital practices that differed from the international style. These were; small-scale inpatient-outpatient clinic-hospitals, spas and iconoclastic hospitals that negated the complete minimalism of the modern block hospital (Verderber and Fine 2000). During the last decade of the 20th century; high-tech romanticist, new residential, critical regional hospitals and health village structure emerged as an alternative to the mainstream mega hospitals (Verderber and Fine 2000). This plurality has four favorable conditions according to Verderber and Fine;

1) New freedom made possible by the rise of postmodernism,

2) The acknowledged failure of the autonomous modern mega-hospital,

3) New medical technologies permitting more services to be provided on an outpatient basis,

4) Competitive pressures.

2.3.3 (Re)Humanization of Modern Hospital

The hospital program was changing as departments were added. They all had to have a certain order within themselves, and departments had to come together in a certain order. This planning scenario made the hospital architecture facilitated as a factory structure, which was a new structure of that period, which had a function in the foreground and with developments in technology the hospital architecture was combined with machine aesthetics. Technological explosion and focusing only on the treatment of the disease are seen as the most important causes of this condition.

1970s was a period when criticism about the unpersonalization of healthacare buildings became widespread, and in 1980s, hospital managers turned towards designers and architects in order to redefine the image of the hospital and the relationship with the patient, which started to be seen as a consumer (Darton, 1996).

In the 1980s, in the British Medical Journal (BMJ) an article commented on the design of hospitals: '…of course, we must humanize hospitals…' (Bardon 1981). This comment was showed that the hospitals were in a dehumanizing situation. Humanization was not a new word, in 1958 French Ministry of Health had produced a circular on "*humanisation des hopitaux*", which articulated the need for humanistic hospital care under a system of universal health care. James Falick who is an architect, wrote an article for Hospitals Journal with the title of 'Humanistic Design Sells your Hospital', in 1981, to pay attention to the aesthetic issue in hospitals for a consumer-centered healthcare system in the United States of America. By the end of the century, projects seeking to humanize hospitals were evident across the globe, from Japan to Brazil (Lewis, 1983; Macnaughton, Collins, White, Elliott, Soukas, Purves, Kellett, Coleman, 2005) It was about two things, one is the approach patient as a consumer, the other is humanistic design suits for this approach. Professor Roger Ulrich, who is the pioneer of the patient-centered design advocates patient-centered design for both patient recovery and also financial benefits to investors (Ulrich, 1984:420-1).

The fact that the patient suddenly appears as a customer requires looking at the issues of turning the concept of health into a commodity and the concepts that healthcare facilities are a profit-making sector with investors other than states or philanthropists.

2.3.3.1 The Commodification of Healthcare

While the patient was an asylum seeker at the beginning of the historical process in the health system, he has become a customer. French author and philosopher, Jean Baudrillard described the human body as the best consumer object in consumer

societies, which has become a salvation element (Baudrillard, 1998). The needs of the consumer often require a valuation for money and guaranteeing the right decision and prestige. To pay for health care eagerly is probably based on the belief that the individual cleverly determines his/her fortune through clever consumer preferences, rather than state bounty (Bauman, 2000).

While explaining the neoliberal transformation in the field of health, Nikolas Rose and Peter Miller explain that the aspects, built by the welfare state will be transformed into something as far as possible (commodified forms) and regulations will be made according to market rules. These specialized and market-oriented aspects also manifest themselves in the neoliberalization of healthcare. As a healthcare commodity, the patient is also redefined as a customer. Neoliberalism has changed the rules established by the welfare state, specific reforms are made to promote private investment and competition in public spending. On a macro scale, neoliberalism can be seen as a series of government reforms to resolve prosperity to reduce public spending and promote private investment and competition (Rose and Miller, 1992:189).

The commodification of health is not just a concept for patients. The human becomes responsible for his/her own health when he is seen as a customer. In this way, governments give the responsibility to the consumer at first, without doing anything. Wyatt, Harris, and Wathen explain how people take responsibility, become decision-makers, and commodification of health care as follows:

> Empowerment' and 'consumerism' are two of the central concepts embedded in the narrative of personal responsibility. Providing health information, especially via the internet, through e-health initiatives such as government-financed health web portals, is expected to 'empower' members of the lay public (often described as consumers) not only to participate more actively in their own care, but also to take more responsibility for their health-related decisions (even those as significant as selecting treatment options). Information delivered via health promotion programs is also expected to result in behavior changes, specifically, the adoption of 'healthier lifestyles', including improved dietary habits and avoidance of risky activities, such as smoking and excessive sun tanning, that are intended to improve public health and

> reduce health care costs. Other examples of strategies intended to empower health system consumers include training patients to ask their doctors more questions, teaching patients to 'self-manage' chronic illnesses, providing family members with results of genetic testing for heritable health conditions and encouraging the home use of self-monitoring equipment (Oudshoorn, 2008, cited in Harris et al., 2010, p. 2).

On the other hand, Miller and Rose describe the issue as the conceptualization of human self as:

> In a whole range of sectors individuals came to reconceptualize themselves in terms of their own will to be healthy to enjoy a maximized normality surrounded by images of health and happiness in mass media and marketing strategies deployed in commodity advertising consumption regimes narrativizing their dissatisfactions in the patient language of rights they organized themselves into their own associations contesting the power of expertise protesting against relations that new appeared patronizing and meaning of their autonomy .Claiming and say in the decision that affected their lives (Miller and Rose, 2008, p. 211).

This situation is to differentiate the ways of providing health services by giving the responsibility to the individual, creating various perception methods and determining the target audience. This is not just a patient, disease relationship. People's images also cover topics such as doing sports, wanting plastic surgery or hair transplantation. Places, where all these services provided are also needed. The commodified state of health, which includes conditions such as sports, using nutritional supplements, is imposed on people with the influence of the media. Nadesan explains this issue as follows:

> In addition to being targeted by corporate sponsored wellness programs more prosperous consumers are targeted by an ever expanding range of markets agents offering products and techniques for maximizing health ranging from organic and vitamins training (Nadesan, 2008, p. 111).

The adoption of a consumer-oriented approach of the health care sector both redefines the definition of well-being and imposes it not directly. Commodified health becomes an option that the citizen can obtain or not at his own initiative, which

affects the equality of citizens. The role of specialists in this transformation is particularly important as they are factors that lead individuals to learn about the norms of acquiring and maintaining healthy lifestyles. Besides, marketing of health services replaces the individual as a subject can freely chooses healthy lifestyles. The spatial implications of the commodification of health become an affordable product range from small clinics to large chain private hospitals.

2.3.3.2 Privatization of Healthcare Services

Initially, around the whole contemporary world, hospitals were defined as the establishment of services in the framework of the health care service benefit. Therefore, there was a question of its non-profit profile. However, over time the enhancements of medical techniques led to a rise in the number of physicians, specialization and the number of hospitals. As a result, the competitive environment emerged and health expenditures have begun to put serious burdens on countries. It has made it compulsory for the hospitals to make a profit to compete and maintain their activities. Administrations have paved the way for the privatization of hospitals to alleviate the burden of increased health care and to improve the quality of the service provided. Hospitals turned into operating as profit-based health centers as well as a treatment center and preventive health services with the impact of global competition, altering customer requirements, quality, cost awareness, and rapid technological development (Godiwalla, Batra, Johnson, and Charleston, 1997). In the Keynesian welfare state, governments have increasingly played a role in providing a range of humanitarian services, since the nineteenth century, particularly after World War II as the solution to the necessity to supply more care markets and the competition was introduced in the late 1980s (Leon, 2014; Deusdad, Pace and Anttonen, 2016).

In spite of the welfare state of the Keynesian economy after World War II, Mont Pelerin Society, and the Chicago School were active keeping the international relations and developing the body of theory and faith and this was neo-liberalism

(Dumenil and Levy, 2004). In most developed economies, neoliberalism, since the twentieth century's final decades, lead to the prevalent marketization of many courses of government and society (Stiglitz, 2002; Osborne and Gaebler, 1992). Neoliberals often promote institutional reforms to facilitate welfare state functions' privatization or marginalized populations' market integration (Harvey, 2010:253).

The occasion for transformation in policies of public facilities arrived with the 1970s' economic crises. In contrast to Keynes' economic orthodoxy, high unemployment and low economic development continued alongside high rates of inflation (stagflation), governments are faced with spending constraints that lead to concepts such as the financial crisis of the state as well as increasing demands for assistance in a wide area (O'Connor, 1973).

Since the global financial crisis of 2007–8, across Europe (and the United States), many interruptions in social spending have created significant pressures for efficiency measures leading to partial privatizations of the health care sector (Kentikelenis, Karanikolos, Reeves, McKee, and Stuckler, 2014; Hermann, 2009). Much of the austerity ideology is based on neoliberal and conservative positions that believe in the unsustainability of public health systems. Their central claim is the self-sustainability of private (profit-making) systems.

Supporters of neoliberals and private healthcare services, and supporters of neoclassical economists in general, accept the presumption that the public sector is inefficient and that state ownership and regulations hinder innovation and undermine quality. So, private ownership and private control are more suitable to control and ownership of the public across the general economy and health care in particular (Shleifer, 1998). According to Harvey "the corporatization, commodification, and privatization of hitherto public assets have been signaled features of the neoliberal project" (Harvey, 2007, p. 369).

The fact that health care becomes a commodity casts a shadow on people's equal rights. Concerning need and consumption; Baudrillard explains that:

> All men are equal before need and before the principle of satisfaction since all men are equal before the use-value of objects and goods…they are unequal and divided before the exchange value (Baudrillard, 1998:49).

While the right to health has been recognized as the most important and natural right in the law, the privatization and commodification of health care create a new situation inequality between people. Consumption produces diversity and social discrimination. Individuals strive to be separated from each other by a mode of consumption (Baudrillard, 1998). The transition of social services from public service to private markets symbolizes a change in individuals' social rights (Baudrillard, 1998).

2.3.3.3 Patient as a Customer

In healthcare facilities, the transition of the role of the sick individual from passive to active began in the late 1960s. The technological advances that have emerged in these times have brought about significant changes in the health system. With the rise in the level of education in societies, consumers have started to emerge with more knowledge and criticizing and questioning the service provided. Recently, patients in hospitals want to participate in their health care and learn what their condition is in the decision-making process and understand their diagnosis. Therefore, the quality of the health care service is no longer seen only in the dimension defined and determined by the health care team, but also the decisions of the patients (Çoban ve Kaşıkçı, 2008: 166).

There have been major changes in health systems recently since the 1980s, neo-liberal policies have been implemented throughout the world. Along with these policies, important reforms in the health sector have been on the agenda as in other sectors, and in recent years this change has accelerated again by gaining momentum. Nowadays, efforts are being made to increase the public and private health institutions' unlimited and systematic benefits, to integrate high-quality health care

services, information technology, and modern devices into the health system, and to ensure that patient safety and patient satisfaction importance (Aslan, Sezgin, Haşıloğlu, 2008: 23-24).

Supporters of healthcare privatization and commodification and on account of neoliberalism conceptualize patients as consumers and promote the choice model of the consumer to eliminate inefficiency and low quality. Healthcare reform that is consumer-centered is a market that maximizes value. The operational dynamics of this private sector system means competing between participants to achieve better results at a low cost for patients (consumers) (Angelo and Haislmaier, 2008).

Patient satisfaction is one of the most important activities in hospitals for providing patient-centered services in the health sector. Today, increasing competition conditions, technology, education level, and communication opportunities have made it obligatory to put patient satisfaction in the focus of activities in health institutions (Aydın, 2012: 212). As a result of globalization, today's competitive conditions have led businesses to look for assistive methods that will make a difference in competition. The survival and sustainability of enterprises depend on their being customer-centered and providing quality services (Koparal, 1997: 324). Hospitals are institutions that are responsible for providing health services. In fulfilling these duties, it is important for hospitals to consider the quality and to take initiatives in this direction. In addition to this, all the employees should take the necessary actions to increase the satisfaction of the patients by showing the necessary care for patient relations and patient satisfaction (Büber and Başer, 2012: 265). Today, health institutions have been able to meet the medical needs of the patients as well as their aesthetic, emotional and cultural needs and expectations. The reason is that the success of a health institution depends on the patient's continued treatment with satisfaction and the conclusion of this treatment process. Patients who are not satisfied with the services may interrupt treatment or apply to other health institutions. In this case, there is a failed production of services for the healthcare enterprise. For this reason, the success of the health institutions can be considered as applying and concluding the treatment with the participation of the satisfied patient

(Güllülü, Erciş, Ünal, Yapraklı, 2008: 28). Scher prepared a list of 10 items and stated that by examining these factors, patient-centered design can be understood very well:

- Space for health care,
- Functional suitability: this also includes security and the condition and maintenance of the institution,
- Privacy: for all users,
- Social support: for all users, especially patients,
- Comfort: for all users,
- Selection and control: for all patients and staff,
- Access to the open air: For all users,
- Diversity of experience: For all users,
- Transport and navigation,
- Communication and information (Scher, 1996).

On the other hand, MacRae listed the eight dimensions of patient-centered care:

- Respect the needs, values and preferences expressed by the patient,
- Access to care,
- Emotional support,
- Information and education,
- Maintenance coordination,
- Physical comfort,
- Inclusion of family and friends,
- Continuity and transience (MacRae, 2000).

Patient satisfaction is one of the important concepts used to demonstrate the quality, efficiency, effectiveness, and performance of health services. Recently, health institutions have been acting according to the expectations and needs of patients and satisfaction with health services (Kırılmaz, 2013: 13). Patient satisfaction is an important function of quality service. Determination of satisfaction levels of patients

is important in terms of improving the quality of service and providing more qualified services following the expectations of patients. Also, patient satisfaction is a complex subject that is influenced by perceptions of hospital care quality, demographic characteristics, personal characteristics, past experiences, attitudes, expectations, care outcomes, hospital physical resources, organizational management, quality recall, length of hospital stay, institutional characteristics and disease characteristics (Taşlıyan ve Gök, 2012: 76). Factors affecting patient satisfaction can be divided into three groups. These are; patient characteristics, service provider characteristics and institutional characteristics. First, the characteristics of the patient include the elements like age, gender, educational level, social security status, and income status, type of disease and duration of hospital stay. These characteristics, which vary from person to person, are closely related to the level of satisfaction with health care. Secondly, the characteristics of the service providers are as follows; personality traits of health personnel, education level, compassion, care and kindness shown to the patient. Third and lastly, the institutional features are; whether the hospital where the health service is provided is a state, university or private hospital and includes physical facilities such as lighting, heat, ventilation waiting rooms and parking (Çakıl and Özer, 2007:141-142; Kırılmaz, 2013: 13; Draper, Cohen, Buchan, 2001, 464-465; Andaleeb, Siddiqui, Khandakar, 2007: 264-265).

In the transition from machine aesthetics to a customer-oriented hospital design, spaces that also appeal to the psychological needs of people have been designed. Reducing building scale is an important goal of humanist architecture in the United Kingdom and Europe. Concerns about the scale stemmed from an increasing number of hospital bed problems in existing buildings. During the post-war hospital shortage, a medical officer in the medical journal Lancet argued that the number of beds in hospitals should be limited to humanistic reasons (Anon, 1947). The ideal hospital scale is especially important for two reasons. The first should give patients specific areas and privacy, and the second should be easy to recognize and navigate at a general level (Dormer 1994). Architect D. J. Petty and senior medical officer Robert

Macdonald Shaw did a trip to Scandinavia and wrote about their observations on hospital that:

> There were a large number of interesting points we noticed which are only possible to touch upon. Perhaps, one of the most striking was the very pleasant sense of scale achieved inside the hospitals. There was an air of quiet welcoming efficiency without any trace of the institutional feeling. We concluded that two of the reasons for this effect were the comparatively low ceiling heights … and the widespread use of naturally occurring timbers (Shaw and Petty, 1955).

In this text; the language of 'humanistic' design was not used but the mention of the scale and natural textures in the surfaces were the specialties of humanizing the design of hospitals. The modern high-tech hospital was not aesthetic and was inhuman, and the impact of space on patients gained a more solid place in the 1980s after Roger Ulrich's study of patients with garden-view rooms improved the transformation faster (Ulrich 1984).

In the patient-centered design, the patient is the main link. The emphasis here is that the patient and his family participate in every stage of the health care process and contribute to the improvement of the quality of health care by sharing their individual experiences. It means that the patient and his family are informed about medical choices and informed more and take responsibility (Cama, 2009). For designers, patient-centered understanding can be summarized as creating physical environments that meet the needs of the patient, reduce stress and provide safety and privacy to it. The important thing here is that the designer can perceive his / her environment from a patient's perspective, and can create high quality environments for patients and their relatives by synthesizing their own knowledge and experience (Prasad, 2008). In the UK, in 1999, a seminar was organized and the report of the seminar was published in May 2001 under the name "Building a 2020 Vision: Future Health Care Environments" and the basis of planning and design principles according to this report were social model of care consists of patient-centered approach, quality of design and sustainability (Francis & Glanville, 2001).

While a patient-centered design approach dominates hospital design, the evidence-based design has begun to show its effect rapidly in hospital design. In the development of design decisions, evidence-based design, which is based on the most reliable research results, is thought to be a new concept that emerged mostly in the field of architecture and design and said to be based on the 1960s, in fact, it can be said that the work of Florence Nightingale and Renkio hospital planning are the first examples of evidence-based design during the Crimean War in which the mortality rates were reduced with the change of physical conditions and kept their records. Evidence-based practice, which began with Archie Cochran's evidence-based research methods in the 1960s, continued with studies (Clipson and Johnson 1987; Clipson and Wehrer 1973; Medical Architecture Research Unit, 1971-1977) that demonstrated the relationship between staff efficiency and hospital organization in the US and the UK in the following years (Malone, Mann-Dooks and Strauss, 2007). Carpman and Grant worked on building orientation and wayfinding in 1993. Evidence-based design is an environmental design approach that aims to improve results for patients, staff and organization by basing design decisions on proven research and practices (Ulrich, Zimring, Joseph, Quan, Choudhary, 2006). This aim can only be achieved by the environment designed as healing for patients, supportive for the family and efficient for the staff (Ulrich 2000).

Evidence-based design is the process for making critical decisions about project design and for clear, careful and logical use of the most valid evidence in research and implementation. Contrary to standardization, it aims to develop individual and unique design decisions. In conjunction with the evidence-based design, an interdisciplinary approach has been replaced by architects' reliance on and reliance only on evidence in their fields such as engineering science, static, geometry, physics, and construction law. The usual answers of the complex problems that arise in design and implementation have been replaced by the new responses of the designer with the user (Hamilton and Watkins, 2009).

In evidence-based design, it is seen that the designer is in cooperation with the user. What is important here, as perceived by many architects; is that the user is considered

to be the key to the solution of many key points, rather than as a barrier in terms of design decisions and project control. Another important point in evidence-based design is that the designer can choose the most reliable among many researches. The important thing here is to have access to the most accurate information that can help design decisions.

The evidence-based design process, according to Hamilton, includes the following 4 stages:

1) Providing research and design connection,
2) Evaluating hypothesis and results,
3) Sharing the obtained information,
4) Presenting the results for independent evaluation (Hamilton 2009).

In order for the evidence-based design practice to be properly understood by architects and engineers, Hamilton first suggested that practitioners examine the current research and projects in detail. He argued that creative designs could be developed and correct design decisions could be made by correctly determining the success and failure stories of the related projects. After this stage, he stated that it is necessary to create a hypothesis for the evaluation of the information obtained and the expected results. In the next stage, it is expected that the designers are expected to share the experiences in the research process with other practitioners and customers, so that the negative and positive aspects can be revealed clearly. In the last stage of the process, he emphasized that all the findings should be evaluated by experts in order to increase their reliability and prove their validity (Hamilton 2009).

Many health organizations apply the evidence-based design principle to improve patient safety and quality of care, and to design healing environments by reducing stress. The Evidence-based Design Accreditation and Certification program (EDAC) created by the "The Center for Health Design" Institution is also supported by the evidence-based design "Pebble" Project, which has become widespread in the design of international healthcare buildings. Pebble Project was started in 2000 by “The Center for Health Design” organization. It is an international research initiative

aimed at change by adopting an evidence-based design approach in the design of healthcare buildings. The Pebble Project, which has more than 50 partners across the United States today, is growing consistently, including Canada and the UK internationally (Taylor, 2009).

The Pebble organization aims to reveal the proven methodology and how to understand their acceptability for the design and construction of new healthcare organizations. Evidence and non-systematic data based on personal narratives are not considered sufficient for decision makers. Comparative evaluations of healthcare buildings and reliable research reports on the subject are considered necessary. In this context, Pebble partners undertake at least one research project, conducting numerous researches on topics such as clinical recovery, patient and family satisfaction, organizational change, and financial performance, and examining the results in the construction and use process. The results of these studies, which are also carried out with Pebble colloquiums held twice a year, new ideas about evidence-based design and activities related to innovative building design are evaluated. Project topics are grouped in several areas such as health quality, patient safety, staff efficiency, environmental safety, and economic results. In general, studies are carried out on the quality of care, sound, light, satisfaction, anxiety and fear, staff efficiency, environmental safety, evidence-based design process, economic results, patient safety and workplace safety (Taylor, 2009).

In 2002, “Saint Alphonsus Medical Center”, one of Pebble's partners, signed a successful study. The hospital was renovated in 2003 with an evidence-based design approach to ensure noise control, especially on patient floors. In line with the evidence obtained from the pebble projects, an understanding that prioritizes user satisfaction has been effective in the design of patient rooms. In order to control the noise level, larger and single rooms were designed, the walls and ceilings were built with acoustic tiles and the machines were moved. As a result of the study, the sound level per patient room fell below 51.7 dB and the sleep quality increased from 4.9 to 7.3. Accordingly, it was observed that patient satisfaction was higher than before in the end of the 3-month comparison period (Taylor, 2009). The "Peace Health Sacret

Heart Medical Center" hosted the 2008 Pebble colloquium and shared the results of the work it carried out regarding the accidents that occurred during patient transportation. The research group investigated the causes of injuries during patient transport for more than 5 years and designed ceiling elevators to reduce accidents. In this way, the accidents that occurred during the transportation of patients in the hospital were reduced by 83% annually compared to the past (Taylor, 2009). Evidence-based design approach has been the most important design approach for hospital designs. This situation aims to avoid giving negative results to the new design by evaluating the results of the design based on the experiences of the human. In many ways, the principles that form the basis of humanity design was nothing new and some of the rather traditional design features were (re)presented as humanization. However, this new terminology emerged as a result of a critique of the 'inhumane' modern hospital (as an oppositional structure) operated as a material representation of modern medical practice (Bates, 2018). Several features described as humanization were famous examples such as Florence and afterward, despite the tendency to align modernism with non-humanization, the dominance of concepts such as nature, color and light is seen in Alvar Aalto's famous Paimio Sanatorium in Finland (Bates, 2018).

In the United States, larger-scale structures were advocated as more humanistic with principles of familiarity and accessibility similar to the shopping malls (Sloane and Sloane, 2003). Although this model is followed in some United Kingdom hospitals, the medical and design literature shows uncertainty about the “humanist” state of this design. The rise of the patient as a consumer was important in the United Kingdom and was closely linked to the rise of patient-centered medicine. However, humanistic design models are more in line with Scandinavian rather than US trends, and more about creating a homey space than consumer culture (Bates, 2018). The aim of both designing a home-like place and approaching the patient like a customer aims to provide patient satisfaction. Scher (1996), MacRae (2000) sorted the parameters that affect the satisfaction of patients and their relatives as follows;

- Authorization level of the hospital,
- Ensuring privacy,
- Ensuring security,
- Providing social support,
- Appealing to aesthetic feelings,
- Helping 'direction – finding,'
- Disability and children being considered,
- To be functional,
- Be accessible.

Health institutions are trying to look for new ways to reduce the sterile, cold images of hospitals and to design more comfortable and welcoming spaces instead. With the patient-centered design, the concepts of "healing architecture" and "healing design" have been introduced as a new approach. In fact, the contribution of elements such as natural light, color, landscape, art, which should be the basis of architecture, but ignored as the buildings progress, continues to be researched and applied in hospital design.

As a healing and humane architectural approach, the biophilic design approach is a design approach that has been widely used in hospitals. Biophilic Design or Life-friendly Design; It can be described as an approach to design healthier living spaces by integrating the built environment with nature in order to decrease the stress level and increase the well-being (well-being) in daily life (Browning, Ryan and Clancy, 2014; Kellert, 2005). According to Kellert, the concept of biophile is to increase the human well-being in the context of the relationship between culture and nature by adopting the more sustainable natural structure of the world in its design and construction. Conceptually biophilic; can be described as efforts to return to nature and integrate with nature for physical and mental health and vital satisfaction (Kellert, 2014; Wilson, 2016).

Although Life Friendly Design or Biophilic Design may seem conceptually new, it has always found a place in built environmental practice with different approaches.

The need for shelter, which arises with the need for protection of human beings, can be summarized as first turning to nature, then transforming nature and finally building. This action towards the need that started from nature has created culture with the development of knowledge and technique, but the development of culture has never been completely disconnected from nature (Cananzi, 2016). In this context, it is observed that nature is used as an input, sometimes directly or indirectly as a design element in the built environment. For example, the design of the flowing water used in Amasya Darüşşifa built in Seljuk's Period, with its visual and auditory features, for the treatment of many diseases, or in the context of biomimicry / biomimulation, in the history of architecture inspired by the nature that comes in different approaches and forms in every period from ancient times to modern times. The most prominent examples of this are the patterns and shapes that are completely emulated in nature in Art Nouveau (Golenda, 2015). According to Kellert and Calabrese biophilic design has 5 criterias:

1) Biophilic design requires repeated and sustained engagement with nature.
2) Biophilic design focuses on human adaptations to the natural world that over evolutionary time have advanced people's health, fitness and wellbeing.
3) Biophilic design encourages an emotional attachment to particular settings and places.
4) Biophilic design promotes positive interactions between people and nature that encourage an expanded sense of relationship and responsibility for the human and natural communities.
5) Biophilic design encourages mutual reinforcing, interconnected, and integrated architectural solutions (Kellert and Calabrese, 2015).

Today, there are many scientific sources for the finding that the human brain and its behaviors are intricately connected to the natural world (Heerwagen and Hase, 2001). Biophilic Design is a method of designing the space to bring its users together with nature and integrate it. Spaces designed with this approach allow its users to live in healthier environments with lower stress and higher levels of well-being in living environments. Biophilic design (life-friendly design approach) is important

for social health and the global economy in key public spaces such as workplaces, schools and healthcare structures (Browning et al, 2014). According to Kellert and Calabrese, connection and interaction with nature can be achieved in 3 main categories. As can be seen in Table 3, these are 24 items under the title of the direct experience of nature, indirect experience of nature and the experience of space and place (Kellert and Calabrese, 2015).

Table 3 Biophilic Design Framework

Direct experience of nature	**Indirect experience of nature**	**Experience of space and place**
Light	Images of nature	Prospect and refuge
Air	Natural materials	Organized complexity
Water	Natural colors	Integration of parts to wholes
Plants	Simulating natural light and air	Transitional spaces
Animals	Naturalistic shapes and forms	Mobility and wayfinding
Weather	Evoking nature	Cultural and ecological attachment to place
Natural landscapes and ecosystems	Information richness	
	Age, change, and the patina of time	
Fire	Natural geometries	
	Biomimicry	

(Kellert and Calabrese, 2015)

Although the design approach does not bear the name of biophilic design, one of the biophilic design approaches with its compliance with the criteria is the Waterfall House designed by Frank Lloyd Wright in 1935. In this respect, the concept of biophile, which is genetically coded into life and nature and defined as an innate trend, already exists in the built environment theory (Demirbaş and Demirbaş, 2019). The rules adhering to the design of the health care structures are not different from the rules mentioned in the other building types required by the architectural action. In this respect, the most important problem of architectural action for hospitals is function and functionalism. The function is the essence of a structure; functionalism is a form of interpretation. Health structure emerges as the best type of structure for functionalist interpretation. The medical rules that must be followed in a hospital have a large share in this. But functionalism and function are not synonymous concepts. A building design that can fulfill a specific function does not necessarily

reflect a functionalist interpretation. Also, the function is not the only element of structure design. The realization of the proposed scheme in a health care structure, regardless of the way in which the function is resolved, is no different from other issues within the scope of all architectural action. For this reason, the architectural product that already fulfills the requirements of architecture becomes a healing design.

CHAPTER 3

HEALTHCARE FACILITIES IN TURKEY

Space is political.

Lefebvre 1977, p. 341

Lefebvre, H. (1977). Reflections on the politics of space. In R. Peet (Ed.), Radical geography (pp. 339–352). London: Methuen and Co.

3.1 Introduction

The issue of transformation of health services in Turkey requires to mention briefly the development of health services in the same geographical area. Various treatments based on the birth of Islamic civilization and continued their activities during the Seljuk and Anatolian Seljuk periods and reached the Ottoman Empire. In the hospitals built for this purpose; patient examinations and treatments were made, medical education was given, various medicines (headache, crunch, fever, skin diseases, etc.) were used for treatment and were given free of charge to those in need (Kılıç, 2012: 9, 42). Many darussifas from the Seljuk period continued to be used by the Ottoman Empire. Accordingly, the health services in the Ottoman Empire are imitating the Seljuk period until the period of Selim III, when the well-established reforms began (Yavuz, 1988: 123). In this period, all health services were administratively palace and military centered, and the majority of the services were for palaces and soldiers. As in everything in the Ottoman Empire, there are traces of monarchy in health policies. Apart from the donation health aid provided to the poor by the notables of the palace and the wealthy, the public receives health services from self-employed physicians by meeting the costs themselves (Akdur, 2008: 392).

The emergence of epidemic diseases seen all over the world in the 19th century caused the Ottoman state to give more importance to health services. After this period, institutions that will provide serious health rehabilitations and preventive and therapeutic services were established, quarantines and collective treatments were applied to prevent epidemics, public health was undertaken by local administrations over time, general health policies were applied, and translations of various medical books were made (Çavdar and Karcı, 2014: 257-260). Also, under the supervision of the palace, examinations were made to physicians through various institutions (*Mekteb-i Tıbbiye-i Adliye-i Şahane, Meclis-i Umur-ı Tıbbiye*), and the drugs were checked and researchers were assigned for new drugs and practices (Yavuz, 1988: 402).

Then, the first examples of the word hospital in the name of the building, Gureba Hospitals were established. The first was opened in 1843 for Muslims under the name of *Bezm-i Alem Gureba-i Müslüm*. *Gureba* means orphan and poor. In the names of foreign and non-Muslim hospitals, the word hospital was used before but for Muslims not. These hospitals were not established by the state and serve as an example for civil hospitals as a foundation. The second Gureba Hospital is İzmir *Gureba-i Müslimin* Hospital founded in 1849. Balıkesir Gureba Hospital was established in 1890 and other samples follow these hospitals (Tonbul and Forta, 2009). The Crimean War period (1853-1856) has an important role in world history in terms of hospital architecture. During this period, a British nurse, Florence Nightingale, was assigned to Istanbul and wrote her experiences in the Selimiye barracks in Üsküdar in her Notes on Hospital book, which will begin a new era for hospital designs.

3.2 The Establishment Period (1923-1960)

After the liberation war, after the establishment of the Grand National Assembly of Turkey on April 23, 1920, the Ministry of Health was established on May 3rd, 1920. The main objective of this period was to reduce the effects of war in the society that

emerged from the war and to establish health legislation. When the Republic of Turkey founded in 1923, Dr. Refik Saydam became the minister of Health and he is an important figure in terms of contribution to the development of healthcare services in Turkey.

When the Republic of Turkey was established, there were a small number of health care organizations that belong to the state, health services were generally provided by foundations. In 1923, 86 inpatient treatment facilities, 6,437 patient beds, 554 doctors, 69 pharmacists, four nurses, 560 health professionals, and 136 midwives were in service in the country. Health services were provided by public, municipal and quarantine clinics and by small public health offices (MOH, 2004). The numerical status of inpatient treatment in Turkey in 1923 are shown in Table 4.

Table 4 Number of Hospitals and Beds in 1923

Type of Institution	Number of Hospitals	Number of Beds
State Hospital	3	950
Municipal Hospital	6	635
Special Administration Hospital	45	4520
Private, Foreign and Minority	32	2402
Toplam	**86**	**6437**

(MOH, 2004)

The Law on Practice of Medicine and Medical Sciences No. 1219 (1928), The Law on Public Hygiene No. 1593 (1930) were accepted in this period which is still in use. Four basic elements of health policies in this period are;

1) Plan, design and application healthcare centrally,

2) Promote prophylactic care centrally and locally for curative,

3) Increase the number of medical faculties to raise the number of healthcare staff and force the mandatory service for graduates,

4) Start programs to combat infectious diseases such as malaria, syphilis, trachoma, and leprosy.

During this period, to find solutions to society's health problems resulting from war, a lot of new buildings were built and old buildings were used as a hospital as well. The first hospitals of the republic, named Numune Hospitals were opened in Ankara, Diyarbakır, Erzurum and Sivas in 1924, and the Haydarpaşa Numune Hospital was opened in 1936. Diagnosis and treatment offices were opened in 150 district centers in 1924 and 20 more centers in 1936, primarily in densely populated settlements. The salaries of physicians were increased and private practice was forbidden because of the equal approach of the social state to public health. (MOH, 2004).

Additionally, to the Numune Hospitals of the period, *Memleket* (Homeland) Hospitals built around the same time are also important in terms of health institutions in Anatolia. The first one of these is the Zonguldak *Memleket* Hospital, founded in 1923 for mine workers in Zonguldak. Other examples are Kayseri *Memleket* Hospital (1924), and Aydın *Memleket* Hospital (1925) (Atmaca and Demirgüç, 2016).

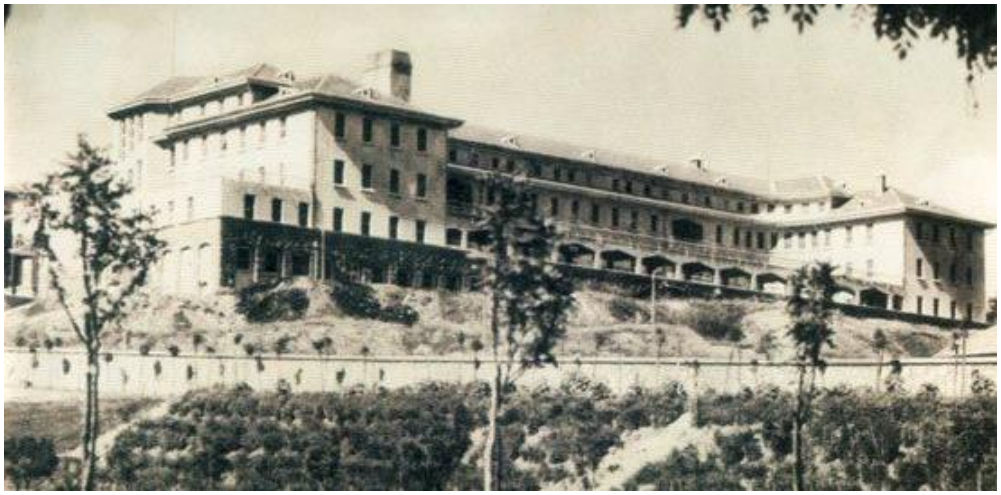


Figure 3.1 Ankara Numune Hospital

(Source: https://i.pinimg.com/originals/fb/f8/38/fbf83873f56a1a937f52ede0e6a2219b.jpg accessed on 26 December 2019)

Figure 3.2 Kayseri Homeland Hospital, 1910

(Source: http://www.havadankayseri.net/portfolio/memleket-hastanesi/ accessed on 3 Jan.2020)

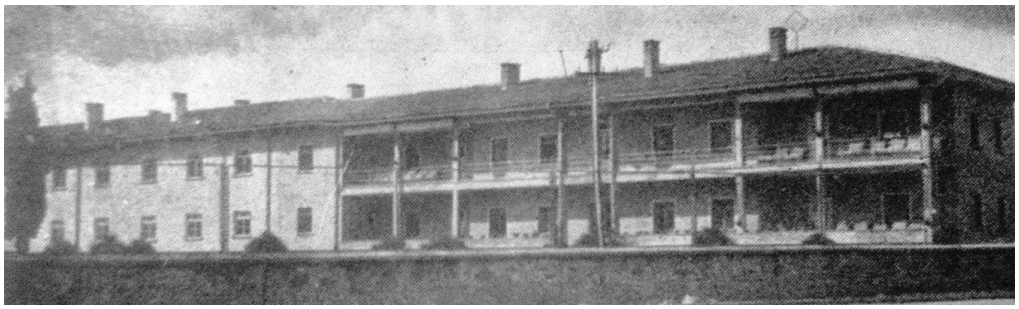


Figure 3.3 Aydın Homeland Hospital, 1918

(Source: https://tr.pinterest.com/pin/389561436507778950/?lp=true accessed on 3 Jan. 2020)

Figure 3.4 Zonguldak Homeland Hospital, Architect Kemaleddin, 1923

(Source: http://www.pusulagazetesi.com.tr/m_7044/hastane-icin-yer-bulundu/ accessed on 3 Jan. 2020)

In parallel with the transformation of hospital designs throughout the world, the new republican administration followed the same path with their western counterparts. In this context, the pavilion type hospitals which were very common in the nineteenth and beginning of the twentieth centuries were left as design type and the novel architectural type of block system was accepted (Uzunay, 2011). After abandoning the pavilion type hospitals which were mostly designed for avoiding the spreading of infecting diseases and known as Nightingale ward, the block type hospital systems became more popular and widely used around the world. The requirement for pavilion type hospitals which were economically challenging were abandoned because the pavilion type hospital required very large plots (Tüker, 1996). Asım Mutlu typologically analyzed the block type hospitals as given shapes in Figure 3.5. The sub-units in the block system allows connection with the circulation elements and easy access to each unit. Moreover, the hallways are not that long and wards can be fitted in a small construction area with more yard space led. This yielded the block type hospitals multi-floor and economically efficient. Block type hospitals are mostly designed in "I, L, T, H, Y, +" shapes and combination of these specific shapes in their layout. I-shaped plans are usually applied for small hospitals in which units are attached to the vertical circulation center and arranged in the same block. On the other hand, L, T, H and Y type plans are utilized in larger hospitals (Mutlu, 1973).

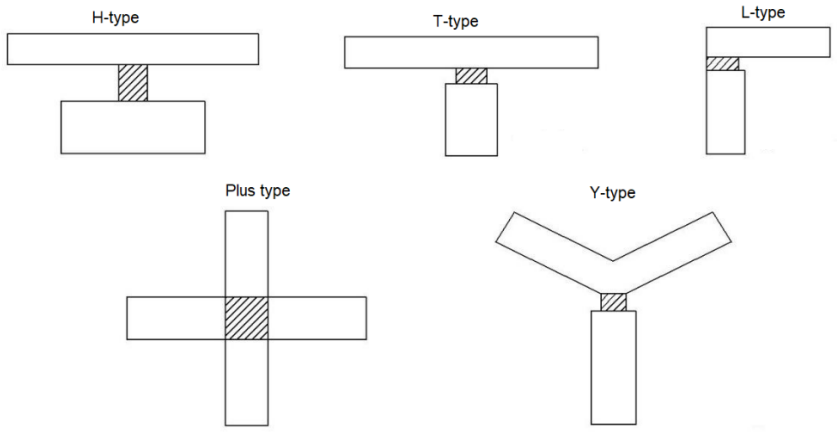


Figure 3.5 Block type hospital plans

(Mutlu, 1973)

Due to the continued use of the buildings used as hospital and medical school even before the Republic of Turkey, specific design approach for hospitals cannot be seen in this period. However, the buildings designed as hospitals in this period have impacts from the general design approaches of the period. For example, the project designed in 1935, for the external diseases department of the Cerrahpaşa Medical Faculty, whose foundation dates back to the Ottoman Period, has the characteristics of the block-type hospital projects with balconies. The building is an inpatient clinic with 150 beds of surgery, mimus, and a section devoted to tuberculosis diseases, and consists of assistants and nurses' department. The bedrooms have a sea view and the balconies designed to provide a terrace in front of each room. These balconies were made by retreating in the form of a tier so as not to prevent the underlying rooms from getting sun, this part is allocated to women on one side and the other to men (Arkitekt; 1935-09; 259-260).

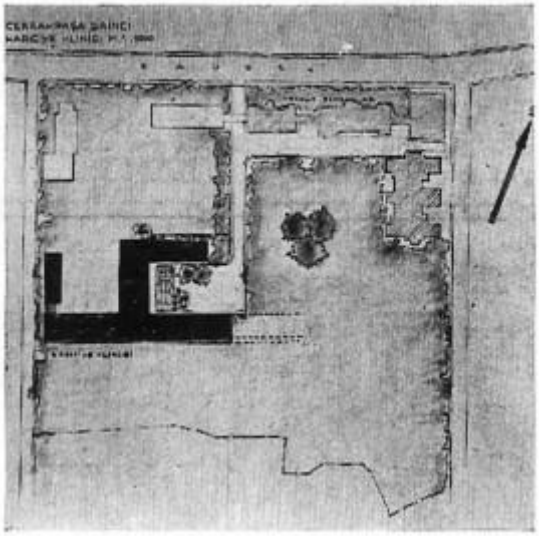


Figure 3.6 External Diseases Department, Cerrahpaşa Medical Faculty Hospital, Site Plan

(Arkitekt, 1935-09: 259-260)

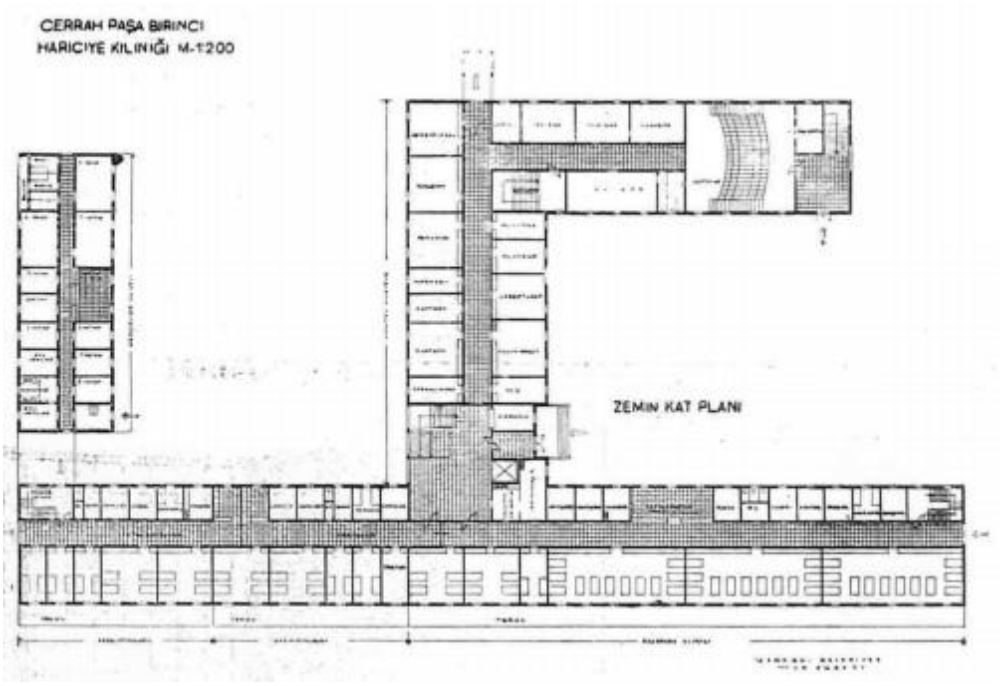


Figure 3.7 External Diseases Department, Cerrahpaşa Medical Faculty Hospital, Ground Floor Plan

(Arkitekt, 1935-09: 259-260)

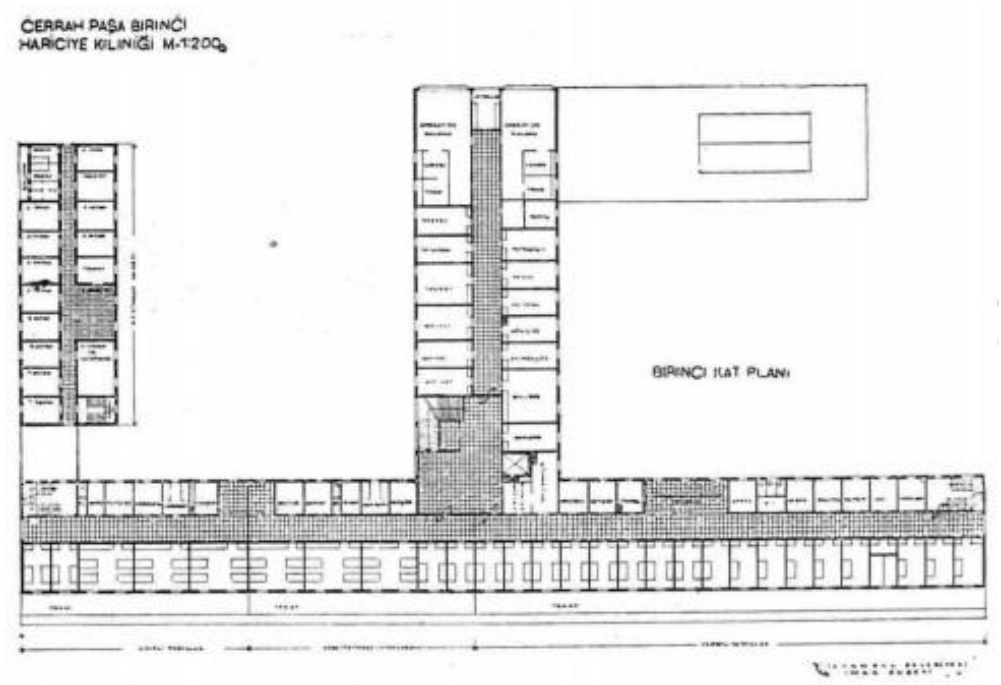


Figure 3.8 External Diseases Department, Cerrahpaşa Medical Faculty Hospital, First Floor Plan

(Arkitekt, 1935-09: 259-260)

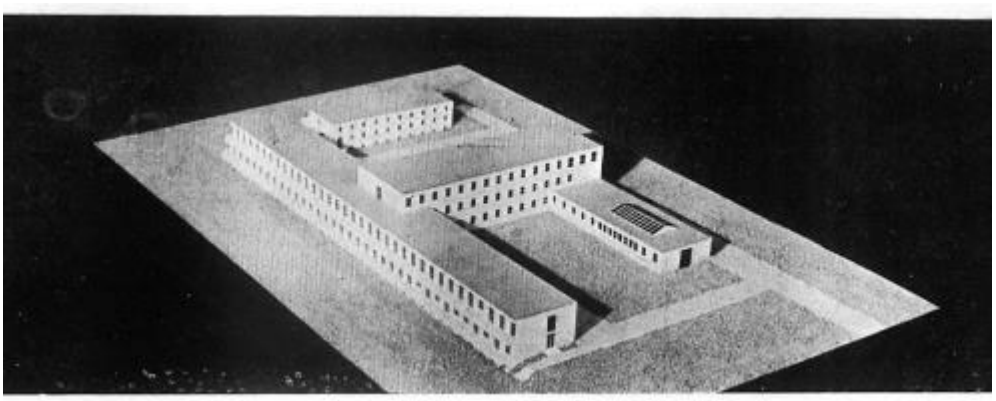


Figure 3.9 External Diseases Department, Cerrahpaşa Medical Faculty Hospital, Model

(Arkitekt, 1935-09: 259-260)

Healthcare buildings have been developed by adding annexes to the existing buildings with the increase in the population and the needs of the hospital. A polyclinic building was built by Istanbul Municipality in 1941 to correspond to some needs of Cerrahpaşa Medical Faculty hospital. The architect of the project is Leman Tomsu (Arkitekt, 1941/42-03-04: 49-52)

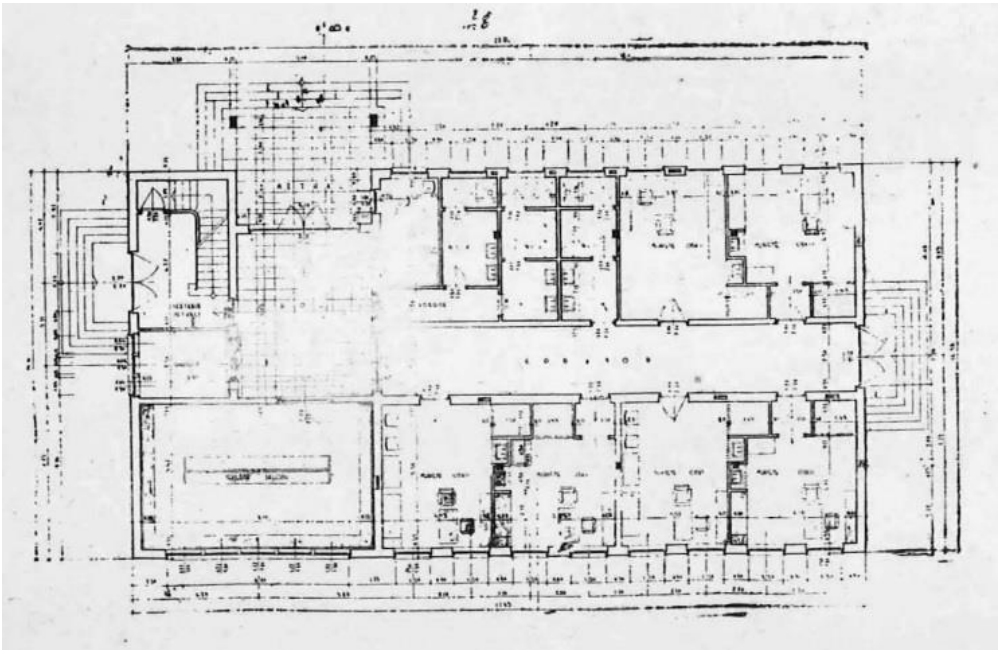


Figure 3.10 Annex Outpatient Department, Cerrahpaşa Medical Faculty, Ground Floor Plan

(Arkitekt, 1941/42-03-04: 49-52)

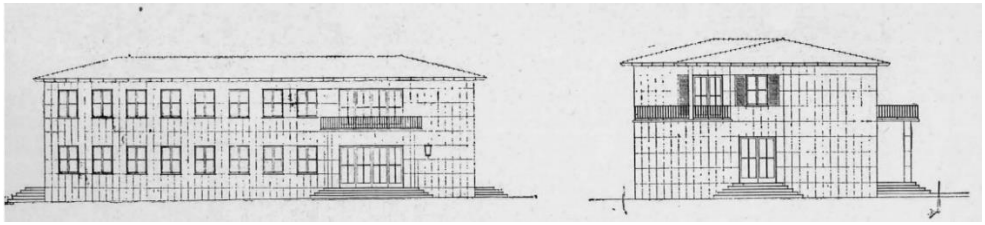


Figure 3.11 Annex Outpatient Department, Cerrahpaşa Medical Faculty, Facades

(Arkitekt, 1941/42-03-04: 49-52)

The block type hospital construction in modern Turkey has certain architectural variations in each decade starting from the 1940s (Özbay, 1996). In the 1940s, the architectural design for the hospitals followed a simple form. In general, on the basement floor; diagnosis areas such as the outpatient clinics, labs, X-ray rooms were employed. On the upper floors, the patient treatment units were located. In most cases, the constructional form was cubic with square and rectangular formed windows. As a general sample of this period, Afyon State Hospital (designed by Erip Erbilen) can be given as illustrated in Figure 3.12 (Özbay, 1996).

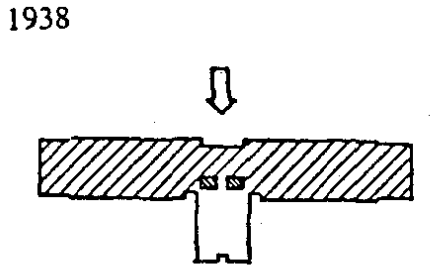


Figure 3.12 Plan of the Afyon State Hospital

(Özbay, 1996)

The fact that healthcare buildings which belong to the state and that the hospitals are built with public resources connects the hospitals with the health policies of the country. In 1946, the First 10-Year National Health Plan was accepted which is the first health plan of Turkey and National Health Plan and the National Health Program did not come into force as a law but the plan and the program influenced the

healthcare organization around the country deeply. The National Health Plan divided the country into seven health regions (Ankara, Balıkesir, Erzurum, Diyarbakır, İzmir, Samsun and Seyhan) aiming to establish a medical faculty in each region. In addition to Ankara and Istanbul Universities, Ege University has started to medical education in İzmir. The National Health Program split the country into 16 health regions (Ankara, Antalya, Bursa, Diyarbakır, Elazığ, Erzurum, Eskişehir, İstanbul, İzmir, Konya, Sakarya, Samsun, Seyhan, Sivas, Trabzon, and Van) (MOH, 2004).

In the 1950s, seven competitions related to health institutions were held, three of which were for public hospitals (Atmaca and Demirgüç, 2016). In the 1950s, generally, the block type scheme was mostly used in hospital projects. T and L shaped hospitals were spread across Turkey. The number of outpatient clinics was enhanced and the outer form of the buildings became more aesthetics with the development of international architectural improvements in the field of modernism. Ankara Numune Hospital's (Ankara Yüksek İhtisas Hastanesi) project which designed by Neriman Birce can be given as an example as seen in Figure 3.13 (Özbay, 1996).

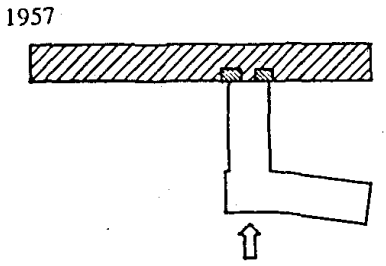


Figure 3.13 Plan of the Ankara Numune Hospital

(Özbay, 1996)

Another example of a T-shaped and block-type hospital project is Istanbul Tradesman Hospital (İstanbul Esnaf Hastanesi). The 250-bed Istanbul Artisans Hospital is built on the land between Süleymaniye and Kalendarhane streets. The architects of the project are Samim Oktay and Saim Arısan. The construction of the hospital started in 1955, but due to the difficulties in obtaining money, the hospital was opened in 1963 and acceptance of the patient started. Many Swiss institutions

and associations, especially the Swiss Locksmith and Building Masters Association, provided sanitary materials worth 1.5 million liras. The total construction area of the hospital is 9000 sqm (Arkitekt, 1964-02:53-59).

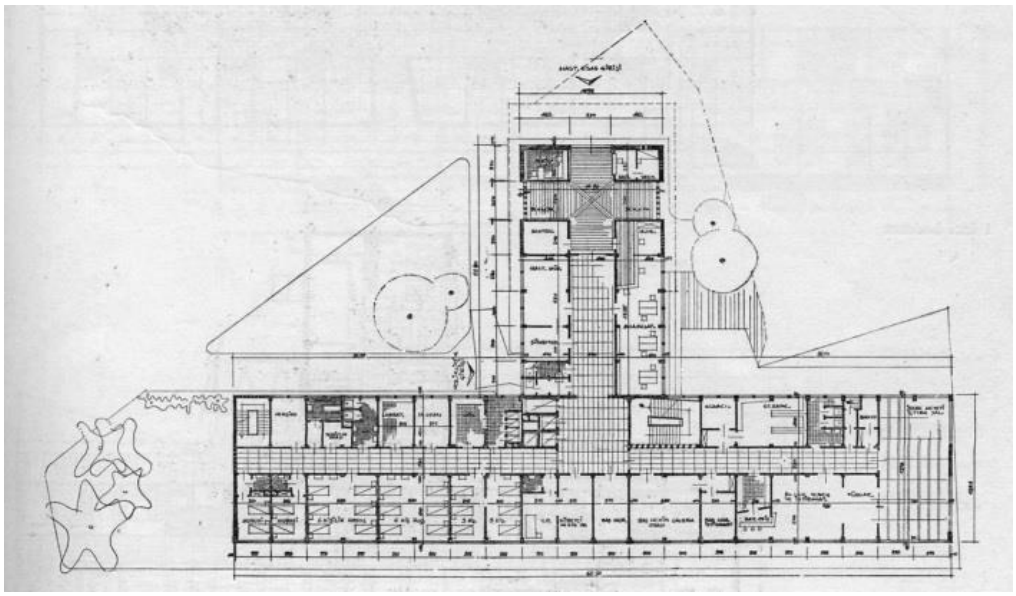


Figure 3.14 Ground Floor Plan of the İstanbul *Esnaf* Hospital

(Arkitekt, 1964-02:53-59)

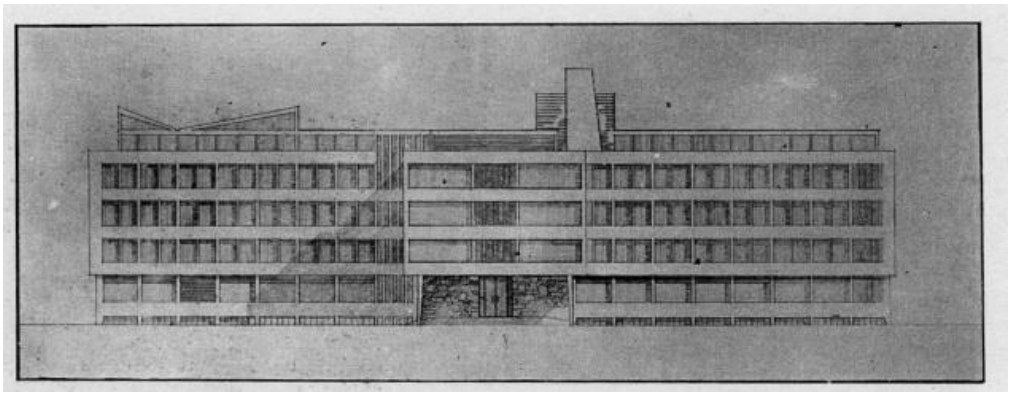


Figure 3.15 İstanbul *Esnaf* Hospital

(Arkitekt, 1964-02:53-59)

3.3 Increasing Number of Beds and Welfare State (1960-1980)

The Universal Declaration of Human Rights published in 1946 and the World Health Organization Constitution, adopted in the same year, are documents that register the use of health services as a human right. To benefit from the highest possible standard of health in the World Health Organization Constitution; It is stated as one of the fundamental rights of every person, regardless of race, religion, political belief, economic and social status. When access to all kinds of health services is envisaged as a human right, it will be a government duty to perform or at least finance and control this service. Therefore, in this period, all health services, including patient treatment services, started to be nationalized in each country. The first country which establish treatment organizations to serve the general public is the Union of Soviet Socialist Republics. This was followed by Sweden, the UK and other countries in Europe (Mimarlık, 1971/09-10).

In Turkey, between 1960 and 1980, it was conducted studies on the socialization of health. In 1961, the Law on Socialization of Health Services No. 2261 was adopted by the Grand National Assembly of Turkey. The Socialization Movement in Health, which started in 1963, spread to the whole country in 1983. Nationwide health centers, provincial and district hospitals were opened after this law (MOH, 2004). The number of hospitals and variations of their design approaches had been enhanced in this period. Besides, the number of beds in hospitals was increased and the number of beds reached 500 or 1000 (Özbay, 1996). An example of these hospitals with a capacity of 575 beds is Istanbul Vakıf Guraba hospital project. In order to provide an additional building to the Vakıf Guraba Hospital in Istanbul, a proposal was requested from 8 architectural offices in early 1960 to build a 575-bed full-fledged hospital on a large land owned by the Foundation. 8 offices participated in the offer. The audit committee has chosen the proposal prepared by Uğur Gündeş, Hüseyin Baban, Vahit Erhan and Orhan Demiraslan as construction project. The construction area of the whole hospital was 31.500.00 sqm (Arkitekt, 1963/01:21-29).

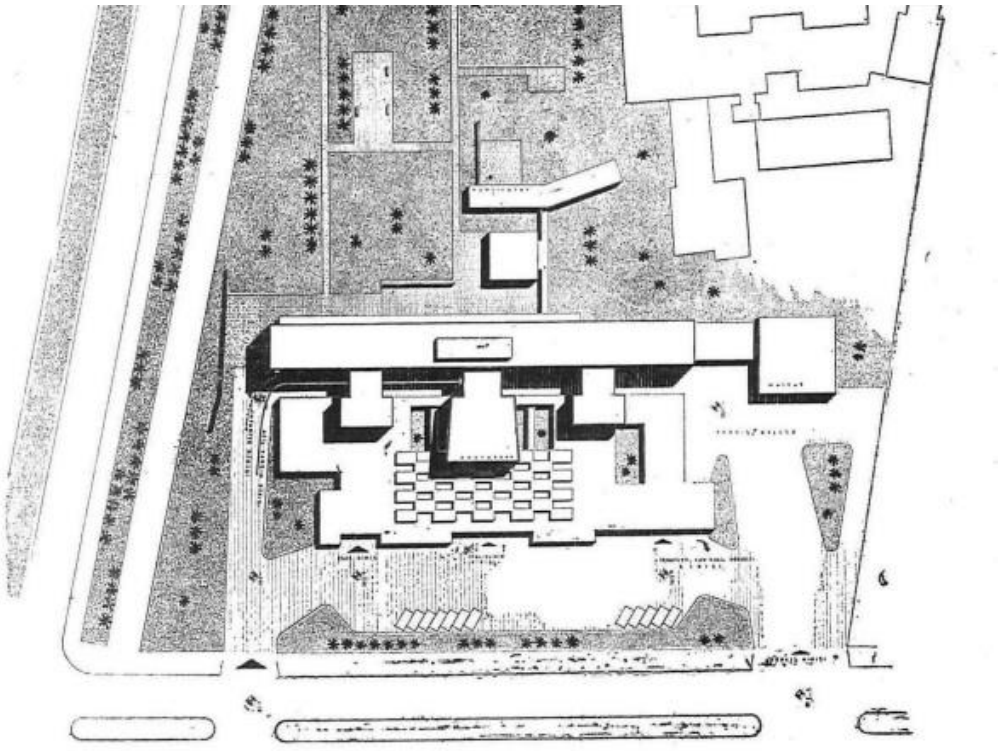


Figure 3.16 Site Plan, Vakıf Guraba Hospital

(Arkitekt, 1963/01:21-29)

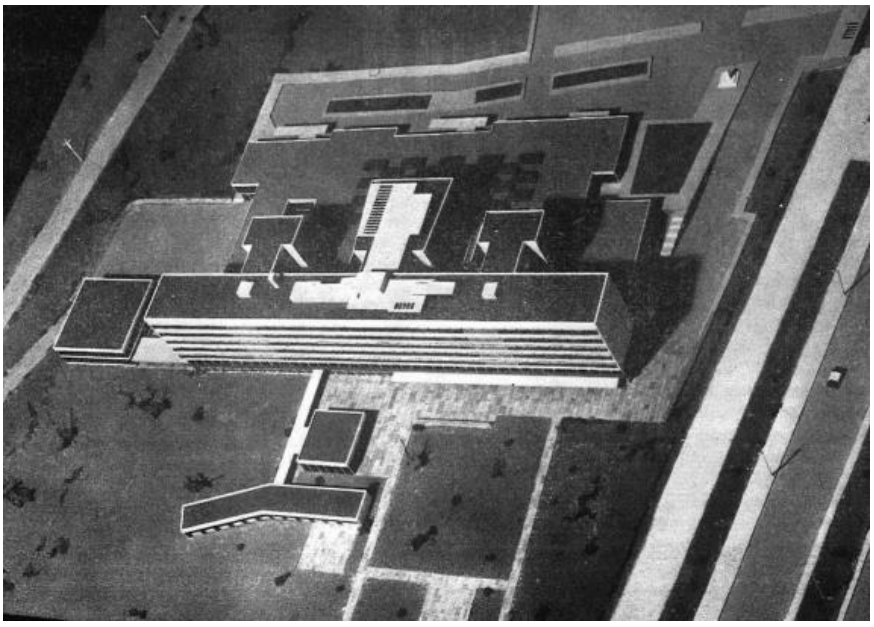


Figure 3.17 Model, Vakıf Guraba Hospital

(Arkitekt, 1963/01:21-29)

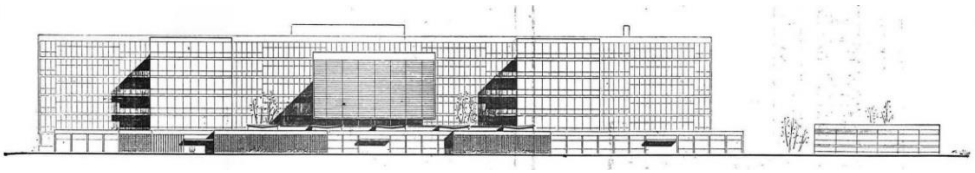


Figure 3.18 Façade, Vakıf Guraba Hospital

(Arkitekt, 1963/01:21-29)

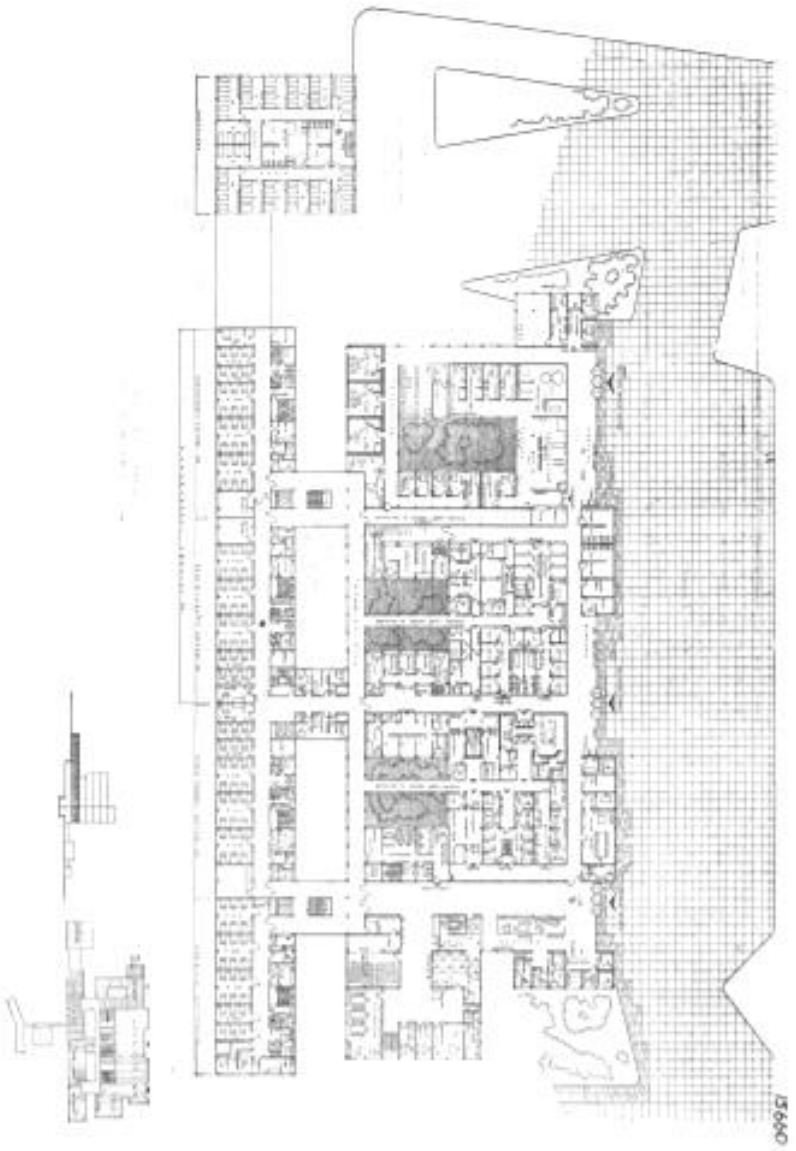


Figure 3.19 Ground Floor Plan, Vakıf Guraba Hospital

(Arkitekt, 1963/01:21-29)

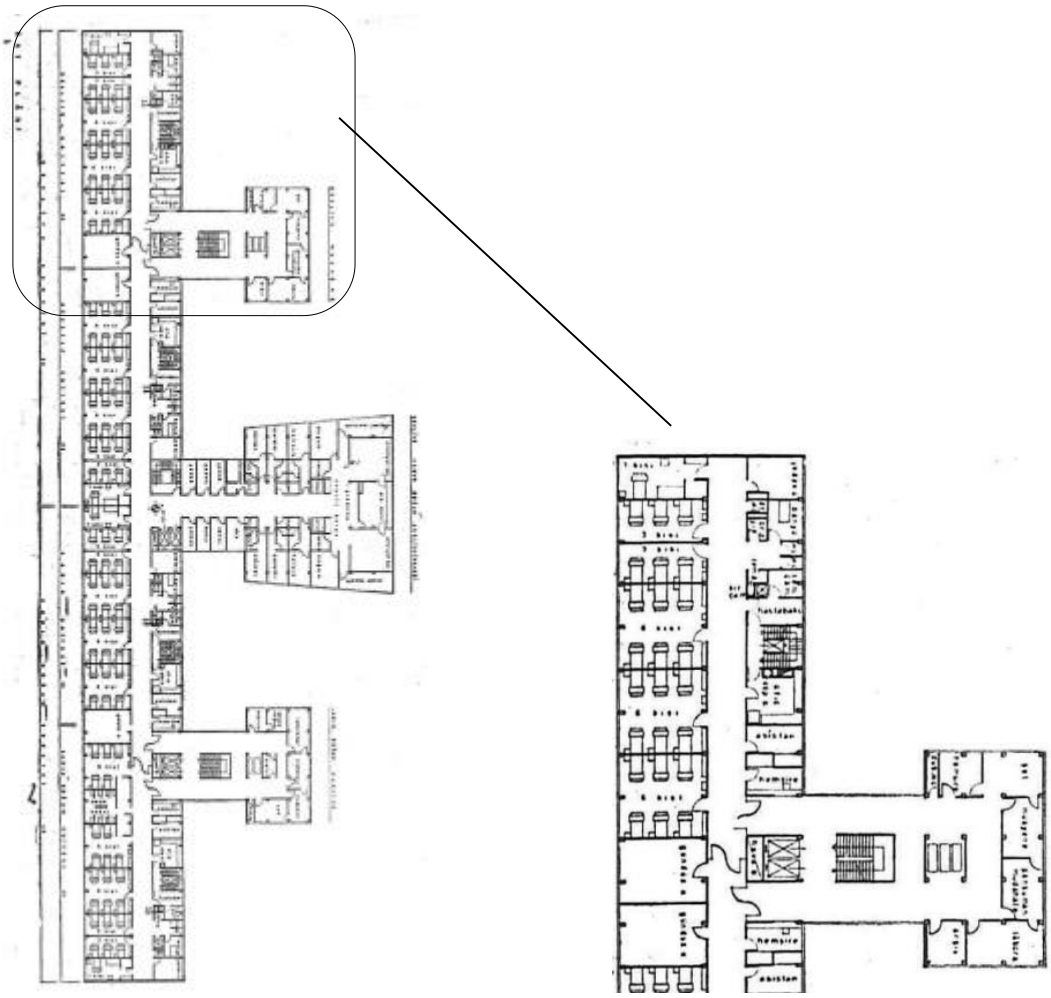


Figure 3.20 Floor Plans and Inpatient Rooms, Vakıf Guraba Hospital

(Arkitekt, 1963/01:21-29)

Patient bedrooms at Vakıf Guraba Hospital are planned as a 6-patient ward. Wards are located on one side of the corridor on south-east oriented and support areas on the other.

Another example for high bedded capacity and the long corridor plan scheme is Ege University Faculty of Medicine Hospital. It was necessary to make a new building complex for Ege University Faculty of Medicine, which was established in Izmir in 1955 in order to meet the health personnel needs of the country. The projects of Ege University Faculty of Medicine Hospital were obtained as a result of a general competition opened in 1961. The architects were Hüseyin Baban, Orhan Demiraslan,

Uğur Gündeş and Vahit Erhan. 4 different facilities are included in the subject of the competition as medical education and healthcare providers. 1. Medical Faculty 2. Medical Faculty Hospital 3. High Nurse College 4. Campus Health Center. The hospital is a complex planned according to patient care, teaching and practice. The total bed capacity of the hospital is 1094. The total construction area of the facility is 98,240 m2. It took about 30 months to prepare all the projects of the building. The program arrangement, the projecting phase and the duration of the construction period lasted 11-12 years and this made it necessary to make some changes in the facility. For this reason, some departments were reconsidered during the construction, and even some additions were made (Mimarlık, 1971/09-10).

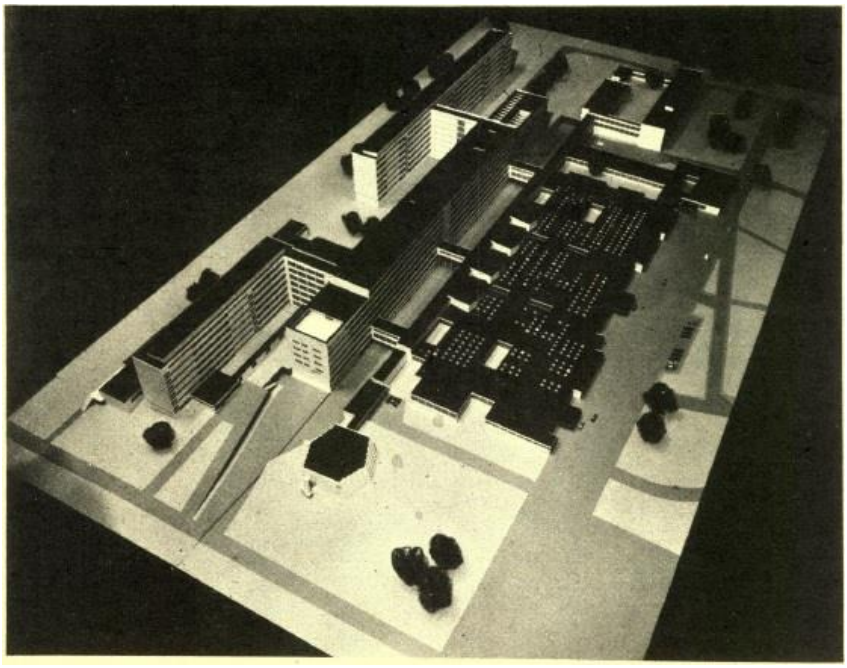


Figure 3.21 Model, Ege University Faculty of Medicine Hospital

(Mimarlık, 1971/09-10)

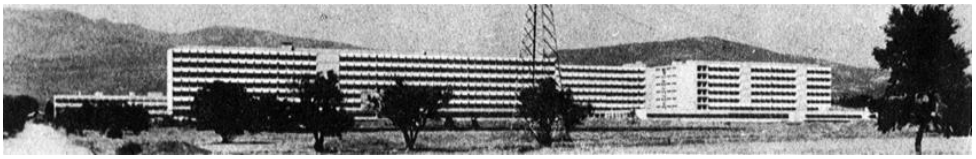


Figure 3.22 Facade, Ege University Faculty of Medicine Hospital

(Mimarlık, 1971/09-10)

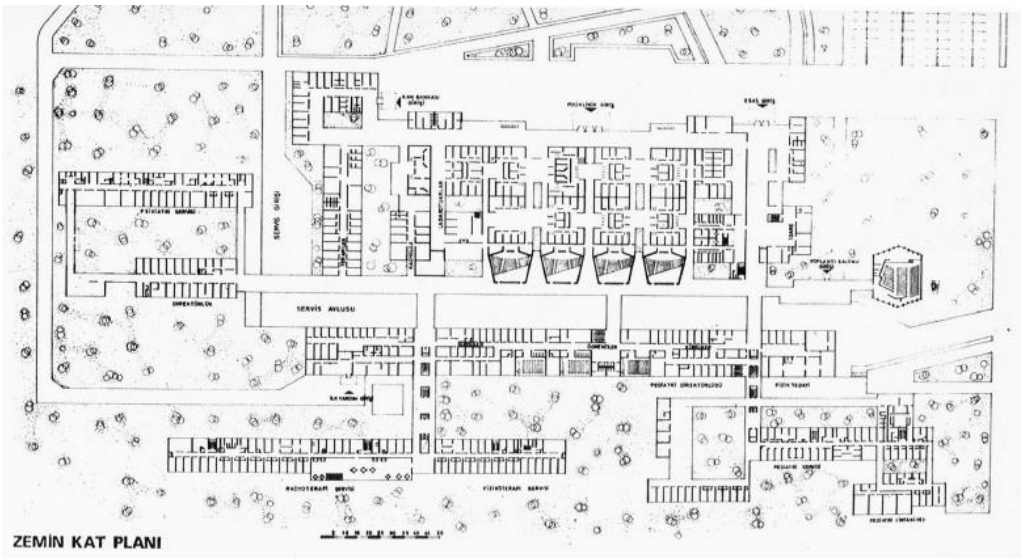


Figure 3.23 Ground Floor Plan, Ege University Faculty of Medicine Hospital

(Mimarlık, 1971/09-10)

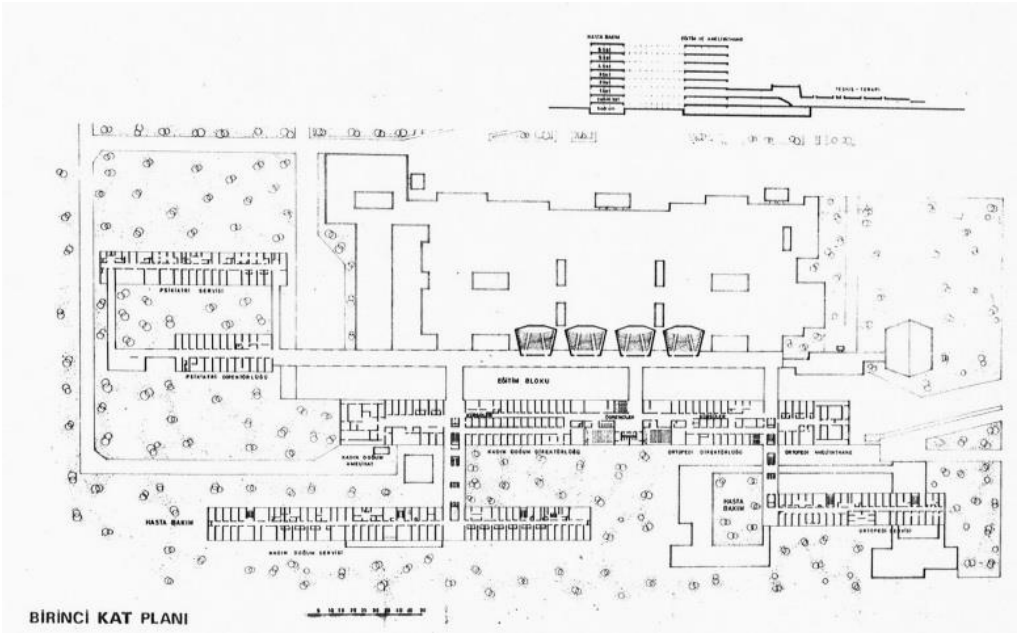


Figure 3.24 First Floor Plan, Ege University Faculty of Medicine Hospital

(Mimarlık, 1971/09-10)

Another example of the projects with high number of beds designed during this period is the Gülhane Military Medical Academy Hospital with 1000 beds. The project was obtained with a general architectural competition organized in 1961 and the first prized project's architects were Güner Acar, Yılmaz Sanlı and Yılmaz Tuncer. The commencement date of the construction is 1962 and the end date is 1971. Total construction area of the hospital is 260.000 sqm (Mimarlık, 1971/09-10).

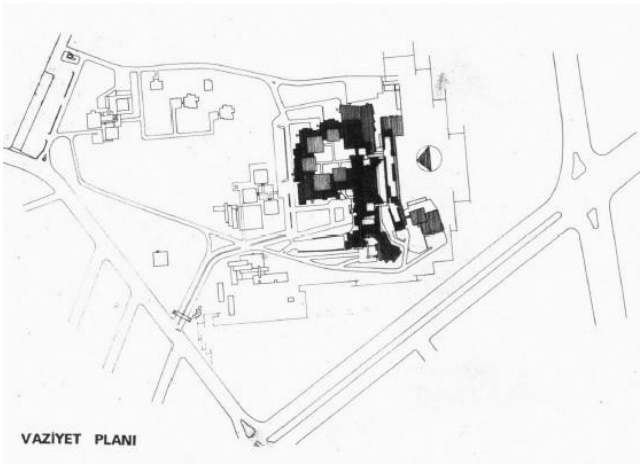


Figure 3.25 Site Plan, Gülhane Military Medical Academy Hospital

(Mimarlık, 1971/09-10)

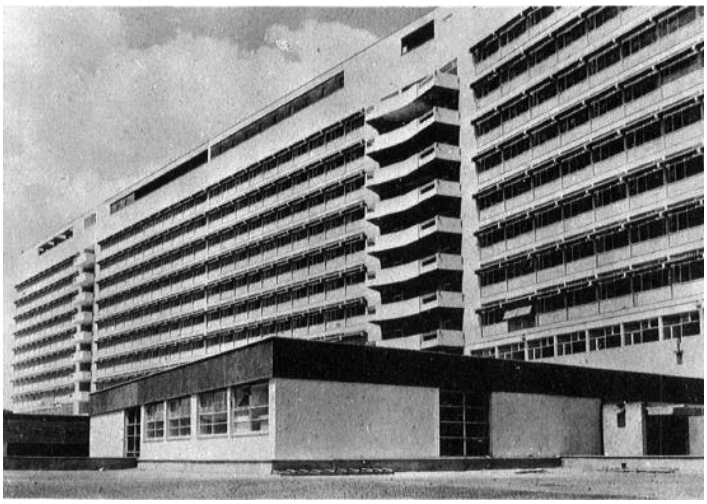


Figure 3.26 Front View, Gülhane Military Medical Academy Hospital

(Mimarlık, 1971/09-10)

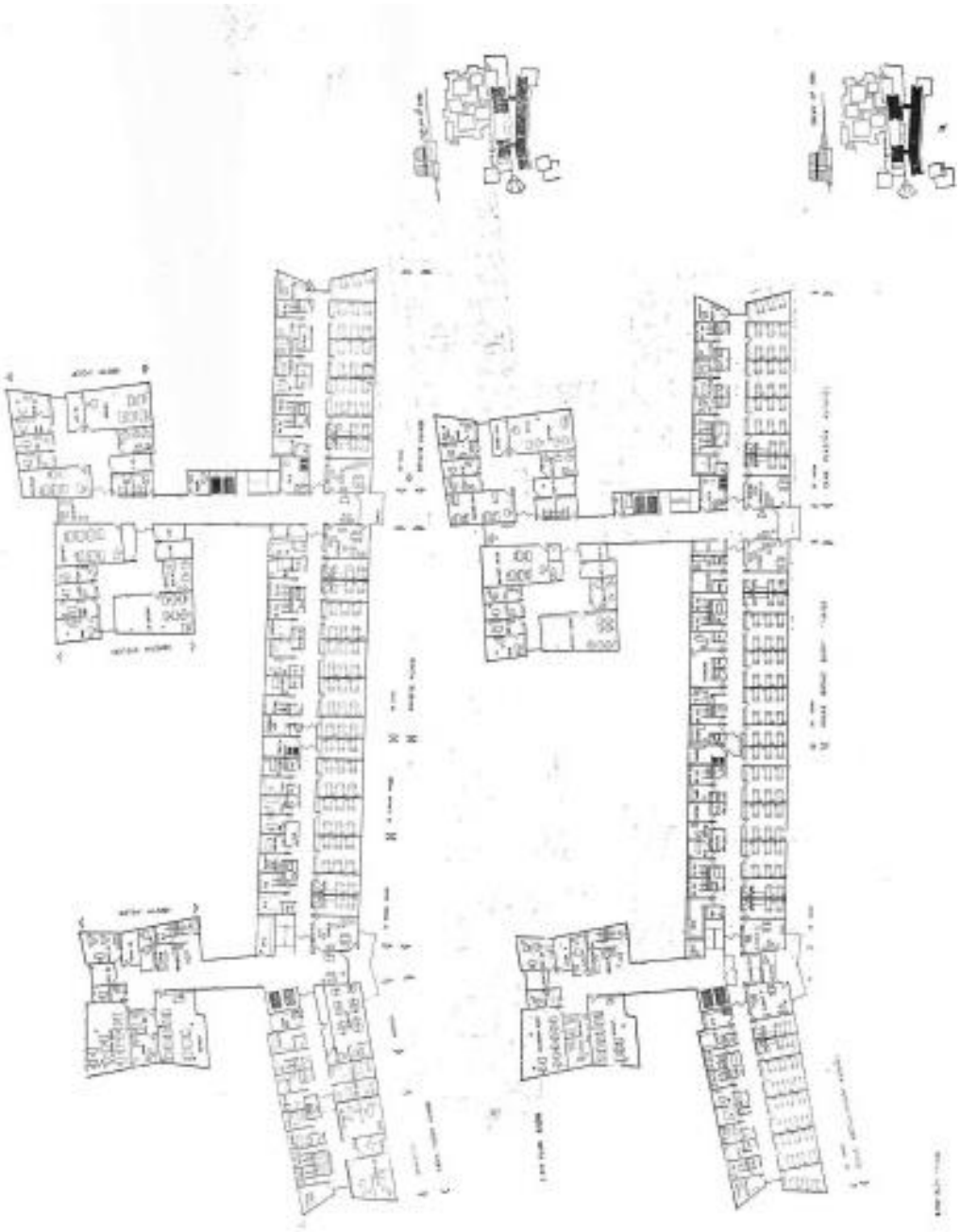


Figure 3.27 Floor Plans, Gülhane Military Medical Academy Hospital

(Arkitekt, 1962/02:82-91)

Since the beds were increased, diagnosis areas were moved to separate blocks as illustrated in Figure 3.28. There are 3 or 4 patient care units on the same floor as can be seen in the Figure 3.27. The most typical structure of this period in which the main block was designed as a rectangular prism is Gülhane Military Medical Academy Hospital. This scheme was very effective in the early 1960s. Another feature of the structure is observed in the solution of the polyclinic. The polyclinic was placed in square blocks. The ceilings are high and have an open-plan scheme. They get light from the ceiling. This structure was effective in many competition and Social Insurance Institution Beyoğlu Hospital, Social Insurance Institution Göztepe Hospital (competition scheme changed in practice), Vakıf Gureba Hospital as National Competition projects. A feature of this scheme was that there were 2 cores on the floor as a result of using 3 or 4 patient wards to reduce the height of the structure (Özbay, 1996).

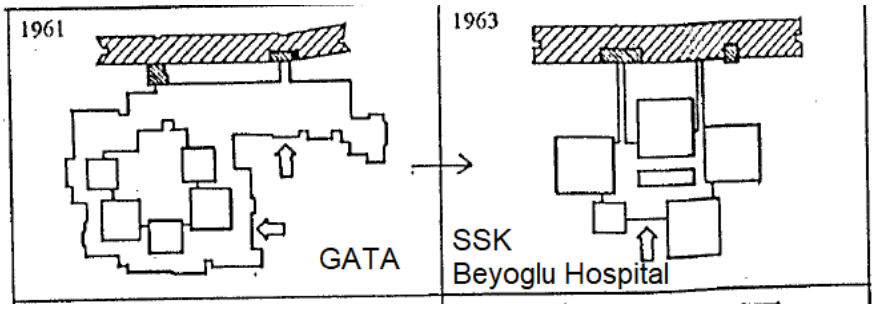


Figure 3.28 Various plans of hospitals in the 1960s

(Özbay, 1996)

The Social Insurance Institution Beyoğlu Hospital, with a design competition under the name of Beyoğlu *İşçi* Hospital in 1963, is planned with a capacity of 560 beds. In the first awarded project which is shown in Figure 3.29 and 3.30 most of the 23 other participating projects, the patient bed blocks are located in the section with a view to the south of the land. The architects of the first awarded project are Güntekin Aydoğan, Osep Sarafaoğlu and Nişan Yaubyan (Mimarlık, 1963/05:10-18).

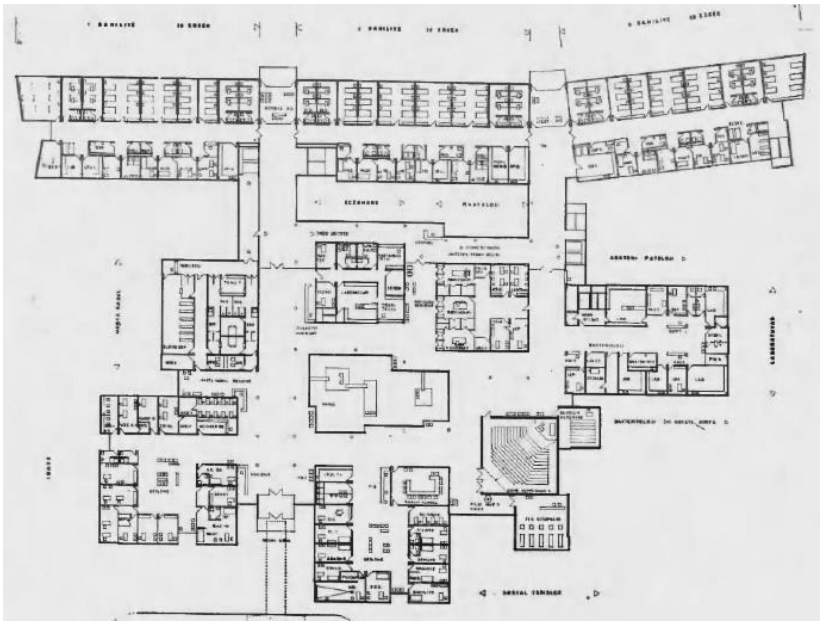


Figure 3.29 Ground Floor Plan, Social Insurance Institution Beyoğlu Hospital

(Mimarlık, 1963/05:10-18)

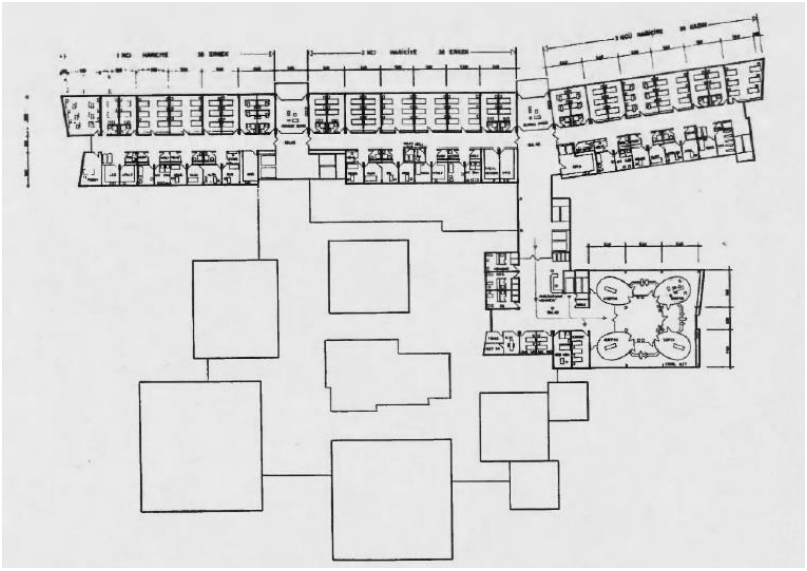


Figure 3.30 First Floor Plan, Social Insurance Institution Beyoğlu Hospital

(Mimarlık, 1963/05:10-18)

Social Insurance Institution Göztepe Hospital is planned on the Kayışdağı Street in Göztepe, Istanbul. The architects of the project, obtained with the general

competition held in 1963, are Erol Altaylı, Hasan Öncüoğlu, and Adnan Taşçıoğlu. The program is organized as a 500-bed general hospital. The main idea in planning is to turn the patient rooms to the landscape and south, to take the services to the north, the front; the main entrance was to take the side road. This hospital is an example of multi-storey block-type hospital typology (Mimarlık, 1971/09-10:65-66).

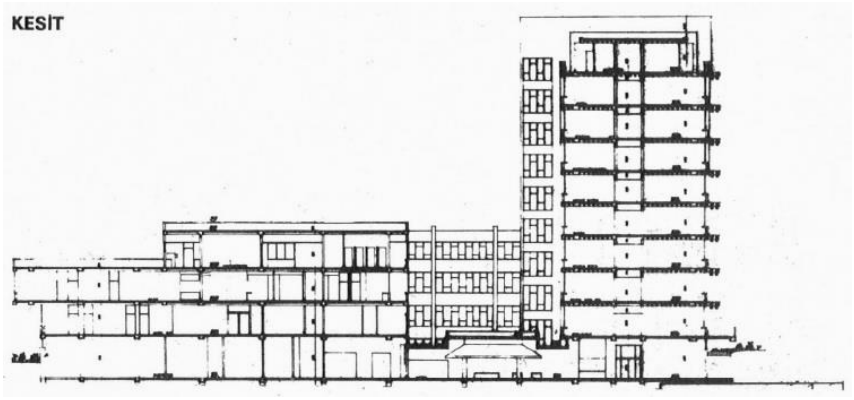


Figure 3.31 Section, Social Insurance Institution Göztepe Hospital

(Mimarlık, 1971/09-10:65-66)

Figure 3.32 Social Insurance Institution Göztepe Hospital

(Mimarlık, 1971/09-10:65-66)

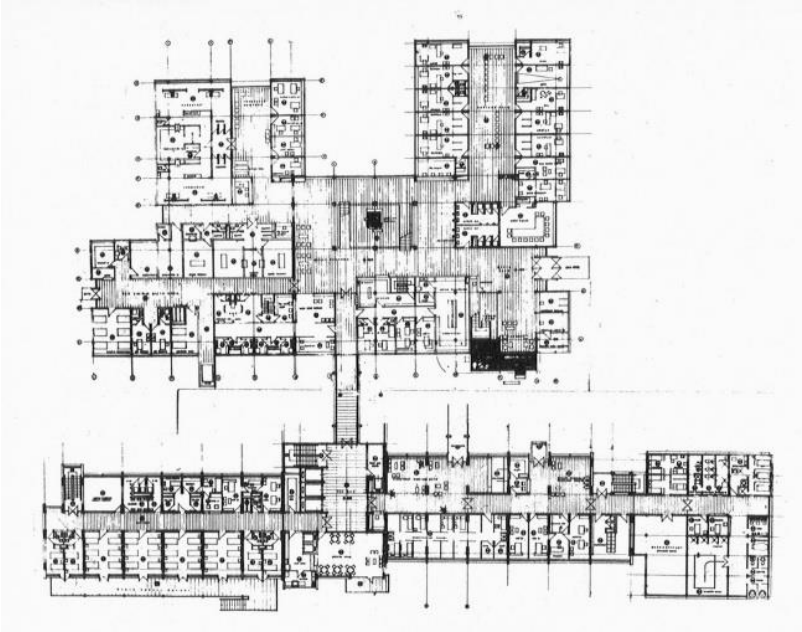


Figure 3.33 Ground Floor Plan, Social Insurance Institution Göztepe Hospital

(Mimarlık, 1971/09-10:65-66)

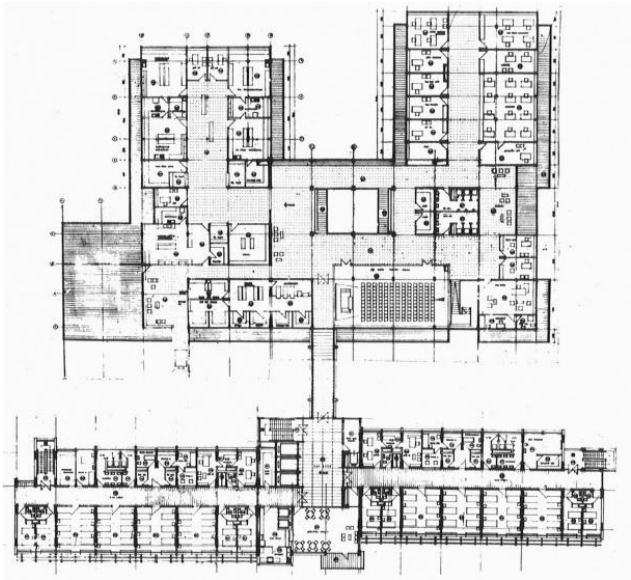


Figure 3.34 First Floor Plan, Social Insurance Institution Göztepe Hospital

(Mimarlık, 1971/09-10:65-66)

Another layout designed differently from this scheme in the early 1960s was the Şişli Children's Hospital of Şaziment-Neşet Arolat (1967, National Competition). In this layout; polyclinic, diagnostic-treatment departments, and operating rooms are located on the lower floors. Inpatient wards were located on these floors, covering a lesser area, depending on a single core. In this diagram, the core is located in the middle of the structure. The main difference of this layout was that the base was larger than the wards and required a terrace roof (Özbay, 1996). The project was achieved as a result of a national competition that ended in 1967. The presence of very old and large pine trees on the plot and the various pavilions of a working hospital affected the shaping of the building. A solution has been sought that aims to cut as few trees as possible and enables the hospital to work during construction. In the patient bedrooms, a square plan has been implemented instead of the single-aisle system, which had been used until then. Number of beds in the project is 720 and the construction area is 38,700 sqm (Arkitekt, 1974-01:42-48).

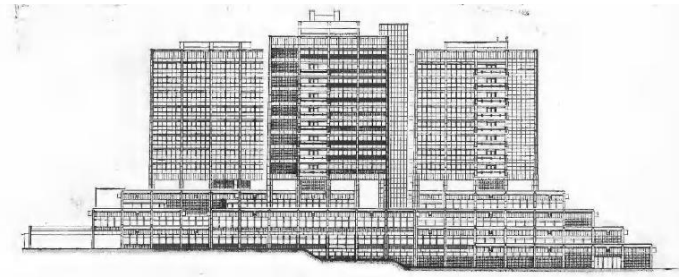


Figure 3.35 Şişli Children's Hospital

(Arkitekt, 1974-01:42-48)

Figure 3.36 Front View, Şişli Children's Hospital

(Serbest Mimar, 2017/2:22)

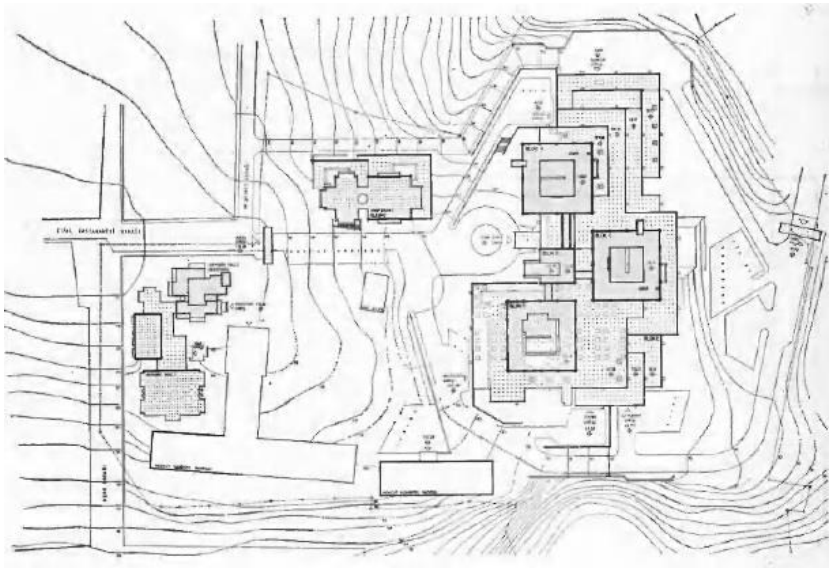


Figure 3.37 Site Plan, Şişli Children's Hospital

(Arkitekt, 1974-01:42-48)

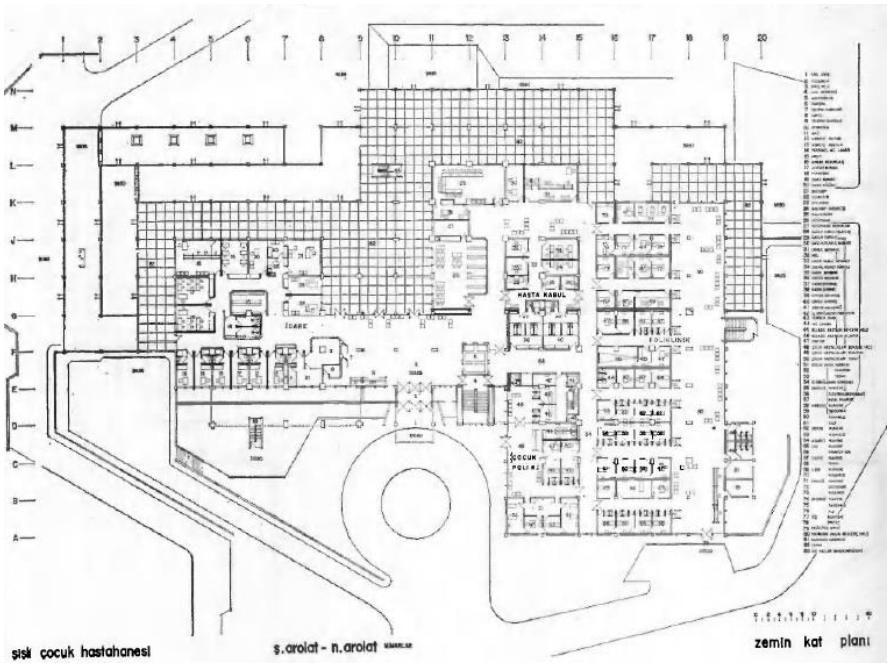


Figure 3.38 Ground Floor Plan, Şişli Children's Hospital

(Arkitekt, 1974-01:42-48)

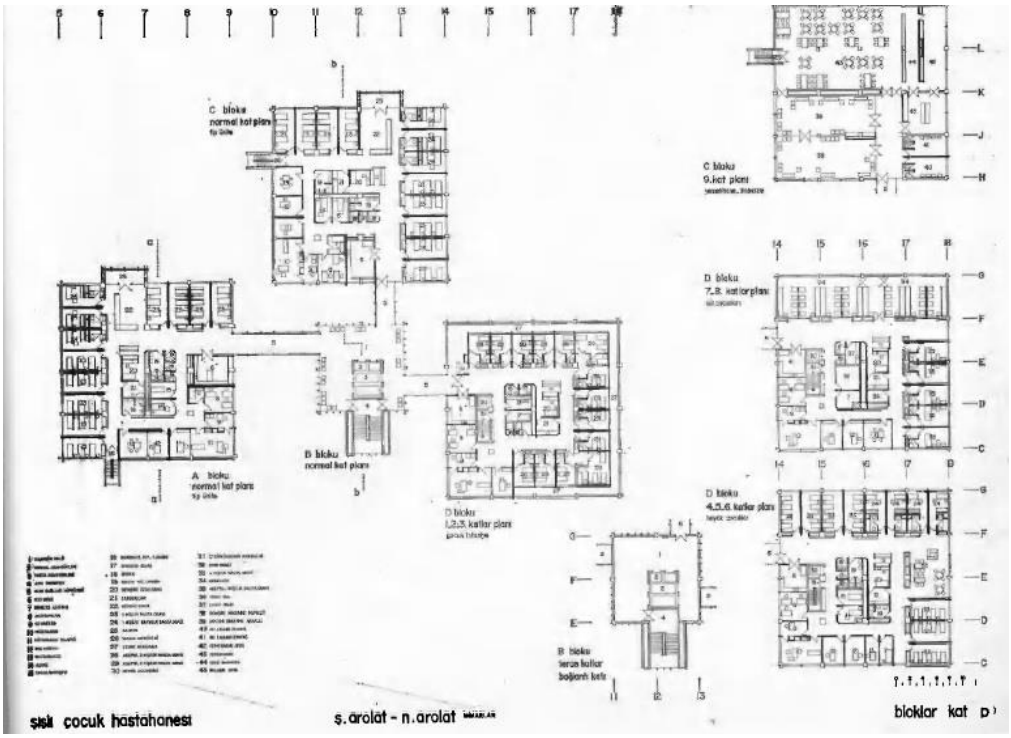


Figure 3.39 Block Plans, Şişli Children's Hospital

(Arkitekt, 1974-01:42-48)

This scheme was applied in a small scale hospital, Zonguldak State Hospital in 1963 by Arolat's and was repeated in Eğridir Bone Hospital designed by Yılmaz Sanlı, Yılmaz Tuncer, Güner Acar in 1967 and Ankara Faculty of Medicine designed by Teoman Doruk in 1976 which has won the 1st Prize in the competition. This version of the scheme was adapted to the conditions of the country in terms of the roof in Ankara University Faculty of Medicine (Affan Kırımlı, Turgut Övünç, Suha Toner, 1967) which had the chance to apply. In this layout, inpatient wards consist of 3 units with a square plan connected to a single core. However, the main change was the removal of departments (polyclinic, diagnostic-treatment, operating room) under the inpatient wards. Diyarbakır Medical Faculty, Çorum State Hospital were other examples of this scheme (Özbay, 1996).

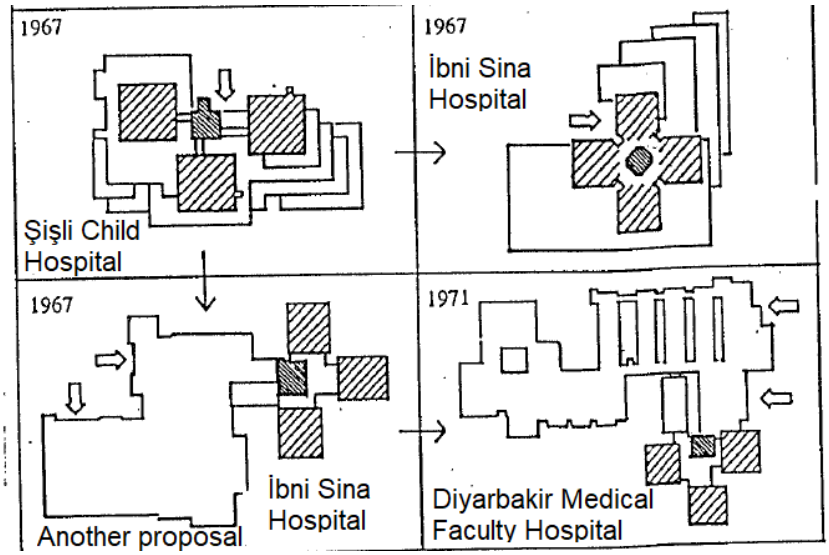


Figure 3.40 Various plans of hospitals in the 1960s

(Özbay, 1996)

In the 1970s, the roof of the healthcare building's architectural design was modified and terrace roofs were abandoned and tile roofing was proposed. Since the tile roof required, in the novel architectural competitions, then the whole hospital plans had to be modified. The hospital constructions were shaped as rectangular structures. On the other hand, patient treatment units were I, T and L shaped constructions. The design includes a single core with diagnosis, administrative and operational rooms in the lower blocks and inpatient wards were located in the upper blocks. On each floor, mostly two treatment units were located. Widely applied plans for the hospitals in the 1970s are given in Figure 3.41 (Özbay, 1996).

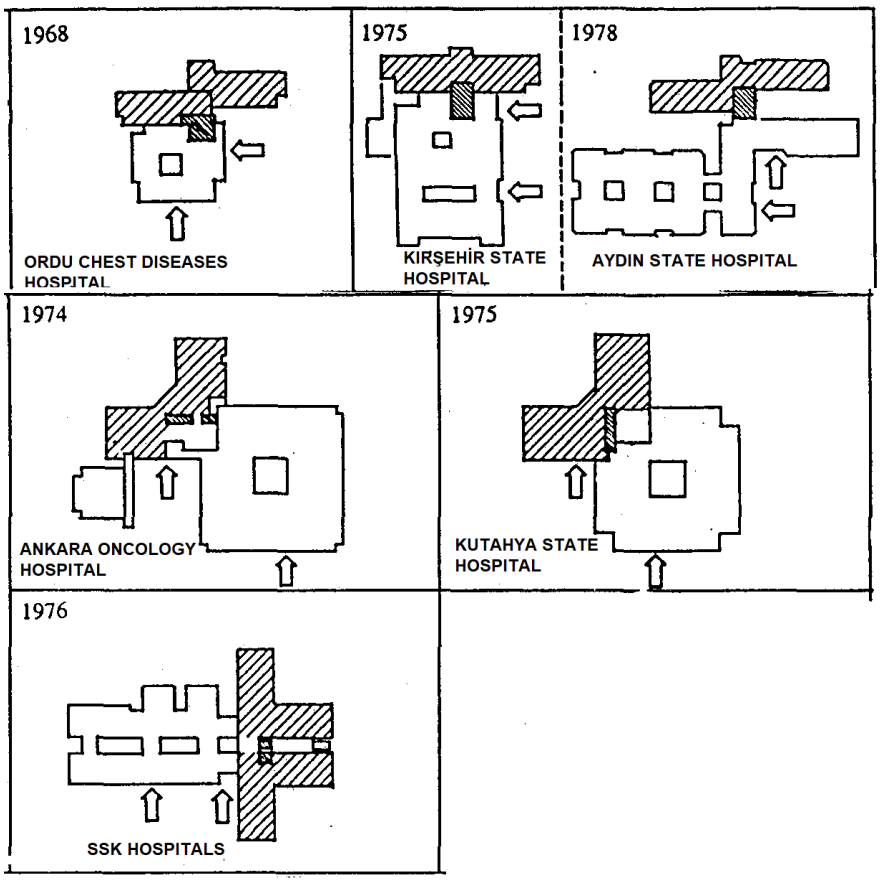


Figure 3.41 Various plans of hospitals in the 1970s

(Özbay, 1996)

3.4 Privatization and Plurality of Healthcare Services (1980-2002)

The Law on the Practice of Full-Time Health Professionals came into force in 1978, and public doctors were strictly prohibited from opening private clinics simultaneously. In 1980, the Law on Compensation and Working Principles of Health Workers was abolished and the right to open private clinics was granted to physicians. In addition to citizens' right to social security, the 1982 Constitution states that the state shall fulfill this duty by utilizing and supervising the health and social institutions in the public and private sectors. The same article contains a provision stating that General Health Insurance can be established (MOH, 2004).

The fundamentals of private hospitals operating in Turkey is based on the Private Hospitals Act No. 2219 in the year 1933. Subsequently, the provisions of this law remained inadequate and problems occurred. The number of private hospital establishments, which were few at the beginning of the Republic, started to increase with the law that came into force in 1987. Article 5 of the Basic Law on Health Services No. 3359 provided the opportunity to transform all health institutions belonging to public institutions and organizations into public health entities except for the Ministry of National Defense (Temel, 2003).

Fundamental changes in the delivery of health services in Turkey has been included as a priority to ensure the opening of the private sector in service delivery (Pala, 2007). In the 1980s, the private sector in Turkey, establishing clinics and dispensaries began to show interest in the field of health (Kerman, Demirgil, Altan, Büyüksavaş, 2011). The first establishments of these hospitals were usually small hospitals. The American Hospital founded in 1920 by Admiral Mark L. Bristol, was a hospital built entirely according to North American standards. Private Çankaya Hospital in Ankara has been in service since 1968. Ankara Güven Hospital was established in 1974 to provide care with the latest technologies (Tontuş, 2018). In the period until the 1980s, practices related to the improvement of service, health infrastructure and organization were made. The years after 1983 are the years of significant changes in health policies. In these years, reform studies based on the acceptance of the problems of the current situation gained momentum (MOH, 2004).

For state hospitals, during the 1980s, architectural design competitions were organized. The influence of young generations in the environment of competitions increased considerably and different attitudes were introduced and accepted. In 1984 Samsun State Hospital Project competition was organized. In 1985, Bolu 275 Bed Architectural Project Competition was organized (Mimarlık, 1985/10:3). The first application on the horizontal hospital scheme is the Bolu State Hospital designed by Hasan Özbay, Tamer Başbuğ, and Erdal Sorgucu in 1985. In this project, a scheme with 4 units on each floor is in the form of a W and the 250-bed hospital is solved on 3 floors. The project, which won the 3rd prize in Bolu State Hospital Competition

in 1985, was an important step in the development of hospital projects. Another example of the horizontal hospital scheme was Maslak Military Hospital designed by Hasan Özbay, Tamer Başbuğ, and Baran İdil in 1988. This 600-bed capacity hospital was designed on 4 floors with 6 units on one floor. Although the 1980s were not rich in hospital competitions, neither of these hospitals was constructed. However, they were effective in breaking the patterns in hospital schemas (Özbay, 1996).

The 1990s was a period in which the number of hospital competitions was high. The most important competition in this period is the Şanlıurfa State Hospital Competition. It was organized in 1990 with a program of 500 bed capacity state hospital. This competition was a competition in which original schemes emerged about the hospital. In 1992, 6 competitions were held one after the other and especially typical projects of the state hospital competitions became widespread such as typical 100 bed physical therapy and rehabilitation center, typical 100 bed eye hospital and typical 200 bed mental health and rehabilitation center (Mimarlık, 1993, 1). In 1995, 14 hospital competitions were held in one year, 2 of them were typical project competitions (400 and 500 bedded State Hospitals). In these hospital projects, it was observed that the schemes produced in the 1970s continued to dominate but new and original searches found a more favorable environment. The dominant features of schemes that break the 1970s understanding are often observed in the design of the mass that includes the inpatient care unit. Another difference is observed in the increase in the search for the third dimension in the interior of the hospital. In this period, hospitals are not seen as pure program stacking. The search for illuminated spaces and spatial differences begins to find its environment. The generally observed result from the competitions was that an awarded schema became a prototype. In Figure 3.42, the various types of hospital plans in the 1990s are illustrated. For instance, 3 different proposals for Şanlıurfa State Hospital are given as design samples (Özbay, 1996).

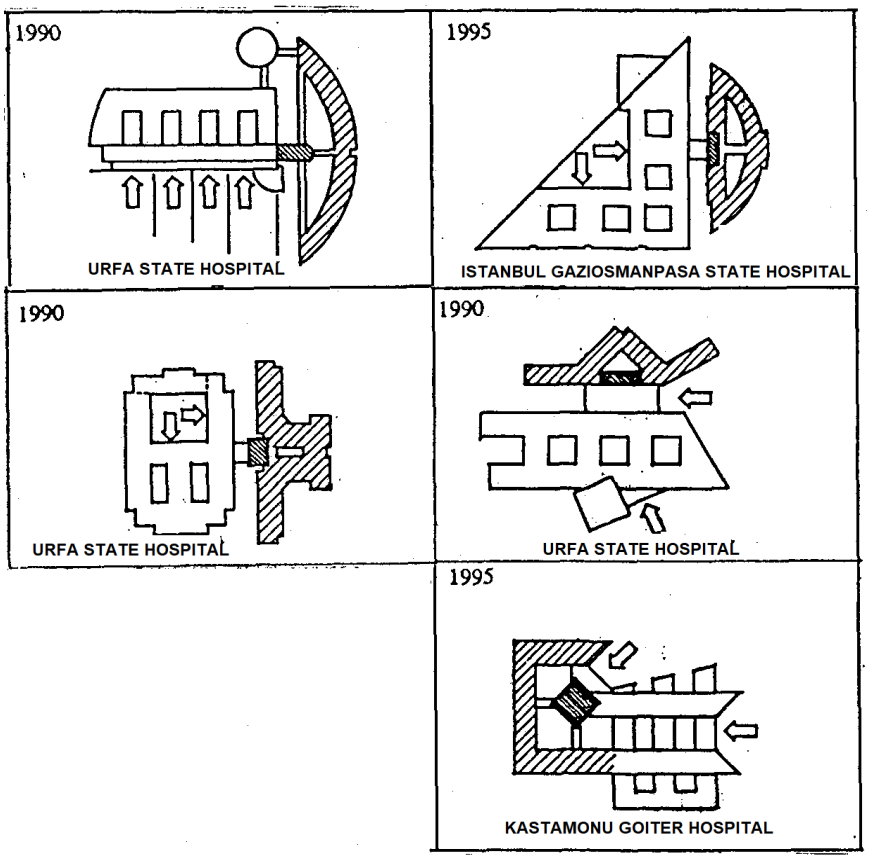


Figure 3.42 Hospital plans in the 1990s

(Özbay, 1996)

There were movements in Turkey Health Policies while architectural project competitions were in progress. First and Second National Health Congresses were held in 1992 and 1993 and health reform studies were conducted (MOH, 2004). National Health Policy, prepared by the Ministry of Health in 1993 contained five main sections such as; support, environmental health, lifestyle, provision of health services, goals of healthy Turkey (MOH, 2004). The main elements of the Health Reform work carried out in the 1990s were:

1) Establishing the General Health Insurance and gathering the social security institutions under one roof,
2) Development of primary health care by establishing family medicine,
3) Converting hospitals to autonomous health enterprises,

4) To transform the Ministry of Health into a structure that gives priority to preventive health services, plans and supervises other health services (MOH, 2004).

In this period, private healthcare buildings continued to be built by the private sector. Acıbadem Health Services Group started to serve as a district health center in 1991. Bayındır Medical Center was established in 1992. *Dünya Göz* Hospital was established in 1996. Kent Hospital was established in 1999 in Izmir. Memorial Şişli Hospital which is shown in Figure 3.43, was established in 1995 as the first project of Memorial Investment Company. The construction of the hospital was completed in late 1999 and Memorial Şişli Hospital received its first patient in February 2000 (Tontuş, 2018).

Figure 3.43 Memorial Şişli Hospital, constructed in 1995

(Source: https://www.turkiyede-tedavi.com/t%C3%BCrkiye-de-tedavi-olanaklar%C4%B1/hastaneler/memorial-%C5%9Fi%C5%9Fli-hastanesi.html accessed on 05 February 2020)

At the end of 1990, the World Bank-supported projects mainly focused on health reform studies, and the reform projects of the period were called “Health Projects”. The pursuit of health reform is not only aimed at increasing patient satisfaction but

also in today's modern management approach, providing better quality service in a more cost-effective way (MOH, 2004).

3.5 Transformation in Healthcare Services (2002-2020)

During this period, legal arrangements were made for private hospitals. The Private Hospitals Regulation enacted on 27.03.2002. Private hospitals are established and operated following the provisions of the Private Hospitals Law No. 2219, the Law on the Execution of the Style of Medical and Medical Arts No. 1219 (Tengilimoğlu et al. 2012). Private Hospitals may belong to real persons and private legal entities. Inpatient and inpatient examination, analysis, examination, medical intervention, surgery, medical care, and other treatment services and at least ten-bed capacity treatment institutions are called private hospitals (MOH, 2016). According to the data obtained from Turkey Statistical Institute data, the number of private hospitals, which were 261 in the year 2000, reached 571 in 2017 (TSI, 2017).

Private hospital projects are divided into two buildings, which are designed as hospitals at the project stage and those that are designed for another function and then converted into hospitals. Ankara Memorial Hospital is a building that was designed in 2010 and is a transformation project. The project, located right next to the Yelken Plaza, was planned as an office and was designed to establish a visual association with Yelken Plaza. Following the start of the construction, its use as a hospital came to the agenda and its function was changed by making necessary revisions in the building and construction phase was completed in 2012. The building, which has 121 patient rooms in total, has a land area of 4718 sqm and a construction area of 31.120 sqm. Interior designs are made by Zoom TPU and aesthetics and comfort are in the foreground.

Figure 3.44 Memorial Ankara Hospital

(Source: http://www.arkiv.com.tr/proje/memorial-ankara-hastanesi/4788 accessed on 05 February 2020)

Figure 3.45 Patient Room, Memorial Ankara Hospital

(Source: http://www.arkiv.com.tr/proje/memorial-ankara-hastanesi/4788 accessed on 05 February 2020)

Private hospitals owners have become institutional hospitals' investors in time and started to establish hospitals in different locations. The project of the Memorial hospital group, which started in Istanbul in 2015 and completed in 2018, is the

Memorial Bahçelievler Hospital. The architectural and interior design belongs to Zoom / TPU. The hospital is planned on a 14.060 m² building island. The building with a construction area of 72.496 m² is a full-fledged health complex with 320 beds. The building has been awarded LEED Platinum certification. It is the first full-fledged general hospital structure in the world to receive this award. Architectural mass land data is shaped in accordance with climate, daylight, heat effect, wind, landscape access and transportation schemes. Inpatient and outpatient floors are planned by separating them vertically. The patient floors are created in the form of a four-arm block, where all patient rooms will provide maximum access to daylight and scenery. This mass is designed by pulling to the center in order to remove the patient rooms from the noise in the land surrounded by roads (Zoom/TPU, 2018).

Figure 3.46 Fifth Floor Plan, Memorial Bahçelievler Hospital

(Source: http://www.arkiv.com.tr/proje/memorial-bahcelievler-hastanesi1/9809 accessed on 10 February 2020)

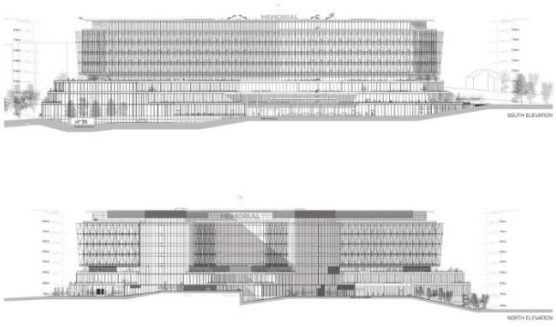


Figure 3.47 Facades, Memorial Bahçelievler Hospital

(Source: http://www.arkiv.com.tr/proje/memorial-bahcelievler-hastanesi1/9809 accessed on 10 February 2020)

Figure 3.48 Memorial Bahçelievler Hospital

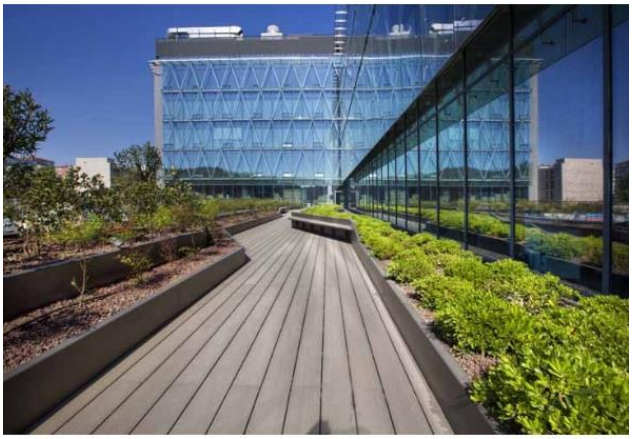


Figure 3.49 Garden View, Memorial Bahçelievler Hospital

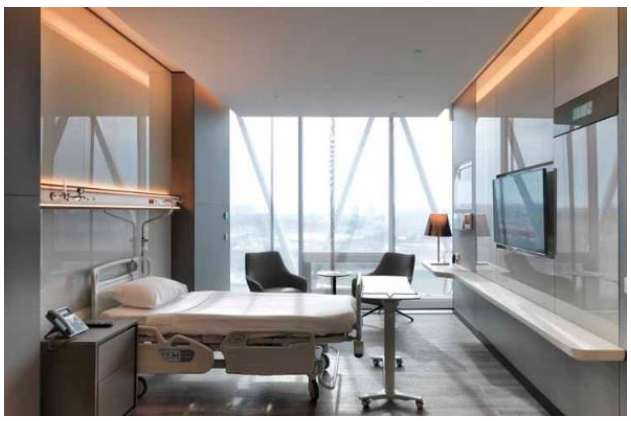


Figure 3.50 Patient Room, Memorial Bahçelievler Hospital

(Images Source: http://www.arkiv.com.tr/proje/memorial-bahcelievler-hastanesi1/9809 accessed on 10 February 2020)

Regulation, which is one of the health policies affecting the stock of health care structures in Turkey was the Health Transformation Program. On 16 November 2002, The 58th Governments' Emergency Action Plan, announced, with the title of "Health for All" by the Ministry of Health. It is largely the same as the reform works in the 90s. The main goals of this plan were;

1- Administrative and functional restructuring of the Ministry of Health,

2- Inclusion of all citizens in the scope of General Health Insurance,

3- Gathering health institutions under one roof,

4- To make the hospitals autonomous in terms of administration and finances,

5- Starting to practice "family medicine",

6- Giving special attention to mother and child health,

7- Dissemination of preventive medicine,

8- Encouraging the private sector to invest in the health sector,

9- Transfer of authority to lower levels in all public institutions,

10- Completion of the lack of health personnel in priority development regions,

11-Implementing the e-transformation project in the field of health (MOH, 2016).

In early 2003, the Health Transformation Program was announced to the public by the Ministry of Health. The Health Transformation Program aims to make this transformation around 8 main themes:

1- The Ministry of Health will be a planner and supervisor,

2- Everyone will be gathered under one roof with universal health insurance,

3- Health care system will be provided in a common, easy to access and friendly way,

a) Primary health services will be strengthened and family medicine will be established,

b) Effective stepped propulsion chain,

c) Health enterprises with administrative and financial autonomy,

4- Health manpower equipped with knowledge and skills, working with high motivation,

5- Educational and scientific institutions to support the system,

6- Quality and accreditation for qualified and effective health services,

7- Institutional structure in rational drug and material management,

8- Access to effective information in the decision process: Health information system (MOH, 2004).

Patient Rights Unit and Patient Rights Board was established for the transition to a patient-oriented system in the health system, and Quality Systems was established in hospitals and research studies on the satisfaction and wishes of patients from the health service have started (Circular Date: 15.10.2003 Issue: 19499).

Within the scope of the Health Transformation Program, it was planned to structure the National Health Accreditation System. Between the Ministry of Health and Joint Commission International (JCI), a cooperation protocol was signed covering the accreditation system, standard development, development of quality monitoring and measurement systems, training of auditors and creation of a database on 23 September in 2004.

In the 2000s, there was no architectural project competition for state hospital designs. The way of obtaining the projects is by the Public Procurement Law (Atmaca and Demirgüç, 2016). During this period, the number of new hospitals increased with health reforms but the construction of a hospital was taking too long to finish. The most important factor in the fact that hospital constructions are being completed in a

short time in the 21st century is the amendments made to the public procurement law.

Studies on the Public Procurement Law in the world started in 1966. The Procurement Law Model proposed by the United Nations Commission on International Trade Law (UNCITRAL) was to achieve the goal of improving economic cooperation between member states. The General Assembly requested that the commission play a more active role in the elimination and reduction of these barriers, considering that differences in national legislation on international trade create an obstacle to the development of trade between states. The Commission, therefore, drafted the Model Law in 1993 and 1994 on the procurement of goods, construction and services. Recent regulations in Turkish Law in the field of public procurement commence with the State Procurement Law No. 2886 issued in 1984. Turkey's European Union (EU) membership process was ranked in 1998 by the World Trade Organization (WTO) as a list of targets that should be in the field of public procurement. WTO studies and evaluations made within the framework of the EU accession process revealed that the State Procurement Law No. 2886 was inadequate. Law No. 4734 on Public Procurement Contracts entered into force on 1 January 2003, establishing the principles and procedures for the issuance and implementation of contracts related to the procurements made according to this law. The UNCITRAL was recommended by the United Nations, the World Bank and the Organization for Economic Co-operation and Development (OECD), which was used as the main source for the drafting of the Law. The Public Procurement Law is strongly influenced by the UNCITRAL Model Law as well as some principles of European Commission (EC) Public Procurement Directives, the World Bank's procurement procedures, and the WTO procurement provisions. It is aimed to avoid wasting resources that are tendered without welding, and therefore is incomplete or resulting in very long periods. This law is still used in both projects and construction of public hospitals (Köktaş, Karaosmanoğlu, Bilgiç, 2009).

In this period when the hospitals belonging to the Ministry of Health and the hospitals belonging to the Social Security Institution were merged, both the repair

works of the hospitals and the construction of new hospitals according to the reform movements were required. The Ministry of Health has initiated studies to control this situation. In line with the Directive on the Determination of Investment Principles of Hospitals of the Ministry of Health, a commission was established for the investment evaluation of 2003. In 2007, Law No. 5683 published in the Official Newspaper dated 09/06/2007, the Department of Construction and Repair was established as a separate unit in the Ministry of Health to carry out the works related to the buildings and investments of the Ministry of Health. In 2013, the General Directorate of Health Investments was established in the Ministry of Health.

The public procurement law, which entered into force in 2003, was the way in which architectural projects were obtained. During this period, many new hospitals were built. Renovation of all hospitals became a necessity especially with the change of the 2007 earthquake regulations. Another issue requiring renewal and modifications was the new regulations on health services. The physical conditions required to obtain a license and to obtain a quality certificate are often not available in existing hospitals. It is authorized to the Ministry of Health with the Decree-Law No. 663 issued on 2 November 2011 in order to issue licenses for all health facilities in Turkey. With the additional article 11 added to the Basic Law of Health Services No. 3359 on 2 January 2014, the licensing of all health facilities providing services in Turkey has become obligatory. The regulation issued by the Ministry of Health on architectural projects until 2010 was the regulation of private hospitals.

At the end of 2010, a design guide for health structures was published called Turkey Healthcare Buildings Minimum Design Standards which provides comprehensive information on the design of health care structures. In 2012, a circular on issues to be followed in health structures came into force. The regulation No. 2012/6 is the technical and legal document for hospital design which includes also the necessary standards. Most of these standards are belong to bedding services, emergency units, operating rooms and intensive care units. Thus the novel architectural designs will be in the direction of satisfying these requirements (Şener, 2017). This memorandum also initiates a standard design for the state-owned hospitals and improves the usage

of the buildings with necessary infrastructure. The regulations are valid for not only patient rooms or emergency units but also operating rooms must be designed according to the guide (Şener, 2017). Private Hospitals Regulations, 2010 Design Standards, and 2012 Circulars are determinative of the minimum standards of hospital design for the first time puts the rules of health care structures in Turkey and is still in force.

The health transformation project continued to be implemented by adding some substances in 2007. The public-private cooperation model, which is considered a radical change in health care policies, is mentioned in the 2008 World Bank report. According to the OECD Health System Review Turkey 2008 report, the reforms can be listed as follows;

1) Giving hospital managers greater autonomy and flexibility in managing revolving funds as well as purchasing and investment decisions

2) Implementing additional performance-based payment system

3) Obtaining hospital clinical (diagnostic) services from the private sector through outsourcing (public-private partnership)

4) Improve health information systems

5) Perform hospital quality and efficiency audits (OECD, WB, 2008).

Firstly, in 2006, Public-Private Partnership Law on the health sector was adopted and a new Public-Private Partnership Department was established within the Ministry of Health to pilot the health sector. Various Public Private Partnership initiatives are planned to be implemented, including the private sector building new training and research hospitals (OECD, WB, 2008 p. 44-45).

It can be said that the layout of the hospitals in this period shows similarities with the healthcare buildings that lasted until the 21st century. In 879 bedded Okmeydanı State Hospital which is shown Figure 3.51 and 3.52 designed by HWP Architectural firm in 2011, obtained according to public procurement law the podium plan scheme,

which was common in the 1960s, was implemented. The patient bed floors are located in the form of high towers on the diagnostic treatment mass.

Figure 3.51 Okmeydanı Hospital, 2013

(MOH)

Figure 3.52 Okmeydanı Hospital, 2013

(Source: http://www.tasyapi.com/tr/okmeydani-egitim-ve-arastirma-hastanesi-0917 accessed on 10 February 2020)

In Gölbaşı 200-bed State Hospital, designed by Altu Architects, obtained according to public procurement law, the plan schema was block type although it was designed in the same year with Okmeydanı. While the block plan schema was applied in the main hospital, the emergency department was solved in a separate mass in the solution of Gölbaşı 200-bed hospital.

Figure 3.53 Ankara Gölbaşı Hospital, 2012

(MOH)

In the Sancaktepe 400-bed hospital scheme, obtained according to public procurement law and designed by Optim Obermeyer Architects in 2010, while the departments were solved in separate horizontal masses, the masses were applied to each other. It can be said that the podium plan type is preferred generally in hospitals where the number of beds is high. In hospitals where the number of beds is less than 500, it is possible to say that the design scheme is vertical block type or block plan type in horizontal scheme.

Together with all these policies, health care projects continued to be produced in Turkey. The number of hospitals under the Ministry of Health, which was 548 in 1967, reached 871 by 2017, the number of university hospitals was only 5 in 1967 and in 2017 it becomes 68, and the private hospitals were 76 in 1967 and the number of private hospitals are 571 in 2017 (TUIK 2017). As seen in the Table 6, various health-related centers have increased in number as the private sector enters the field of health and commodifies health. The increasing number of daily clinics under the name of health and care center is reflected in the number of centers receiving external patients. Although the number of hospitals in the country has increased, the number of beds per 1000 people is 2.6 and the average of OECD countries is 7.4. in the year 2001 and 2.79 in the year 2017 as can be seen in Table 5 and Table 7. In addition to the rapid population increase in the country, the fact that most of the newly constructed hospitals were opened to service in addition to the local hospitals affected the distribution of the number of beds.

Figure 3.54 İstanbul Sancaktepe Sarıgazi Hospital, 2010

(MOH)

In this period, in many cities and towns in Turkey, new hospitals were built. The increased number of hospitals are shown in Table 5. In these hospital designs where the projects are different from each other, it is possible to see the concept of humanization of hospitals as seen in the world. Single or double patient rooms, with selected color and materials both inside and outside the hospital played a role in stripping the modern machine hospital from the cold image to the humane environment especially inpatient bedrooms.

Table 5 Number of medical institutions, total number of hospital beds and number of hospital beds per 1000 population, 2000-2017

Yıllar Years	Total number of medical institutions	Number of inpatient medical institutions	Number of outpatient medical institutions[(1)]	Total number of hospital beds	Number of hospital beds per 1000 population
2000	**10 747**	1 183	9 564	134 950	2,08
2001	**10 581**	1 199	9 382	140 710	2,14
2002	**9 685**	1 156	8 529	164 471	2,48
2003	**9 183**	1 174	8 009	165 465	2,46
2004	**9 038**	1 217	7 821	166 707	2,45
2005	**8 870**	1 196	7 674	170 972	2,48
2006	**9 831**	1 203	8 628	174 342	2,50
2007	**11 839**	1 317	10 522	178 000	2,52
2008	**13 818**	1 350	12 468	183 183	2,56
2009	**15 205**	1 389	13 816	188 638	2,60
2010	**26 993**	1 439	25 554	200 239	2,72
2011	**27 997**	1 453	26 544	194 504	2,60
2012	**29 960**	1 483	28 477	200 072	2,65
2013	**30 116**	1 517	28 599	202 031	2,64
2014	**30 176**	1 528	28 648	206 836	2,66
2015	**30 449**	1 533	28 916	209 648	2,66
2016	**32 980**	1 510	31 470	217 771	2,73
2017	**33 587**	1 518	32 069	225 863	2,79

Source: Ministry of Health

1) The numbers of Community Health Centers, Family Medicine Units, Tuberculosis Dispensaries, MCH/FP Centers, Cancer Early Diagnosis, Screening and Training Centers,

Specialty Medical Centers and Private Outpatients Clinics are included in the total. Reliable data in compliance with the description could not be obtained before the year 2000.
(source: TSI, 2017**)**

Table 6 Number of inpatient and outpatient medical institutions, 1990-2017

		Inpatient medical institutions					
Years	General Total	Total	Attached to the Ministry of Health	University	Private	Other[(1)]	Outpatient medical inst.
1990	**857**	**857**	686	23	125	23	-
1991	**899**	**899**	719	25	133	22	-
1992	**928**	**928**	739	25	143	21	-
1993	**962**	**962**	764	27	151	20	-
1994	**982**	**982**	781	29	154	18	-
1995	**1 009**	**1 009**	792	33	166	18	-
1996	**1 034**	**1 034**	797	35	184	18	-
1997	**1 078**	**1 078**	813	37	210	18	-
1998	**1 138**	**1 138**	842	40	237	19	-
1999	**1 171**	**1 171**	849	42	260	20	-
2000	**10 747**	**1 183**	861	42	261	19	9 564
2001	**10 581**	**1 199**	870	43	267	19	9 382
2002	**9 685**	**1 156**	774	50	271	61	8 529
2003	**9 183**	**1 174**	789	50	274	61	8 009
2004	**9 038**	**1 217**	829	52	278	58	7 821
2005	**8 870**	**1 196**	793	53	293	57	7 674
2006	**9 831**	**1 203**	767	56	331	49	8 628
2007	**11 839**	**1 317**	848	56	365	48	10 522
2008	**13 818**	**1 350**	847	57	400	46	12 468
2009	**15 205**	**1 389**	834	59	450	46	13 816
2010	**26 993**	**1 439**	843	62	489	45	25 554
2011	**27 997**	**1 453**	840	65	503	45	26 544
2012	**29 960**	**1 483**	832	65	541	45	28 477
2013	**30 116**	**1 517**	854	69	550	44	28 599
2014	**30 176**	**1 528**	866	69	556	37	28 648
2015	**30 449**	**1 533**	865	70	562	36	28 916
2016	**32 980**	**1 510**	876	69	565	-	31 470
2017	**33 587**	**1 518**	879	68	571	-	32 069

Kaynak: Sağlık Bakanlığı
(2) The numbers of Community Health Centers, Family Medicine Units, Tuberculosis Dispensaries, MCH/FP Centers, Cancer Early Diagnosis, Screening and Training Centers, Specialty Medical Centers and Private Outpatients Clinics are included in the total. Reliable data in compliance with the description could not be obtained before the year 2000.

Source: Ministry of Health

(1) Under the "Other" group, inpatient medical institutions owned by the municipalities are covered. They were included in the "Private" group because of a few number for the year 2016 and 2017. Ministry of Defence Hospitals were included in the "Other" group between the years of 2002-2015.

Table 7 Hospital Beds and Admission in Turkey and Other Countries

	Hospital beds/ 1,000 population	In-patient admission/ 100 population
Selected Upper Middle Income Countries		
Brasil	3.1	NA
Mexico	1.1	5.5
Malaysia	2.0	NA
Romania	7.6	18
Thailand	2.0	NA
Turkey	2.6	7.6
Tunisia	1.7	8
Venezuela	1.5	NA
Total Upper Middle Income Countries	***3.3***	***6***
Selected OECD Countries		
Canada	4.1	10.0
Germany	9.3	22.6
Italy	5.5	18.0
Portugal	4.0	12.0
UK	4.2	15.1
USA	3.7	12.5
OECD Average	***7.4***	***16.2***

Notes: In-patient admission rate in Turkey is net of admission to Ministry of Defense hospitals
The overall admission rate is somewhat higher than indicated above.
Source: OECD Health Data 2001, World Bank World Development Indicators 2001

In developing countries such as Turkey, health policy is the most important political input. Health investments are also important for citizens and governments. The fact that the space is inevitably political (Lefebvre, 1977) also finds its worth in health care structures. The change of the economic policies, the outputs of the consumer society and the global flow of money were also reflected in the health issue which is directly related to the human. Healthcare has become a commodity, health centers and hospitals have entered economic competition to regain health, and the health sector has become an important investment area for investors. In the health policies in Turkey and in the transformation of the structure of healthcare architecture, spatial reflection of these concepts are seen. The realization of a radical transformation of these reflections in health care structures is with the construction of city hospitals. City hospitals, which were offered as a phase of the Health Transformation Program and realized a radical transformation in health care structures, and which were

obtained through the cooperation of the private sector with the public, started accepting patients in 2017.

CHAPTER 4

CITY HOSPITALS

4.1 Introduction

The health sector in Turkey and the system are undergoing a process of change in line with the transformations in the world. An example of this change is the implementation of the city hospitals with the public-private partnership method (Kerman et al. 2012: 5). With the Health Transformation Program which entered into force in 2003, Turkey is divided into 29 health regions. The new hospital construction and the renovation of the existing buildings for the restructuring of qualified hospital services according to the designated roles of these regions and the number of qualified beds planned are included in the investment programs of the government. The health facilities in the provinces which are in the center of the region have to carry the conditions that can accept and treat the patients who need further examination and treatment. In this context, it is planned to build large-scaled hospitals to meet the health service needs of both the province and the region in provinces that are in the position of health district centers (MOH Inpatient Health Facilities Planning Guide, 2011). These hospitals' name was "health campus" during the tender process but changed to "city hospitals".

In Turkey, city hospitals have two different operating systems. The first one is the city hospitals constructed and operated by the public-private partnership method and the other one is the city hospitals constructed by classical procurement methods. In this study, city hospitals are examined and constructed with the PPP method, which is quite different from classical hospital construction and operation methods (Uçar, 2017). The public-private partnership model was introduced to meet the increasing demand for health services with limited public resources (PPP in Health Association, 2017).

According to the Activity Report of the Ministry of Health, 31 hospitals were planned to be constructed with the public-private partnership model in Turkey. 20 of the hospitals' contracts have been signed and the construction has been started and 10 of them have been admitted to the patient. The procurement of 10 hospitals is ongoing. 1 hospital is awaiting the approval of the High Planning Council. Yozgat, Mersin, Isparta, Adana started to admit patients in 2017. In 2018 Kayseri, Elazığ Eskişehir, Manisa, and Ankara Bilkent City Hospitals were put into service and in 2019, Bursa City Hospital started to admit patients (MOH, 2018).

Figure 4.1 Isparta City Hospital, 2017

(MOH)

Table 8 City Hospitals Started to Serve and Their Bed Capacities

	Name of the Hospital	**Bed Capacity**
1	Yozgat City Hospital	475
2	Manisa City Hospital	558
3	Isparta City Hospital	755
4	Elazığ City Hospital	1038
5	Eskisehir City Hospital	1081
6	Mersin City Hospital	1294
7	Bursa City Hospital	1355
8	Adana City Hospital	1550
9	Kayseri City Hospital	1607
10	Bilkent City Hospital	3704

(MOH 2018)

Table 9 Signed Hospitals and Their Bed Capacities

	Name of the Hospital	**Bed Capacity**
1	Tekirdağ City Hospital	480
2	Kütahya City Hospital	600
3	Konya City Hospital	838
4	Kocaeli City Hospital	1180
5	Şanlıurfa City Hospital	1700
6	Gaziantep City Hospital	1875
7	Bayraklı City Hospital	2060
8	Rehabilitation and Forensic Psychiatry Hospitals (total bed)	2400
9	İkitelli City Hospital	2682
10	Etlik City Hospital	3577

(MOH 2018)

Table 10 Procurement Process Ongoing City Hospitals and Bed Capacities

	Name of the Hospital	**Bed Capacity**
1	Diyarbakır City Hospital	750
2	Rize City Hospital	800
3	Ordu City Hospital	900
4	Samsun City Hospital	900
5	Trabzon City Hospital	900
6	Aydın City Hospital	950
7	Antalya City Hospital	1000
8	Denizli City Hospital	1000
9	Sakarya City Hospital	1000
10	Sancaktepe City Hospital	4200

(MOH 2018)

İzmir (Yenişehir) Tınaztepe City Hospital is awaiting approval from the High Planning Council and has a capacity of 1,200 beds (MOH, 2018).

4.2 Distinguishing Architectural Features

City hospitals' architectural projects are the architectural projects prepared by the architect chosen by the contractor firm that won the tender. These architectural projects are prepared in line with the needs program provided by the Ministry of Health. City hospitals, like all other hospitals, consist of inpatient and outpatient areas and diagnostic, treatment areas and support and administration areas that serve them. Table 11 shows the typical program of a city hospital and the contents of the main three departments. In the city hospital plan schemes, there are inpatient areas as multi-floor towers and outpatient areas, that is, polyclinics, which connect a large diagnostic and treatment mass. With the differences in these 3 main departments coming together, the plan schemes are shaped and change.

Figure 4.2 Mersin City Hospital

(MOH Archive)

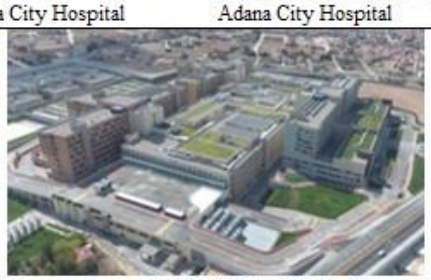
Table 11 An Example of a Project Program

Inpatient Bed Wards
16 Bed Acute Care Unit
16 Bed Women's & Pediatric Acute Care Unit
16 Bed Prisoner Services
13 Bed Intensive Care Unit
13 Bed Women's & Pediatric Intensive Care Unit
10 Bed Cardiovascular Intensive Care Unit
12 Bed Newborn Intensive Care Unit
24 Bed Newborn Intensive Care Unit
13 Bed Trauma Unit
15 Bed Burn Unit
14 LDR Patient Rooms
10 Bed Newborn Nursery
16 Bed Post-Partum Unit
Clinics
Patient Admissions
General 12 Exam Room Module
General 24 Doctor Room Module
Diagnostic & Treatment
Endoscopy Unit
Radiology Department
Hyperbaric
Surgery Suite
Day Surgery Area
Pre/Post Operation Area
Emergency Service
Hemodialysis Center
Physiotherapy Center
Sterile Processing Department
Advanced Pathology Unit
Transfusion Center
Genetic Diseases Central
Invitro Fertilisation Unit
Burn Unit
Support
Technical Services
Car Parking

(MOH)

Three different models can be seen in the schemes of the city hospitals in use. The first is the arms attached to the main core, the second is the Y-shaped towers on the main core, and the third is the mixed-use of podium plan (matchbox on a muffin) and towers connected to the main core. These layouts are shown in Table 12.

Table 12 Lay-out of the City Hospitals in used

Lay-Out	City Hospitals			
Arms Attached to the Main Core	 Kayseri City Hospital	 Bilkent City Hospital	 Isparta City Hospital	 Mersin City Hospital
Y-shaped Towers on Muffin	 Elazığ City Hospital	 Bursa City Hospital	 Adana City Hospital	 Manisa City Hospital
Mix Type (Arms Attached to the Main Core and Matchbox on Muffin)	 Yozgat City Hospital	 Eskişehir City Hospital		

Kayseri, Mersin, Isparta and Bilkent City Hospitals are examples of models with bed ward towers around the main core containing diagnostic, treatment units and administrative units. Towers connect with bridges to the main cores. This layout can be classified as the arms attached to the main core.

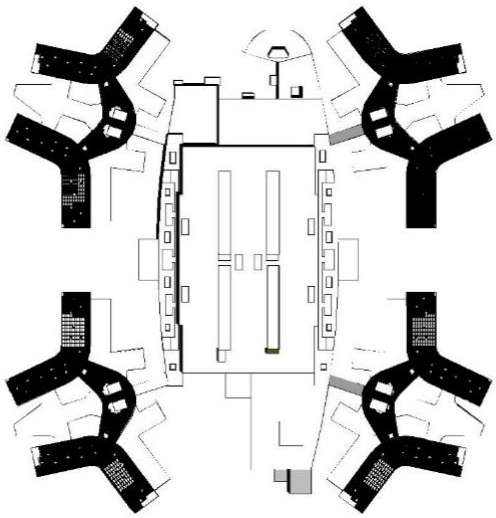


Figure 4.3 Kayseri City Hospital

(Projects from MOH archives)

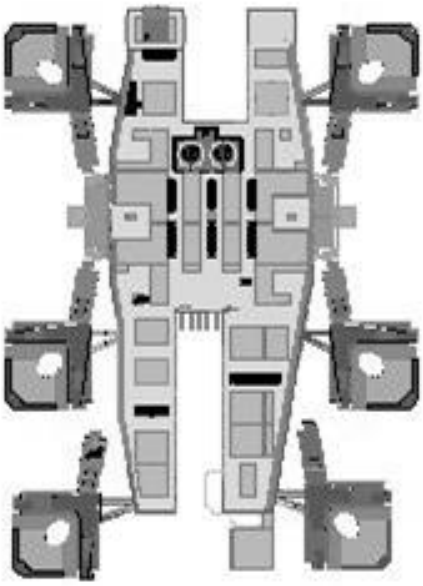


Figure 4.4 Bilkent City Hospital

Examples of city hospitals consisting of bed ward towers located on the diagnostic and treatment base integrated with the out-patient areas are Elazığ, Adana, Bursa, and Manisa. These can be classified as Y shape towers on the main core. It can be said that the biggest difference that distinguishes this model from the scheme of Kayseri, Bilkent, Isparta and Mersin Hospitals is the absence of the bridges where the towers are connected to the core. Yozgat and Eskişehir City hospitals can be classified as the mix type of the two lay-out. Blocks are connected to the core by the bridge as well as the blocks positioned above the core.

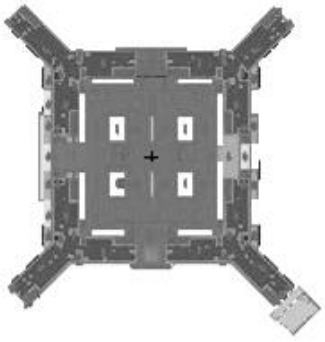


Figure 4.5 Bursa City Hospital

(Projects from MOH archives)

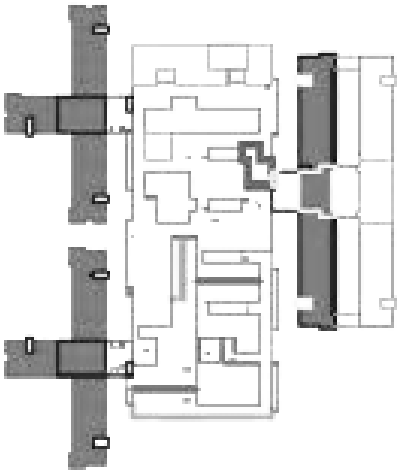


Figure 4.6 Eskişehir City Hospital

(Projects from MOH archives)

Ikitelli city hospital has the lay-out that the towers on the core. In this lay-out the bed towers are connected to the diagnostic and treatment base with elevators and staircases directly.

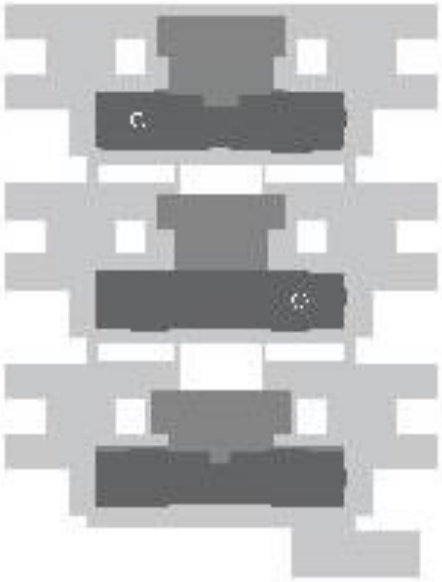


Figure 4.7 İstanbul İkitelli City Hospital

(Projects from MOH archive)

The interior design project has been a subject that distinguishes city hospital projects from other state hospital projects and contributes positively to architecture. While interior architecture is not included in the design of other state hospitals, the choice of materials and colors proceeds with the decisions of the mechanism controlling the fine workmanship of the building. The preparation of interior design project is one of the most important differences in spatial arrangements of city hospitals. Due to the absence of regulations and standards for interior design in Turkey for hospitals, the interior design projects differ from hospital to hospital, which has created architectural diversity among city hospitals. It is noteworthy that the interior design projects are made for usually the intense circulation areas such as the main entrance halls, waiting areas and special departments like children's departments and hemodialysis etc. Architectural materials, like flooring, wall and ceiling materials used in city hospitals have similar characteristics with state hospitals. Since the interior design is projected and the company undertakes the services such as maintenance, repair and cleaning within the fixed investment amount in public-private partnership model, which positively affects the quality and workmanship of the materials.

Figure 4.8 Main Entrance Welcome Counter, Bursa City Hospital

(MOH,Archive)

Figure 4.9 Patient Waiting Area, Bursa City Hospital

(MOH,Archive)

Figure 4.10 Patient Waiting Area, Bursa City Hospital

(MOH,Archive)

The most striking condition in the spatial and medical planning of the city hospitals is the planning of intensive care rooms as a single room. Intensive care areas in other state hospitals are designed in the type of an arena system which the patient units separated with curtains or temporary glass partitions and covers. In city hospitals, each room has separate sinks for the doctor to wash his hands before and after the patient intervention.

Figure 4.11 Intensive Care Unit, Bursa City Hospital

(MOH,Archive)

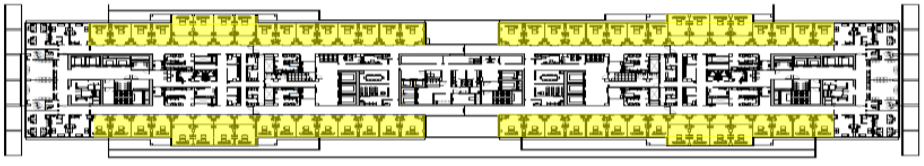


Figure 4.12 Intensive Care Unit Floor Plan, İkitelli City Hospital

(MOH,Archive)

In the City Hospitals, patient bedrooms are planned with a capacity of one or two patients. Each one has a bathroom. After 2010, there are no more than 2 patient bedrooms in other state hospitals. However, some of the hospitals that have been

built and are still in use have patient bedrooms with more than 2 beds. As seen in Figure 4.14 and Figure 4.15, wooden materials and neutral colors are used in the bedroom and accompanying seats that allow for lying when necessary are planned. In these patient-oriented designs, a therapeutic and hygienic spatial understanding is dominant by considering the effect of the space on the patient's recovery time as a patient-centered approach for patient rooms.

Figure 4.13 Patient Room, Bursa City Hospital

(MOH, Archive)

Figure 4.14 Patient Room, Kayseri City Hospital

(MOH, Archive)

The most important point of the city hospitals separated from other state hospitals is that elevators are provided as vertical circulation elements. While vertical circulation is provided by escalators in the main halls, the use of elevators is at the forefront in the circulation scenario of these buildings. Besides, although the stairs are planned, they are fire escape and the main stairs in the main circulation axes of the patients are not planned.

Figure 4.15 Medical Avenue, İkitelli City Hospital

(MOH,Archive)

Although the number of beds of city hospitals is different from each other, the number of beds of most of them is higher than the vast majority of the other state hospitals. Therefore, closed areas are also high. The most important factor that increases the area per bed is the presence of parking garages in these hospitals. Indoor parking had not been planned in state owned hospitals before city hospitals. The number of beds, indoor areas and indoor parking areas of some of the city hospitals are shown in Table 13.

Table 13 Bed Capacity, Total Gross Area, Parking Area

Hospital	Bed Capacity	Total Gross Area (sqm)	Parking Area (sqm)
Eskişehir City Hospital	1081	330.000	74.000
Bursa City Hospital	1355	460.000	120.000
Kayseri City Hospital	1607	465.000	110.000
İstanbul İkitelli City Hospital	2682	1.000.000	300.000
Ankara Bilkent City Hospital	3711	1.300.000	226.000

(MOH)

Another factor that distinguishes city hospitals from other public hospitals is the preparation of flow charts within the architectural projects. The sheets of different circulation schemes such as clean, dirty material, food, inpatient, and outpatient are detailed and projected due to the services provided by the company in the public-private partnership model. Accurate editing of flow charts in hospitals ensures the efficiency of architectural construction, speed of service and quality.

Figure 4.16 Kayseri City Hospital

(MOH)

Due to the increased bed capacities and diagnostic and treatment units and parking garages in the city hospitals, the indoor area is excessive. These hospitals are planned as compact structures where the transition is possible. The growth of the scale caused the need for a large plot. The size of the plots and the construction areas of the hospitals are shown in Table 14. Since the plots of this site are not available in the city centers, they are mostly located on out-of-city plots. Table 15 shows the distances of some city hospitals to certain points in the city center.

Table 14 Site Areas and Ground Floor Areas

Hospital	**Bed Capacity**	**Total Gross Area (sqm)**	**Ground Floor Area (sqm)**	**Site Area (sqm)**
Eskişehir City Hospital	1081	330.000	65.000	189.000
Bursa City Hospital	1355	460.000	89.000	754.000
Kayseri City Hospital	1607	465.000	190.000	481.000
İstanbul İkitelli City Hospital	2682	1.000.000	153.000	789.000
Ankara Bilkent City Hospital	3711	1.300.000	213.000	506.000

(MOH)

Table 15 Distance from City Center

Hospital	**Eskişehir C.H.**	**Bursa C. H.**	**Kayseri C. H.**	**İkitelli C. H.**	**Bilkent C. H.**
Distance to the Governor's Building	8.5 km	35 km	10 km	7.5 km*	14 km
Distance to Kızılay Square					11 km
Distance to Eskişehir Şelale Park	8.4 km				
Distance to Municipality B. of Başakşehir				4.9 km	
Kayseri Kalesi			10km		
Bursa City Square Shopping Mall		19 km			

*The distance from Başakşehir District Governorship

Due to their capacity, city hospitals add intensely human and traffic load to their locations. These are patient (outpatient), staff, logistics, ambulance and emergency loads. The number of persons and vehicles subject to planning regarding the Bilkent City Hospital are shown in Tables 16,17,18.

Table 16 Hourly Distribution of Outpatients to Bilkent City Hospital

Hour	07:00 08:00	08:00 09:00	09:00 10:00	10:00 11:00	11:00 12:00	12:00 13:00	13:00 14:00	14:00 15:00	15:00 16:00	16:00 17:00
Sum	**7.232**	**7.232**	3.616	3.616	2.712	904	3.616	3.616	2.712	904

(MOH)

Table 17 Hourly Distribution of Automobile Access to Bilkent City Hospital

Hour	07:00 08:00	08:00 09:00	09:00 10:00	10:00 11:00	11:00 12:00	12:00 13:00	13:00 14:00	14:00 15:00	15:00 16:00	16:00 17:00
Sum	**4.339**	**4.339**	2.170	2.170	1.627	542	2.170	2.170	1.627	542

(MOH)

Table 18 Daily Visitors to Bilkent City Hospital

	OUTPATIENT	**PHYSICIAN**	**MEDICAL STAFF**	**SUPPORT STAFF**	**PATIENTS COMING FOR**	**VISITOR OF INPATIENTS**	**CLINIC PATIENT**	**PATIENTS TO BE SURGERY**	**INTERN**	**EMERGENCY SERVICE**	**SUM**
SUM	36.160	2.591	5.839	4.671	17.015	1.264	36.160	2.048	3.000	12.000	**120.748**

(MOH)

As can be seen from the tables, Bilkent city hospital is a place where 120,748 visitors come and go daily. This is the population of a small city. The number of patients coming to the outpatient clinic in the morning is 7332 and the total number of vehicles in the morning hour is 4339.

In Eskişehir City Hospital, a total of 3000 vehicles are planned to arrive at the morning traffic peak time (8-9). The total number of visitors is planned to be 22,750 during the day.

Figure 4.17 Eskişehir City Hospital

(MOH archives)

Figure 4.18 Eskişehir City Hospital Satellite View

A total of 4,460 people are planned to work in Bursa City Hospital. Apart from the staff, the number of patients and their companions, emergency patients and visitors was calculated and the number of daily users of the hospital was 31.645. The total number of daily users of the hospital and internal functions together with the staff has been determined as 36.105. It is planned to enter 2,565 vehicles at peak hours in the morning at Bursa City Hospital.

Table 19 Total Visitors and Total Vehicles

Hospital	Bed Capacity	Total Visitors (per day)	Total Vehicles (peak hour)
Eskişehir City Hospital	1081	22.750	3000
Bursa City Hospital	1355	36.105	2565
Ankara Bilkent City Hospital	3711	120.748	4339

(MOH)

In addition to all of these, due to the growth of the scale, especially in the base part, the patient covers a lot of distance between the units, the length of the base is approximately 1 km in the hospitals with more than 1000 beds. It is seen that despite the inevitable depth of this base, although there are skylights in places, there is a place where natural light is not used adequately and there are places that do not receive any natural light.

Figure 4.19 İstanbul İkitelli City Hospital

(MOH)

The hospitals create very large spaces can cause important problems in the mobility between these spaces. Reaching from one point of the city hospital to another can sometimes take a very long time depending on the intensity. Given the fact that health services are often competing over time, it is an important requirement that spatial design is arranged to take into account the work stress of the employees. Due to the large physical areas in city hospitals, citizens may have difficulty in finding directions and reaching targeted points.

The importance of hospitals in the city cannot be denied. Transportation and location are the most important issues for a hospital. In this case, city hospitals bring intensity to the region they are located, due to their bed capacities. With the starting to serve of city hospitals, some of the existing hospitals were closed. The subsequent use function of these abandoned areas, which remained as hospitals in the city's memory, is important for the society.

City hospitals are large-scale projects together with providing health services together, quality and patient-oriented interior designs. The fact that the projects are large, leaves the function and architecture of the building aside and cause an urban impact. In his manifesto; "*Bigness or the problem of the large*" the Dutch architect, Rem Koolhaas states five theorems:

> 1. Beyond a certain critical mass, a building becomes a Big Building. Such a mass can no longer be controlled by a singular architectural gesture, or even by any combination of architectural gestures. The impossibility triggers the autonomy of its parts, which is different from fragmentation: the parts remain committed to the whole.

> 2. The elevator-with its potential to establish mechanical rather than architectural connections-and its family of related inventions render null and void the classical repertoire of architecture. Issues of composition, scale, proportion, detail are now moot. The 'art' of architecture is useless in Bigness.

> 3. In Bigness, the distance between core and envelope increases to the point where the façade can no longer reveal what happens inside. The humanist expectation of 'honesty' is doomed; interior and exterior architectures become separate projects, one dealing with the instability of programmatic and iconographic needs, the other-agent of dis-information- offering the city the apparent stability of an object. Where architecture reveals, Bigness perplexes; Bigness transforms the city from a summation of certainties into an accumulation of mysteries. What you see is no longer what you get.

> 4. Through size alone, such buildings enter an amoral domain, beyond good and bad. Their impact is independent of their quality.
>
> 5. Together, all these breaks-with scale, with architectural composition, with tradition, with transparency, with ethics-imply the final, most radical break: Bigness is no longer part of any issue. It's exists; at most, it coexists. Its subtext is fuck context (Koolhas and Mau, 1995:499-502)

Davey also adds on bigness issue in globalization and competition as follows:

> Bigness is inescapable. Since the beginning of the Industrial Revolution, civilization has been inexorably set on a course to increasing size. Cities become ever larger and more land-hungry; transport systems become more capacious; corporations have to become bigger and bigger so that they can compete with a hope of success in the global market (Davey, 2002).

Undoubtedly, the facilities offered by technology lie in the construction of such large-scale hospital projects. Otherwise, it would not be possible to realize these projects. Developments in the mechanical field in architecture has overcome the traditional limitations of architectural design; elevators, air conditioning systems changed forms and the plans. About this transformation as quoted in Frampton's Modern Architecture "the elevator doubled the height of the office building and the steel frame doubled it again" (Frampton, 1980).

Starting in the 1940s, a similar construction in the world was made in America and Europe. It is seen that high-tech buildings fit large hospitals with a functionalist approach. Most of these hospitals were located in suburban areas. This had a major impact on the spread of suburban settlements called suburban sprawl. The construction of suburban hospitals inevitably led to dependence on the car. Hospitals were previously located in the neighborhoods, which could be accessed by foot, tram buses or trains. As the cities grew, a dilemma began for urban hospitals. This dilemma was whether hospitals would stay where they were and rediscover themselves or move with the community that had moved away from the center. The

second option was to build new hospitals on open terrain adjacent to the high-volume traffic arteries, surrounded by an asphalt stream. In this context, the emergence of the suburban hospital is almost identical to the rise of the suburban shopping mall in the 1950s and 1960s. Both were settled in an open area and the middle of parking spaces for too many vehicles. Both were in a low-density area with a sharp transition after the density of the central neighborhood left behind. In general, the old hospital in the city was later sold or demolished for redevelopment (Verderber and Fine 2000). Verderber and Fine describes this as:

> (M)any urban medical centers were faced with the choice of remaining in their present location or moving out to the booming suburbs which needed schools, libraries, and roads in addition to new health facilities…for decades the relationship between the old neighborhood and the voluntary hospital had been awkward yet the community had usually accepted the manifest destiny of the institution. Now the hospital had to weigh on the one hand land constraints and pressures for expansion against...its avowed mission to serve its traditional core constituency…was the institution to build upward or outward (Verderber and Fine 2000).

By 2000, the energy costs of suburban mega hospitals were examined and considered unsustainable (Frank, Engelke, Schmid, 2003). In the end, this expansion dynamo became quite contradictory to any concept of land conservation or historic preservation. Since the detrimental consequences of this situation have emerged, the hospital has been at the heart of the contemporary movement in sustainable environmental design for health (Verderber 2010).

It is undeniable, the city hospitals bring qualified spaces and innovation to Turkey health care system. The changes and transformations created in their locations will emerge in the future.

According to the definition of Wikipedia and many other sources, projects of 1 million dollars and above are called mega projects. Due to this definition, city hospitals are among the megaprojects and their rhetoric is based on the concept of size.

According to İlhan Tekeli, the first criterion to be a megaproject is the size and the second is the appeal. A large-scale investment has significant impacts on society, the environment, and the state budget, and hence the public interest is the agreed criteria on the issue (Tekeli, 2014). Megaprojects have been found as an optimistic effective solution to raise the status of society in global political, economic systems and other aspects of society. In the historical processes, very large structures were built for the prestige and status by the power owners. Built for the name of gods, pharaohs, kings' huge monuments, temples, may be the beginning of megaprojects. In twenty first century, again due to prestige, brand and competition conditions, the concept of size and bigness draws attention in the discourses of the projects. Because big projects are made with big capitals and the bigger means more capital flow on a global scale. The concept of big has always been a concept that attracts the attention of society. The value of everything, that is bigger, higher or longer, independent from its architectural value, it seems to create a value of its own (Güzer, 2016).

4.3 Investment Model

City hospitals are investments that have been tendered with the public private cooperation model. In general, the public-private partnership model is a process that includes the sharing of resources, risks, rewards, powers, and responsibilities so that some of the services that the public authority has to provide for the benefit of the public are provided by private sector representatives (Chakravarty, Sadhu, Bhattacharjee, Nallala, 2015). The use of public-private partnership investment model in the world is generally concentrated in special areas such as health, transportation, and energy (Çakır, 2016). The public-private partnership model is used extensively in the field of health by the United Kingdom, Germany, France, Italy, Spain, Poland, Hungary, Romania, Australia, Canada, Portugal, Japan, Mexico, South African countries (PPP Association in Health, 2017). Generally, it is possible to group the characteristics of PPP into five groups as:

1. Cooperation with at least two actors is required. One of the actors in the public sector and the other is the private sector,

2. The roles of both sides are different and the sides can negotiate with each other,

3. It enables the establishment of long-term and stable relations between the sides,

4. One side may have to share authority or other institutional values as well as tangible assets such as money and land,

5. Risks and responsibilities are shared between the public and private sectors (Li and Akintoye, 2003).

The general objectives of the public-private partnership model can be summarized as follows:

- Ensuring the economic, effective and efficient delivery of public services,

- To provide opportunities for the development of the private sector, to contribute to the overall economic development in the country by bringing competition and innovation,

- To obtain the best benefit of the public, private sector and the population served by providing appropriate risk and reward sharing among the partners (Hosmac, p.4).

The public-private partnership model has both advantages and disadvantages. The advantages of the public-private partnership (PPP) model are as follows:

- Provides innovation in the provision of services,

- Increases the potential value of money compared to traditional approaches,

- Provides more efficient use of resources,
- Brings private sector capital, which can be totally or partially taxed, to production except for limited public capital in the provision of services,
- Provides better quality services due to performance-based standards,
- Increases citizen satisfaction,
- Improves quality control, quality assurance, and contractual accountability,
- Enables public institutions to focus on their strengths within their area of responsibility,
- Facilitates infrastructure payments made by the public sector,
- Develops innovative solutions,
- Reduces project implementation costs,
- Allows projects to be realized in a shorter time,
- Facilitates the proper realization of complex and large infrastructure projects,
- Ensures that some risks are transferred to the private sector,
- Gives public skills, experience, and technology,
- It attracts foreign investors in investing in the country,
- Creates employment and volume to local suppliers (Sonğur, 2016).

Disadvantages of public-private partnership model are as follows:

- PPP contracts are complex and require the design and management of contracts by professionals,

- Lack of sufficient savings in the public sector for PPP applications in new areas increases the risk,
- Since the borrowing is made by the private sector, resource costs may be higher,
- The transfer of the works to the private sector may lead to the loss of the capacity of the public sector to carry out these works,
- Foreign capital interest in this model may evoke alienation and capitulations,
- The fact that PPP contracts are generally too long-term may cause long-term payment obligations,
- Overall budget flexibility decreases and investment planning can become more complex,
- Payments related to PPP applications are reflected as expenses. Therefore, the cost dimension of PPP projects may not be seen in the balance sheets. This should be considered in terms of the balance sheet technique,
- Improper risk distribution, inadequate or incomplete sanctions, especially in contract design, can cause serious problems in this model in the long term,
- The operating period may cause problems due to improper preparation of contracts,
- Public and private sector structural mismatch triggers conflict culture (Tekin, 2007).

PPP in Turkey has been raised in the 1980s and since then has begun to benefit particularly in areas such as power generation and drinking water (Uz, 2007; Tekin 2004). The first application for the PPP model in Turkey was launched in the field of electricity generation in 1984. In 1994, Law No. 3996 dated 08.06.1994 on the

Realization of Certain Investments and Services in the Context of Build-Operate-Transfer Model was put into force and especially the airport and tunnel construction was started to be carried out by the private sector since the law was put into effect (Şahin and Uysal, 2008).

For the delivery of health services in Turkey, there are no PPP applications until the 1980s. In this period, more outsourcing was tried. This privatization was initially carried out for services such as catering, security, cleaning or software services in hospitals. 13.08.1999 Date of the Constitution of the Republic of Turkey and the Law No. 4446 Amending Certain Articles can be displayed as a first step towards the implementation of the PPP model in Turkey (Kerman et al. 2012).

The essence of PPPs in the health sector in Turkey is 3359 Health Care Act No. 5396 on 03.07.2005 date and the Basic Law, the Law on Health Care Services Inclusion of an Article 7 is based on the inclusion of additional substances. The implementation principles for the construction, financing, and operation of city hospital projects are largely based on the additional article 7 (Gürkan, 2014). In the first subparagraph of Article 7, which is an important legal basis for the projects of city hospitals with PPP method, "Health facilities which are decided by the High Planning Council as required by the Higher Planning Council are subject to the preliminary project and basic standards to be determined by the Ministry of Health, real or private legal entities to be determined by procurement, provided that they do not exceed forty-nine years, provided that they can be rented for a certain period and price "(Official Newspaper, 2005a). According to this; “On the lands to be decided by the High Planning Council, the health facilities to be built by the private sector will be leased by the Ministry for a certain period time and all services other than medical services will be provided by the private sector” (Şahin and Uysal, 2008). The approval and procurement finalization process of the High Planning Council (HPC) in city hospitals constructed by the PPP method is one year, the investment period is three years and the operation period is twenty-five years (PPP in Health Association, 2017).

Another regulation affecting the development of PPP implementation in the health sector is the Regulation on the Renewal of Health Facilities in the Provision for Leasing and the Operation of Services and Areas Other than Medical Services in the Facilities published in the Official Newspaper dated 22.07.2006 and numbered 10655. In 2007, with Law No. 5683, a department was established in the Ministry of Health under the name of the Public-Private Partnership Department to carry out business and transactions related to investments to be made by this method. This department later started to work under the General Directorate of Health Investments. In order to accelerate the works done by the PPP method, in 2013, the Ministry of Health entered into force with the Law on the Establishment, Renewal, and Procurement of Services with Public-Private Partnership Model and Amendment of Some Laws and Decree Laws (Atasever, 2014).

Works and transactions and procurements to be carried out by the Public-Private Partnership method are not subject to the State Procurement Law no. 2886 and Public Procurement Law no.4734. PPP is an agreement and some aspects of the agreement are as follows (2014/6282 PPP Management):

- Designing the construction works of the facility and commercial service areas,
- Financing,
- Construction, maintenance, and repair work,
- Performing the services left to the contractor and operating commercial service areas,
- The responsibility of the contractor during the transfer process to the Ministry at the end of the contract period,
- Liability of the contractor for any damages caused to third parties during the contract. (Compensation of the damages to be incurred by the Contracting

Entity if the contractor does not fulfill its obligations stipulated in the contract and penal conditions)

The process of public-private partnership model in Turkey starts after the preliminary project is prepared by the administration, a comprehensive pre-feasibility of the project is prepared. The pre-feasibility prepared is submitted to the approval of the High Planning Council (HPC) and the pre-qualification procurement is initiated after the authorization of the pre-feasibility by the HPC. Companies that have passed the prequalification are invited to bid. After the first proposal, the project equalization process and the proposals of the firms are evaluated and the final proposals of the firms that pass the evaluation are received. The auction is held in the presence of the media and the bargaining process and the contract with the most advantageous bidder are signed. The contractor is responsible for the construction, maintenance and repair of the facility and commercial service areas, and for the transfer of the settlement to the Ministry of Health in a well-maintained, operational and usable condition free of any debts and commitments at the end of the contract period (Atasever, 2018). Public-private partnership model is a method consisting of the following stages:

- The real estate of the treasury is allocated to the private sector contractors for the construction of a health facility,

- The Contractor builds a health facility on this real estate with its resources and under the conditions determined by the Ministry of Health and provides investment goods and services if specified in the contracts,

- The completed health facility is delivered to the Ministry of Health and the rent is paid within the period specified in the contract. The contractor can also generate income from commercial areas and commercial activities other than those specified by contract and health services. Besides service, purchases can be made by the contractor,

- All maintenance and renewals specified in the contract are made by the company (Atasever, 2014).

In this investment model, no spending is made from public resources until the construction is completed. After the fulfillment of the work, two types of payments will be made by the Ministry of Health for city hospitals:

1) Usage Fee Payments
2) Service Payments

The usage fee is the repayment made by the Ministry of Health during the operation period (25 years) of the investment made by the contractor firm up to the total fixed investment amount in return for the use of the health facilities. Service payments are the payments made by the Ministry of Health in return for the provision of discretionary and compulsory services by the contractor during the operation period. Usage fee payments are made at the beginning of each quarter, while service payments are made monthly. The usage fee payments are made to cover the investment costs (construction costs, borrowing costs, etc.) of the health care facility. Service payments are made to cover the costs arising from the services provided by the contractor and maintenance and repair activities (Canbey, 2017).

In city hospitals in Turkey (depending on contract), the contractor company provides a total of 19 services. Six of these services are compulsory and thirteen are optional services. The services will be subjected to a market test every five years (Çakır, 2017).

Compulsory services in city hospitals (P1) are provided by the contractor for 25 years. Non-compulsory services (P2) in city hospitals are provided by the contractor for 25 years. These services are subject to market testing every 5 years. The cost of these services is paid according to the terms of the contract except for the investment. Compulsory services are;

- Building and Land Services
- Exceptional Maintenance and Repair Services

- Common Services Management Services
- Furnishing Services
- Ground and Garden Maintenance Services
- Other Medical Equipment Support Services

Optional services are;

- Spraying Services,
- Parking Services,
- Cleaning services,
- Hospital Information Management System Services,
- Security services,
- Patient Guidance, and Accompany Services / Reception / Transport Services, Laundry and Laundry Services,
- Food and Dining Hall Services,
- Laboratory Services, Imaging Services,
- Sterilization and Disinfection Services,
- Waste Management, Rehabilitation (Uçar 2017).

In city hospital projects, commercial areas such as hotels, restaurants, pharmacy, if any, are operated by the contractor under the name of P3 services for 25 years. The cost of these commercial areas allocated to the contractor will be deducted from the investment amount and the income obtained from renting or operating these areas belongs to the contractor (Canbey, 2017).

Considering the modern hospital design approaches, city hospitals can be regarded as a humanized hospital structure with its interior design approach, colors and materials, but it is far from the Scandinavian home-style human approach due to its scale and capacity. It can be said that it is similar to the American design approach, which sees large-scale and mall-like structures as humane due to their familiarity. Although it is close with the design elements such as colors and materials to the biophilic design approach, which is a contemporary design approach in healthcare

buildings; it cannot be said that every area coincides with the biophilic design approach due to the depth of the plan and the design approach where the medical function is prioritized. While the city hospitals aim patient (customer) satisfaction with the architectural differences and improvements and advantages offered by the investment model, it cannot go beyond the guesswork to write about personnel satisfaction, environmental effects and sustainability due to their construction novelty.

CHAPTER 5

CONCLUSION

The hospital became viably for private initiative from the moment that sickness, which had come to seek a cure, was turned into a spectacle. Helping ended up by paying, thanks to the virtues of the clinical gaze.

Michel Foucault, *The Birth of the Clinic: An Archaeology of Medical Perception*

Chapter V: The Lesson of the Hospitals

Health care structures, like all architectural products, are not separate from their context. The evolution of healthcare structures from history to the present has been influenced by the whole of inputs that will affect an architectural product of the time and reflect the *Zeitgeist*, the spirit of each period. The architecture of the health care structures in Turkey has changed along with the context. Architectural products legitimized by the laws of decision-makers have caused new building types and typologies from the past to the present. Healing people and allocating a shelter for those who were sick was associated with factors such as religion and belief before the institutionalization of hospitals. Hospitals were included in the temple complex in ancient Greece, in Christian and Muslim societies, they were also included in the complexes of churches and mosques. Even in the Renaissance period, cross planned for hospitals continued to be used. The medical science was institutionalized and hospitals began to turn into institutions providing medical education in the 18th century. The factors that caused the first attempts to improve the physical conditions of the hospitals in the 18th century are urbanization and the increase in population. The main basis of the solutions was scientific theories. Until the end of the 19th century, pavilion-type designs were used for healthcare buildings that transformed under the influence of the Miasma Theory, providing mutual ventilation. In this

period, medical science experts made a direct contribution to the design. In the late 19th century, developments in medical technology started to emerge. Areas such as x-rays, sterilization, and laboratories have been added to hospital programs. In the first half of the 20th century, much more development than these developments occurred rapidly, technology developed and modern architecture spread rapidly. While multi-storey block-type hospital structures become widespread in city centers where the lands are not large, matchbox on muffin plan types is also encountered simultaneously on larger plots. Occasionally, the ground floor area of the block-type hospital expands and deep-space hospital designs emerged. Since the 20th century, it is not possible to talk about a single plan scheme for hospitals. But it is possible to talk about common design approaches.

In architectural formations, transformations emerge as problems arise. In modern era the fact that medical planning takes priority over other architectural elements in healthcare buildings where functionalism is prioritized, caused problems. For the 1950s, 60s, 70s' hospitals, lots of critics had been made that the patient was not satisfied in hospitals, daylight was not used, and the places were deep, bare, cold and solid. Designing hospitals on a human scale that make patients feel at home with the use of natural materials, therapeutic spaces and colors came to the agenda again after the 80s. Simultaneously, the provision of health services has changed, and in this period, the patient has started to turn into a customer due to the economic policies. Under the influence of neo-liberal policies, the health care sector is becoming increasingly marketized and privatized. The increasing number of private health institutions and increasing competition conditions are also felt in the health care sector. In this context, patients are considered as customers and they are handled within the framework of market logic and services are produced accordingly. For this reason, hospital design cares about patient satisfaction and care about patient satisfaction to attract more patients to the hospital and make the incoming patient a loyal customer. The health sector, where the profit rate is high, has become an important investment area where the private sector allocates a budget. The fact that the patient is a customer means that the health institutions compete with each other

and customer satisfaction shows the quality of the service provided. For this reason, the new period begins, in which financial concerns are motivated, and spaces where patient satisfaction is intended are designed so the physiological needs of the patient (customer) started to take designer and investors' attention. In the 21st century, the concept that the designing hospital but it is not like a hospital concept becomes a target in hospital designs. Due to the patient satisfaction importance hospitals are designed as hotels. The entrance halls like hotel lobbies and the patient rooms are like hotel rooms.

Health care structures and health care policies in Turkey have changed inevitably along with the influence of the other countries. The reforms targeted at the end of the 20th century were implemented in the 21st century. The steps being taken in Turkey, starting from the 80s, most of the reforms introduced in the 90s under the name of Mega Project in Health were implemented with the 2003 Health Transformation Program. Over the past 20 years, with the World Bank and the World Trade Organization's impact, the provision of health services in Turkey changed. Changes are reflected in the spatial organization of healthcare buildings. During this period privatization of healthcare services were on the agenda. Small private hospitals, large private hospital chains were established, increased in number and started to serve in addition to state hospitals. In recent years, with the investment model of public-private partnership model, city hospitals were started to build and some of them started to provide health care service. As a part of the Health Transformation Program, city hospitals, which are spatially large compact structures bring a new spatial and economic organization that has not been tried before in Turkey. In these patient-oriented designs, the satisfaction of the patient (customer) has been the most important factor. It has been a compulsory direction for the citizen who wants to get service from the state hospital by closing other state hospitals. While the common concept of this period is to ensure that to design hospital that seems not like a hospital, to provide satisfaction for the patient, for the employer (private sector or government). As a result, it turns out that the commodification of

the concept of health, being a part of the market, is parallel to the privatization of healthcare buildings or healthcare services.

City hospitals are designed patient-centered. The area of doctors and other health professionals is few compared to other areas. When we look at the period from the 18th century to the beginning of the 20th century, it is seen that doctors take an active role in the design of the hospitals. The situation can be linked to the commercialization of hospitals and the demands of the employer. The priority of patient or customer satisfaction in private hospitals serves the purpose of the private hospital. In city hospitals, the state has built the hospital for the first time, including its project, to the contractor. The government has recently changed this decision and has announced the tender for the city hospitals, Ordu and Sakarya, with the aim of making only the project service procurement according to the Public Procurement Law. Although the tender is not finalized at the moment, this decision shows that the control of the projects is resumed by the government, which is the healthcare provider. It is still an ongoing discussion whether the city hospitals continue with their investment model or with their architectural features.

Governments have started to support new investments, especially mega-sized, in which international money flows are provided as a result of globalization. This situation causes the projects to start at the scales that the small investors cannot afford. City Hospitals are the largest hospital investment projects in Turkey. While doing so, the state has also changed the investment model apart from the scale and implemented it with a public-private partnership model. However, since the individual is a customer who consumes the health service that uses his / her own right of choice. The income of the patient, who goes to public hospitals and does not want to spend a lot of on health, is a long-term income. Considering that the imaging services are provided by the contractor in the city hospitals made with public-private cooperation projects, the patient's examination gain returns to the private sector. This is the way that was formed in the 1980s as outsourcing services in hospitals since then. The current difference is to see a single company, while before every service that is outsourced to different companies, for each service such as laboratory,

imaging. In cases where the hospital management purchases the services, it is more possible to apply sanctions to the company from which the service is purchased, because the administration knows the service contract. The employer of the imaging company is the contractor of the building in city hospitals. Hospital management, which is also the controller of the contractor, is actually in a higher position. However, the subcontractor's employer is the contractor is a business difference that distinguishes city hospitals from other hospitals. It is a financial investment model aimed at the rapid realization of modern health structures, not privatization, and hospitals are delivered to the public in a well-maintained and operational state at the end of the operational period. But since the projects are completed in the long term with the investment and operation period, the contractor tries to reflect the possible risks to the price as much as possible. During the operation period, weaknesses that may arise from the management of activities of the public and private sector, and in the long term, problems may arise due to the difference in understanding the written business guides of the changing employees of the investor and the administration. For this reason, if there are issues in the contract that can be interpreted, they may need to be removed. The fact that this model consists of a contract requires the legal system to function very well. The public-private partnership model enables the implementation of advanced technology structures that cannot be implemented in public hospitals since the private sector makes quick decisions and puts these decisions into practice and does not experience any problems such as lack of appropriation.

City hospitals are patient-centered with indoor parking, escalators, atriums, well-decorated halls and rooms, an adequate number of qualified beds, and the use of new technologies in diagnosis and treatment areas and aiming the reduction of hospital infections in the whole hospital. City hospitals also create an important employment area for the cities where it is established. It employs personnel service areas such as cleaning, security, technicians, etc. City hospitals are new and clean at present and it must remain in the same quality for 25 years. It is seen that most of the lands on which city hospitals are located are out of town. It is a matter of curiosity about what changes

will occur in the environment of hospitals in the years ahead. The locations of the hospitals are very important for a city. Since city hospitals started to serve with the closure of several other hospitals in the city, it can be said that the use of closed hospitals and their lands is also important. It is necessary to provide easy access to novel hospitals to avoid time problems for patients and their relatives in emergencies. Meticulous attention should be paid to the infrastructure, roads and public transportation facilities required by the local administrations for city hospitals located outside the city. Due to the large physical areas in city hospitals, citizens may have difficulty reaching to the hospitals with public transportation and finding directions. Wayfinding issue is important especially in hospitals due to their complexities. I believe that the hospital architects and those who are studying this subject should be handled from the functionalist approach and the healthcare building should be handled completely with its social impact, and I believe that hospitals should be designed and researched not only by reducing functionality to medical planning but integrated with aesthetic philosophy.

Regulations that were enacted in 2010 and 2012 are used in the design criteria of healthcare buildings. However, in planning of architectural and engineering discipline of health care buildings of this scale, development and renovation studies are required in the legislation related to hospital architecture. Especially in specialized areas such as intensive care, operating room, emergency room, it is important to create new criteria by applying an evidence-based design model rather than regulations specific to the unit. In this respect, the planning of health leading countries in the world should be examined, and the data obtained should be combined with the evidence-based design approach of the biophilic design approach, which is a new approach in the design of health structures, by blending with the life, habit and health system of Turkey.

Besides, it should not be forgotten that the structure has a healing quality for the city as much as the content of the health structure is considered. Planning problems such as infrastructure and transportation should be anticipated and solutions should be sought. It should be taken into consideration that health care buildings are important

structures in both architectural and urban scale. Different disciplines should come together and should be handled in the light of evidence-based design criteria and using the experiences gained from the buildings that are used in this way provide the correct design criteria both on the urban and architectural scale.

This study can be advanced multi-dimensionally. Even though there is information about the buildings since the buildings have just been completed, there is not enough experience. It is possible to continue this study as an evaluation study in the following years. Similarly, with different typologies, issues such as user satisfaction and productivity comparison of this typology can be done in a multidimensional way in the coming years. I hope that this study will create a base for people who do this type of work.

REFERENCES

Acıduman, A., Darüşşifalar Bağlamında Kitabeler, Vakıf Kayıtları ve Tıp Tarihi Açısından Önemleri-Anadolu Selçuklu Darüşşifaları Özelinde. *Ankara Üniversitesi Tıp Fakültesi Mecmuası, 63*(1), 9-15, 2010

Aitken, J. T., Fuller, H. W. C. and Johnson, D. *The Influence of Christians in Medicine,* Intervarsity Press, Nottingham, 1984.

Akintoye, A. & Li, B., *PPP: Risk, Value and Communication in Public-Private Partnership Procurement.* (Ed. Akintola Akintoye, Matthias Beck and Cliff Hardcastle) *Public-Private Partnership: Managing risk and Opportunities*, Blackwell Science Ltd., Malden, 2003.

Akdur, R., *Cumhuriyetten Günümüze Türkiye'de Sağlık*, 12 Ulusal Halk Sağlığı Kongresi 21-25 Ekim, Ankara, 2008

Akurgal, E., *The Art and Architecture of Turkey*, Oxford, 1980.

Al-Ghazal, S. K., T*he Origin of Bimaristans (Hospitals) in Islamic Medical History*, *Foundation for Technology and Civilisation,* Publication ID: 682, April 2007.

Allan, N., Hospice to Hospital in The Near East: An Instance of Continuity and Change in Late Antiquity, *Bull. Hist. Med.*, 64: 447-450, 1990.

Andaleeb, S. S., Siddiqui, N. and Khandakar, S., Patient Satisfaction with Health Services in Bangladesh, *Health Policy and Planning*, 22(4), 263-273, 2007.

Angelo G. and Haislmaier E.F., *Health Care Reform in Massachusetts: Medicaid Waiver Renewal Will Set a Precedent*, Web Memo, Heritage Foundation, No:1979, July 2, 2008

Anon, Our Hospitals, *The Lancet*, 250 (6481): 726–727, 1947 [Google Scholar]

Anon, Viewpoint, *Hospital Development*, 11 (6): 6, 1983 [Google Scholar]

Arkitekt Dergisi Veritabanı, 1931-1980 url: http://dergi.mo.org.tr/detail.php?id=2&sayi_id=82 (Date of access: 24/02/2020)

Aslan Ş., Sezgin M. ve Haşıloğlu S. B., Özel Sağlık Kuruluşlarında Müşteri Memnuniyeti ve Memnuniyeti Oluşturan Unsurların Araştırılması, *Muğla Üniversitesi Sosyal Bilimler Enstitüsü Dergisi*,20: 23-40, 2008.

Atasever, M., *Türkiye Sağlık Hizmetlerinin Finansmanı Ve Sağlık Harcamalarının Analizi (2002-2013),* ISBN: 978-975-590-521-1, Ankara, 2014.

Atasever, M., Gözlü, A., Özaydin, M. M., Güler, H. Örnek, M., Barkan, O. B., Kavak, Y., İlhan M. N., *Şehir Hastaneleri Araştırması,* (Ed. Atasever, M.), Sasam Enstitüsü, Ankara, 2018.

Atmaca, Y., Demirgüç, U., *3. İstanbul Tasarım Bienali: Biz İnsan Mıyız? Türümüzün Tasarımı 2 Saniye, 2 Gün, 2 Yıl, 200 Yıl, 200.000 Yıl*, 2016.

Ateş, M., *Sağlık İşletmeciliği*, Beta Yayınları, İstanbul, 2012

Aydın, N. vd., *Malatya Ağız ve Diş Sağlığı Merkezinde Hasta Memnuniyeti,* 3. Uluslararası Sağlıkta Performans ve Kalite Kongresi Sözel Bildiriler Kitabı, No:212, 2012

Baggot, R., *Public Health: Policy and Politics*, Macmillan Press Ltd., Great Britain, 2000

Bardon, D., No Place Like Home? *British Medical Journal*, Vol.282, 1981

Barkan, Ö., *Süleymaniye Cami ve İmareti İnşaatı (1550-1557), I. Cilt,* Türk Tarih Kurumu Basımevi, Ankara,1974

Bates, V., 'Humanizing' Healthcare Environments: Architecture, Art and Design in Modern Hospitals, *Design for Health,* 2(1), 5-19, 2018

Baudrillard, J., *The Consumer Society: Myths and Structures,* Sage, London,1998.

Bauman, Z., *Liquid Modernity,* Polity Press, Cambridge, 2000.

Bektaş, Y., The Crimean War as A Technological Enterprise, *Notes Rec.*71, 233–262, Tokyo, 2017

Benli, G., Hospitals in The Ottoman Period and The Work of Sinan the Architect: Suleymaniye Complex Dar Al-Shifa and The Medical Madrasa, *A + Arch Design*, 2 (2), 23-32, 2016

Birch-Lindgren, G., *Modern Hospital Planning in Sweden and Other Countries*, Constable, London, 1951

Bobrow, M., Thomas, J., *Inpatient Care Facilities, Building Type Basics for Healthcare Facilities, (E*d. Kliment, S., John Wiley and Sons), 131-192, Canada, 2000.

Bryder, L., *Below The Magic Mountain, 1st Ed.* Clarendon Press, Oxford, 1988.

Browning, W. D., Ryan, C. O. & Clancy, J. O., *Patterns of biophilic design.* New York: Terrapin Bright Green, 2014.

Büber, R. ve Başer, H., Sağlık İşletmelerinde Müşteri Memnuniyeti: Vakıf Üniversitesi Hastanesinde Bir Uygulama. *Sosyal ve Beşeri Bilimler Dergisi, 4 (1),* 265-274, 2012.

Cama, R., *Evidence-Based Healthcare Design*, John Wiley & Sons, Hoboken, New Jersey,2009

Cananzi, Daniele M., City, Nature, Culture. New way of living sociability (the case of Reggio Calabria), *Procedia - Social and Behavioral Sciences*, 223, 745-749, 2016.

Canbey, E., *Sağlıkta PPP Modeli Finans Aşaması*, Rönesans Sağlık Yatırım Sunusu, Nisan 2017

Cantay, G., *Anadolu Selçuklu ve Osmanlı Darüşşifaları*, Türk Tarih Kurumu Basımevi, Ankara, 1992.

Carey, K., Hospital Cost Efficiency and System Membership. *Inquiry*, 40(1), 25-38, 2003.

Casey, E.S., The Place of Space in The Birth of the Clinic, *The Journal of Medicine and Philosophy, (12)*: 351-356, 1987.

Chakravarty, N., Sadhu, G., Bhattacharjee, S. and Nallala, S., Mapping Private-Public-Partnership in Health Organizations: India Experience, *International Journal of Medicine and Public Health*, 5 (2),128-132, 2015.

Christiansen, I., Commodification of Healthcare and Its Consequences. *World Review of Political Economy, 8(1)*, 82-103, 2017.

Cilliers, L. and Retief, F. P., The Evolution of the Hospital from Antiquity to The End of the Middle Ages. *Curationis, 25(4)*, 60-66, 2002.

Colquhoun, A., *Modern Architecture*, p.200-201, OUP, Oxford, 2002.

Constantelos, D., *Byzantine Philanthropy and Social Welfare*, Rutgers University Press, New Brunswick, New Jersey, 1968.

Cook, G. C., Henry Currey Friba (1820–1900): Leading Victorian Hospital Architect, And Early Exponent of The 'Pavilion Principle'. *Postgraduate Medical Journal, 78*(920), 352-359, 2002.

Coyne, J.S. and Singh, S. G., The Early Indicators of Financial Failure: A Study of Bankrupt and Solvent Health Systems. *Journal of Healthcare Management*, *53*(5), 333-346, 2008.

Çakıl, E. & Özer, A., Sağlık Hizmetlerinde Hasta Memnuniyetini Etkileyen Faktörler, *Tıp Araştırmaları Dergisi*. 5(3):140-143, 2007.

Çakır, A., *Şehir Hastanelerinde Yönetim Modeli*, Kamu Hastaneleri Kurum Başkan Yardımcısı SAYED Sunumu, 2017.

Çakır, M. K., *6428 Sayılı Kanuna Göre Kamu Özel İşbirliği Kavramı ve Yeni Bir Model: Yap Kirala Devret,* Seçkin Yayınevi, Ankara, 2016.

Çavdar, N. ve Karcı, E., XIX. Yüzyıl Osmanlı Sağlık Teşkilatlanması'na Dair Bibliyografik Bir Deneme, *International Periodical for The Languages, Literature and History of Turkish or Turkic*, 9(4): 255-286, 2014.

Çelik, R., Selçuklu'da Bir Sosyal Hizmet Kurumu Örneği: Kayseri Gevher Nesibe Şifahanesi, *Yalova Sosyal Bilimler Dergisi, 15,* 158-164, 2017.

Çoban, İ. ve Kaşıkçı, M. G., Hastaların Hemşirelik Bakımını Algılayışları. *Florence Nightingale Journal of Nursing, 16 (63),* 165-171, 2014.

Darton, E., (1996). The Evolution Of The Mission And Design Of The Hospital, *Hospital Evolution*, http://www.ericdarton.net/pdfs/Evolution%20of%20the%20Hospital, (Access Date:23/01/2020)

Davey, P., Bigness, *The Architectural Review,* August 2002.

Deamer, P., *Architecture and Capitalism:1845 To The Present, 1st Press,* Routledge, New York, 2014.

Demirbaş, G.U., Demirbaş, Ö. O., Biyofilik Tasarim Kapsaminda Peyzaj Mimarliği Ve İç Mimarlik Arakesiti: Eğitim Programlarinin Karşilikli Değerlendirilmesi *Turkish Journal of Landscape Research*, 2:2, 50-60, 2019.

Deusdad BA., Pace, C. and Anttonen A., Facing The Challenges in The Development of Long-Term Care for Older People In Europe In The Context Of An Economic Crisis, *Journal Of Social Service Research 42*: 144-150, 2016.

Diamantis, G., Useful Known and Unknown Views of the Father of Modern Medicine, Hippocrates and His Teacher Democritus. *Hell Journal Nucl. Med.*, 11(1): 2-4, 2008.

Dilani, A., *Issues of Human Centered Design for Healthcare Building Human Centered Design for Health Care Buildings*, International Conference and Workshop August SINTEFF Unimed, Tronheim Norway, 1997.

DiSantis, D.J., Early American Radiology: The Pioneer Years, *American Journal of Roentgenology (Radiology)*, 147 (4), 850-853, 1986.

Dişli, G. and Özcan, Z., An Evaluation of Heating Technology in Anatolian Seljuk Period Hospitals (Darüşşifa) (1), *METU Journal of Architecture*, 33(2), 183-200, 2016.

Doğan, Ş. N., Ortaçağ'da Anadolu'nun Eğitim Mekânları: Selçuklu Medreseleri-Darüşşifalarından Örnekler, *Hacettepe Üniversitesi Eğitim Fakültesi Dergisi (H. U. Journal of Education)*, 28(2), 429-443, 2013.

Dols, M. D., The Origins of the Islamic Hospital: Myth and Reality, *Bulletin of the History of Medicine*, 61 (3), 367-390, 1987.

Dormer, P., Improving Hospital Design, *British Medical Journal, 309* (6962), 1170–1172, 1994.

Draper, M., Cohen, P. and Buchan, H., Seeking Consumer Views: What Use Are Results of Hospital Patient Satisfaction Surveys? *International Journal for Quality in Health Care,* 13(6), 463-468, 2001.

Dumenil, G. and Levy, D., *Capital Resurgent: Roots of the Neo-liberal Revolution,* MA: Harvard U.P., Cambridge, 2004.

Ergenoğlu A.S., *Sağlık Kurumlarının İyileştiren Hastane Anlayışı Ve Akreditasyon Bağlamında Tasarımı Ve Değerlendirilmesi,* Yayımlamamış Doktora tezi, Yıldız Teknik Üniversitesi Fen Bilimleri Enstitüsü, İstanbul, 2006.

Eylers, E., Heikkonen, N., Holopainen, T., Lindh, T., Malmberg, Mentu, J. S., Pakoma, K. Riekko, T., Riksman, E., Saarikko, J., & Sainio J., *Paimio Sanatorium Conservation Management Plan*, Alvar Aalto Foundation, Helsinki, 2016.

Eylers, E., Planning The Nation: The Sanatorium Movement in Germany, *The Journal of Architecture*, 19(5), 667-692, 2014.

Eylers, E., Planning The Nation: The Sanatorium Movement. *The Journal of Architecture*, 19(5), 667-692, 2014.

Eylers, E., *Nationalism and Architecture*, *"National Identity through the International Style: Alvar Aalto's Paimio Sanatorium and its Role for Finland";* (Eds.R. Quek, D. Deane, S. Butler), Ashgate Publishing, (pp. 199-211), 2012.

Eyüpgiller, K. ve Özaltın, M., *Restitüsyon ve Restorasyon, Bir Şaheser Süleymaniye Külliyesi,* Kültür ve Turizm Bakanlığı, Kütüphaneler ve Yayınlar Müdürlüğü, (ss. 193-232), Ankara, 2007.

Farsi, M. ve Filippini, M., An Analysis of Efficiency and Productivity in Swiss Hospitals, *Schweizerische Zeitschrift Für Volkswirtschaft Und Statistik,* 142(1), 1-37, 2006.

Fişek, N., Türkiye' de Sağlık Devrimi, *Mimarlık Dergisi*, 9 (9-10). T.C. Mimarlar Odası Yayınları, İstanbul, 1971.

Folland, S.T. and Hofler, R. A., How Reliable Are Hospital Efficiency Estimates? Exploiting The Dual to Homothetic Production. *Health Econ.*, 10(8), 683-698, 2001.

Forty, A., *Words and Buildings*, Thames and Hudson, London, 2000.

Foucault, M., *Kliniğin Doğuşu, 2. Basım,* (Çev.İnci Malak Uysal), Epos Yayınları, Ankara, 2006.

Foucault, M., *Deliliğin Tarihi: Akıl Ve Akıl Bozukluğu: Klasik Çağda, 2. Basım*, (Çev.Mehmet Ali Kılıçbay), İmge Kitabevi, İstanbul, 2006.

Frampton, K., *Modern Architecture: A Critical History*, Oxford University Press, Oxford, 1980.

Francis, S., Glanville, R., Nuffield Trust for Research and Policy Studies in Health Services.; *RIBA Future Studies*, 2001.

Frank, L.D., Engelke, P.E., Schmid, T. L., *Health and Community Design: The Impacts of the Built Environment on Physical Activity,* Island Press, Washington, 2003.

Gainsborough, H.J., *Principles of Hospital Design*, The Architectural Press, London, 1964.

Gareau, B. J., The Limited Influence of Global Civil Society: International Environmental Non-Governmental Organizations and The Methyl Bromide Controversy in The Montreal Protocol, *Environmental Politics 21* (1), 88–107, 2012.

Gaudin, B., *The Hospital and the City. The Architecture of Hospitals. NAI Publishers*, (pp. 7-14), Rotterdam, 2006.

Gelijins, A. C., & Ethan, H. A., *The Changing Economics of Medical Technology*, National Academy Press, Washington, 1991.

Gelijins, A. C., *Tecnology and Health Care,* National Press, Washington, 1992.

Godiwalla, Y. H., Batra, H. C., Johnson, J. A. and Charleston, C., Managing Hospitals in Dynamic Environments, *International Journal of Health Care Quality Assurance, 10*(5), 202-207, 1997.

Goichon, A. M., *İbn Sinâ felsefesi ve Ortaçağ Avrupasındaki Etkileri, (Çev.İ. Yakıt)*, Ötüken Yayınları, İstanbul, 2000.

Golenda G., Architecture inspired by nature: biomimicry from Art Nouveau to Neo-Futurism. url: https://architizer.com/blog/practice/details/biomimicry-binet-som/, (Access date 20/02/2020)

Gold, S., The Royal Masonic Hospital, *Thirties Society Journal,2(*29),33, 1981.

Goubert, J. P., *The Conquest of Water: The Advent of Health in the Industrial Age*, Princeton University Press, New Jersey, 1986.

Gönül, C., *Sinan Külliyelerinde Darüşşifa Planlaması, Mimar Sinan Dönemi Türk Mimarlığı ve Sanatı,* Türkiye İş Bankası Kültür Yayınları, (ss.48-49), İstanbul, 1988.

Güllülü, U., Erciş, A., Ünal, S., Yapraklı, Ş., *Sağlık Hizmetlerinde Müşteri Memnuniyeti,* Detay Yayıncılık, Ankara, 2008.

Güntöre, S.Ö., *Tıp ve Felsefe*, Nobel Tıp Kitabevi, İstanbul, 2005.

Gürkan, M.F., *Kamu-Özel Ortaklığı,* Adalet Yayınları, Ankara, 2014.

Güzer, C. A., *Türkiye'deki Mega Projelere Mimari Bakış Paneli*, Mipim, Cannes, 2016 , https://www.youtube.com/watch?v=sQEYuRoOkuA , Erişim: Ocak 2020.

Hamilton, D.K, Watkins, D.H., *Evidence-Based Design for Multiple Building Types*, John Wiley, Hoboken, New Jersey, 2009.

Harris, R., Wathen, N., Wyatt, S., *Health Consumers Health Work and the Imperative of Personal Responsibility*, Palgrave Macmillan, United Kingdom, 2010.

Harvey, D., Neoliberalism as Creative Destruction, *The Annals of the American Academy of Political and Social Science, 610*(1), 21-44, 2007.

Harvey, D., *The Enigma of Capital: And the Crises of Capitalism*, NY Oxford University Press, New York, 2010.

Harwood, E., *Proponent of Flexible Hospital Design,*
url: http://www.architectsforhealth.com/library/johnweeks.html , (Date of access: 05 January 2020).

Heerwagen, J. & Hase, B., Building biophilia: Connecting people to nature in building design, 2001.

url:http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.454.4959&rep=rep1&type=pdf , (Date of access: 05 February 2020).

Hermann, C., *The Marketization of Health Care in Europe. In Socialist Register, Morbid Symptoms: Health under Capitalism*, (Ed. L. Panitch and C. Leys), pp.125–144. Merlin Press and Monthly Review Press, London, 2010.

Hoff, H. E., Dentistry and the Centenary of Anesthesia. *McGill Dental Rev*, 9(1), 18-30, 1947.

Hosmac-Confederation Indian Industry, *Partnerships in Healthcare: A Public-Private Perspective*, Whitepaper, India, 2009.

Howard J., *The State of the Prisons in England and Wales, With Preliminary Observations, and an Account of Some Foreign Prisons and Hospitals*, (Ed.W. Eyres), Warrington Printed, Bedfordshire, 1777.

Howe, D.E., *The Hospital of Santo Spirito and Pope Sixtus IV, 7th Press*, New York, 1978.

Hughes, J., The Matchbox on a Muffin: The Design of Hospitals in the Early NHS, *Medical History,* 44(1), 21-56, 2000.

Hughes, J., *The Indeterminate Building in Hughes, Non-plan, Essays on Freedom, Participation, and Change in Modern Architecture and Urbanism,* (Ed.J. Hughes and S. Sadler), pp.90-103, Architectural Press, Oxford, 2000.

Hughes, J., *After Non-Plan, In Non-Plan,* (Ed. J. Hughes and S. Sadler), Architectural Press, pp. 91-97, 2002.

Humphreys, C., Waiting for the Last Summons: The Establishment of the First Hospices in England 1878–1914, *Mortality,* 6(2): 146-165, 2001.

Hurry, J. B., *Imhotep, The Vizier and Physician of King Zoser, 3rd Edition,* Oxford, 1926.

İnan, A., *Eski Mısır Tarihi ve Medeniyetler*, Türk Tarih Kurumu Basımevi, No.318, Ankara, 1956.

Joint Commission on Accreditation of Healthcare Organizations (JCAHO), Joint Commission International Standards for Hospitals, *Joint Commission Resources Inc.*, Illinois, 2003.

Jones, J. W., *Acute Care Design: Emerging Trends, Fifth Symposium On Healthcare Design*, San Diego, 1992.

Kan, T., İstanbul Süleymaniye Külliyesi Örneğinde Külliyeler Için Bir Yönetim Modeli Yaklaşımı, Yayınlanmamış Doktora Tezi, Mimar Sinan Güzel Sanatlar Üniversitesi Mimarlık Anabilim Dalı, ss.171-269, İstanbul, 2014.

Kavuncubaşı, Ş. ve Yıldırım, S., *Hastane ve Sağlık Kurumları Yönetimi*, Siyasal Yayınevi, 3. Basım, Ankara, 2012.

Kellert, S. R., *Building for life: Designing and understanding the human-nature connection.* Washington: Island Press, 2005.

Kellert, S. R., Biophilia and biomimicry: Evolutionary adaptation of human versus nonhuman nature. *Intelligent Buildings International*, 8(2), 51-56, 2014.

Kellert, S. R. & Calabrese, E. F., *The practice of biophilic design, 2015* https://www.biophilic-design.com Access Date: 02/02/2020

Kentikelenis, A., Karanikolos, M., Reeves, A., McKee, M. and Stuckler, D., Greece's Health Crisis: From Austerity to Denialism, The *Lancet*, 383, 748-53, 2014.

Kerman U., Demirgil H., Altan, Y. ve Büyüksavaş, A., Özel Hastanelerin Yönetsel Sorunları Üzerine Bir Araştırma: Antalya ve Isparta Örneği, *Süleyman Demirel Üniversitesi İktisadi ve İdari Bilimler Fakültesi Dergisi* ,16(1), 93-108, Isparta, 2011.

Khayrallah, A., *Outline of Arabic Contributions to Medicine and Allied Sciences*, (pp. 63-68), Beirut, 1946.

Kılıç, A., Anadolu Selçuklu ve Osmanlı Şefkat Abideleri Şifahaneler, MedikalPark Hastaneler Grubu Yayını, İstanbul, 2012.

Kırılmaz, H., Hasta Memnuniyetini Etkileyen Faktörlerin Sağlık Hizmetlerinde Performans Yönetimi Çerçevesinde İncelenmesi: Poliklinik Hastaları Üzerine Bir Alan Araştırması, *Acıbadem Üniversitesi Sağlık Bilimleri Dergisi*, (4)11-21, 2013.

Koolhas, R., Mau, B., *Bigness or The Problem of Large, In S, M, L, XL, OMA*, (pp 499-502), The Monicelli Press, New York, 1995.

Koparal, C., *Yönetim ve Organizasyon*, Anadolu Üniversitesi Yayınları, Eskişehir, 1997.

Kortan, E., *Türkiye'de Mimarlık Hareketleri ve Eleştirisi 1960-1970*, Yapı Endüstri Merkezi Yayınları, (ss.70-82), İstanbul, 1986.

Köktaş, A., Karaosmanoğlu, F., Bilgiç, V. K., Kamu *İhaleleri Ve Etik, Yolsuzluğun Önlenmesi İçin Etik Projesi Akademik Araştırma Çalışması*, Başbakanlık Kamu Görevlileri Etik Kurulu, Ankara, 2009.

Kuilman, M., *Quadralectic Architecture–A Panoramic Review*, Falcon Press, Nashville, 2011.

Leon, M., *The Transformatin of Care in European Societies,* Palgrave MacMillan, Houndmills, UK, 2014.

Lefebvre, H., Reflections on the politics of space. In R. Peet (Ed.), Radical geography (pp. 339–352). London: Methuen and Co, 1977.

Lewis, C. T and Short, C., A., *Latin Dictionary*, Clarendon Press, Oxford, 1958.

Lewis, I. C., Humanizing Paediatric Care, *Child Abuse and Neglect,* 7 (4), 413–419, 1983.

Lewis, N. and Associates, *Queen Victoria Medical Centre Conservation Analysis*, PHD Thesis, Design By-Dialogue: The Architectural Programming of the Royal Melbourne Hospital 1935-1945, Melbourne, 1985.

Loudon, I., *Western Medicine: An Illustrated History,* Oxford University Press, Oxford, 2002.

Lunsgard, J., Consumer Direction and Choice in Long Term Care for Older Persons, Including Payments for Informal Care: How Can It Help Improve Care Outcomes, Employment and Fiscal Sustainability? *OECD Health Working Papers, 20, OECD Edition,* Paris, 2005.

Macnaughton, R. J. P., Collins, J., White, M., Elliott, K., Soukas, A., Purves, G., Kellett, P. and Coleman, S.M., *Designing for Health: Architecture, Art and Design, James Cook University Hospital*, NHS Estates, London, 2005.

MacRae, S., *Patient Centered Healthcare: An Interview with Susan MacRae*, www.Best4Health.org, (Access Date: 12/02/2020)

Madison, K., Multihospital System Membership and Patient Treatments, Expenditures, And Outcomes. *Health Serv. Res.*, *39*(4), 749-769, 2004.

Malone, E., Mann-Dooks, J.R., Strauss, J., 2007. Evidence-Based Design: Application in the MHS, url: http://www.noblis.org/MissionAreas/HI/public/Documents/EBDInMHS.pdf , (Access Date: 12/12/2018)

Maga, M., Robotlar Sanal Gerçeklik Ve Hekimler, *Bilim Ve Teknik Dergisi*, 351(15), 1997.

McDowell, F., *The Source Book of Plastic Surgery*, Williams and Wilkins Company, pp.5-85, Baltimore, 1977.

Miller R. L.and Swensson E. S., *Hospital and Healthcare Facility Design*, W. W. Norton & Company, New York, 2002.

Miller, P. & Rose, N., *Governing advanced liberal Democracies*. (Ed. Miller, P. and Rose, N.), '*Governing the Present: Administering Economic, Social and Personal Life',* Polity Press, Malden, 2008.

Miller, Timothy S., The Knights of Saint John and the Hospitals of the Latin West, *Speculum 53*(4), 709–733, 1978.

Miller, Timothy S.,*The Birth of the Hospital in the Byzantine Empire*, Johns Hopkins University Press, Baltimore, 1985.

Mimarlık Dergisi Arşiv, 1963-2019, url: http://www.mimarlikdergisi.com/index.cfm?sayfa=arsiv, (Access Date:12/02/2020).

Mumford, E., *The Emergence of Mat or Field Buildings, 'Le Corbusier's Venice Hospital and The Mat Building Revival',* (Ed. Sarkis, H.), pp. 48-66, Harvard Design School, Prestel, Germany, 2001.

Mutlu, A., *Sağlık Yapıları ve Hastaneler,* Devlet Güzel Sanatlar Akademisi Yayınları, Türk Arşivi Matbaası, s.36, İstanbul, 1973.

Nadesan, M. H., *Governmentality, Biopower and Everyday Life*, Routledge, New York, 2008.

Najmabadi, M., *History of Medicine in Iran,* 5th Section, University of Tehran Press; pp.477-633, Tehran, 1963.

Nardin, A., Humanizing Healthcare Environments: Architecture, Art and Design in Modern Hospitals, *Design for Health, 2*(1),5-19, 2009.

Nasuhioğlu, İ., *Tıp Tarihine Kısa bir Bakış,* Diyarbakır Tıp Fakültesi Yayınları No: 9, Ayyıldız Matbaası A.Ş. Ankara, 1974.

Nightingale, F., *Notes On Hospitals.* (Ed. Longman, G. and Longman, R.), Longman, London, 1863.

Nonini, S., "*The Smoke and Mirrors of Health Reform in El Salvador: Community Health NGOs and the Not-So-Neoliberal State." In Dying for Growth: Global Inequality and the Health of the Poor,* (Ed.J. Y. Kim, J. V. Millen, A. Irwin, and J. Gersham), pp.359–81, Common Courage Press, Monroe, ME, 2000.

Noushirawy, A. R., The Islamic Bimaristans of the Middle Ages, (Translation: Badra, M. Kh), *The Arab Legacy Bulletin*, 21(4), 202, 2004.

Nuffield Provincial Hospitals Trust and University of Bristol, Studies in The Functions and Design of Hospitals: The Report of an Investigation

Sponsored by The Nuffield Provincial Hospitals Trust and The University of Bristol. Oxford University Press, Oxford, 1955.

Nutton, V., *Ancient Medicine*, Taylor and Francis, U.S., 2005.

O'Connor, J., *The Fiscal Crisis of the State*, St Martin's Press, New York, 1973.

Ochsner, A. and Sturm, M. *The Organisation, Construction and Management of Hospitals*, p. 117–119, 1907.

OECD Health Data 2001,Tables and Graphs

url: http://www.oecd.org/newsroom/archives/1913396.pdf (Access Date: 27.11.2019).

OECD, World Bank, OECD Sağlık Sistemi İncelemeleri Türkiye, 2008.

Osborne, D. and Gaebler, T., *Reinventing Government: How The Entrepreneurial Spirit Is Transforming the Public Sector*, Reading, Addison-Wesley, MA, 1992.

Ökmen, M., Yılmaz, A., Baştan, S., *Kamu Yönetiminde Yeni Yaklaşımlar ve Bir Yönetişim Faktörü Olarak Yerel Yönetimler,* (Ed. M. Ökmen ve A. Yılmaz). *Kuramdan Uygulamaya Kamu Yönetimi*, (ss. 23-80), Gazi Kitapevi, Ankara, 2004.

Özbay, H., Türkiye'deki Hastane Şemalarının Tipolojik Gelişimi, *Mimar Dergisi*, 6 (7), 11, 1996.

Öztürk, L., *On İkinci Yüzyıla Kadar İslam Dünyasında Hastaneler,* İz Yayıncılık, (s.25), İstanbul, 2007.

Pala, K., *Türkiye Için Nasıl Bir Sağlık Reformu?*, 2007. url: https://www.researchgate.net/publication/280230044_Turkiye_icin_nasil_bir_saglik_reformu (Access Date: 29.11.2019).

Pearson, P., *Alvar Aalto and The International Style, Whitney Library Of Design*, Watson-Guptill Publications, New York, 1978.

Pevsner, N. A., *History of Building Types, The A.W. Mellon Lectures in the Fine Arts – 1970 Bollinger Series 35-19*, Princeton University Press, Princeton, 1976.

Pevsner, N., *A History of Building Types (Vol. 257),* Thames and Hudson, London, 1976

Pfiefer, J., W. Johnson, M. Fort, A. Shakow, S. Gloyd, K. Gimbel-Sher, Strengthening Health Systems in Poor Countries: A Code of Conduct for Nongovernmental Organizations, *American Journal of Public Health 98* (12): 2134–40, 2008.

Prasad, S., *Changing Hospital Architecture*, Riba, London, 2008.

Pringle, J., *Observations on the Diseases of the Army*, No. 21145, Edward Earle, Philadelphia, 1810,url:https://books.google.mw/books/about/Observations_on_the_Diseases_of_the_Army.html?id=5y5AAQAAMAAJ&utm_source=gb-gplus-shareObservations ,(Access Date:12/01/2020).

Purves, G., *Healthy Living Centres: A Guide to Primary Health Care Design*, Architectural Pres-Elsevier Science, Oxford, 2002.

Quecedo C. R., *The Functionalist Awakening of Alvar Aalto in The Kinkomaa Tuberculosis Sanatorium. Each Thing in Its Place and A Distinctive Aesthetic for Each One*, Published by Alvar Aalto Museum, 2012.

Ragab, A., *Physicians and Patients. In The Medieval Islamic Hospital: Medicine, Religion, and Charity* (pp. 139-222), Cambridge University Press, Cambridge, 2015.

Rasmussen S.E., *Experiencing Architecture*, MIT Press, Cambridge, 1959

Reed, P., *Alvar Aalto Between Humanism and Materialism,* The Museum of Modern Art, New York, 1998.

Richardson, H., *Historical Context and General Hospitals. English Hospitals 1660–1948: A Survey of Their Architecture, And Design*, Swindon Royal Commission on The Historical Monuments of England, pp.1–43, Royal Commission on Historical Monuments, London, 1998.

Risse, G. B., *Mending Bodies, Saving Souls: A History of Hospitals,* Oxford University Press, p.82, Oxford, 1999.

Rosenfield, I., Hospital Architecture and Beyond, 'Today and Tomorrow: The Architectural View', *The Architects Journal,* June, p. 1100, New York, 1937.

Ryan, F., *The Forgotten Plague: How The Battle Against Tuberculosis Was Won - And Lost, 1st Edition*, Back Bay Books, New York, 1994.

Schoepf, B. G., Schoepf, C. and Millen, J., *Theoretical Therapies, Remote Remedies: SAPs and the Political Ecology of Poverty and Health in Africa, Monroe,* Common Courage Press, ME, 2000.

Schreyögg, J. and von Reitzenstein, C., Strategic Groups and Performance Differences Among Academic Medical Centres. *Health Care Manage Rev.*, 33(3), 225-233, 2008.

Seymer, L., *Selected Writings of Florence Nightingale*, p.119, MacMillan, New York, 1954.

Shaw, R., & Petty, D. J., Report *of Joint Visit to Denmark, Sweden, Finland and Norway,* Welcome Library, London, 1955.

Shleifer, A., *State Versus Private Ownership*, p. 6665, National bureau of Economic Research, Cambridge, MA, 1998. url:

https://pubs.aeaweb.org/doi/pdfplus/10.1257/jep.12.4.133 (Access Date: 13/11/2019)

Sloane, D. C. and Sloane, B. C., *Medicine Moves to The Mall, pp.* 224–225, JHU Press, Maryland, 2003.

Stevens, E. F., *The American Hospital of the Twentieth Century: A Treatise on the Development of Medical Institutions, Both in Europe and in America, Since the Beginning of the Present Century*, New York, 1928, url: https://wellcomecollection.org/works/qm623esu , (Access Date:12/01/2020)

Stevenson, C., *Medicine and Magnificence: British Hospital and Asylum Architecture*, (pp. 1660–1815), Yale University Press, London, 2000.

Stiglitz, JE., *Globalization and Its Discontents,* Norton, New York, 2002.

Sonğur C., *Türkiye'de Kamu-Özel İşbirliği Modelinin Entegre Sağlık Kampüslerinde Uygulanmasında Paydaşların Görüş Ve Değerlendirmeleri*, Yayımlanmamış Doktora Tezi, Hacettepe Üniversitesi Sosyal Bilimler Enstitüsü Sağlık Kurumları Yönetimi Anabilim Dalı, Ankara, 2016.

Sullivan, R., A Brief Journey into Medical Care and Disease in Ancient Egypt, Journal *of Royal Society of Medicine*, 88, 141-145, 1995.

Şahin, M. ve Uysal, Ö., *Kamu Ekonomisi Perspektifinden Kamu – Özel Sektör Ortaklıkları,* Ekin Yayınevi, Bursa, 2008.

Şahin, M. ve Uysal, Ö., Kamu Maliyesine Etkileri Açısından Kamu Özel Sektör Ortaklıkları Üzerine Bir Değerlendirme, *Maliye Dergisi*, 162, 2012.

Şener, M., Türkiye'de Devlet Hastanesi Mimarlığının Gelişimi Üzerine Bir İnceleme, *Yapı Dergisi,* 423, 132-137, 2017.

Tate, C.A., *Design-By-Dialogue: The Architectural Programming of the Royal Melbourne Hospital 1935 – 1945,* PHD Thesis, 2016.

Taşlıyan, M. ve Gök, S., Kamu ve Özel Hastanelerde Hasta Memnuniyeti: Kahramanmaraş'ta Bir Alan Çalışması, *Kahramanmaraş Sütçü İmam Üniversitesi İktisadi ve İdari Bilimler Fakültesi Dergisi*, 2 (1), 69-94, 2012.

Taylor, E. M., The Pebble Project: The year in review 2009 url: https://www.researchgate.net/profile/Ellen_Taylor/publications

Taylor J.,*The Architect and the Pavilion Hospital, dialogue and design creativity in England 1850-1914,* Leicester University Press, New York, 1997.

Tekeli, İ., *Siyasetçiler ve Mega Projeler Üzerine,* Mega Projeler ve İstanbul Paneli, Mimar Sinan Güzel Sanatlar Üniversitesi Şehir ve Bölge Planlama Bölümü, İstanbul, 12.02.2014.

Tekin, A.G., Kamu-Özel Sektör İşbirlikleri- Kamu-Özel Ortaklıkları, *İdarecinin Sesi Dergisi*, 21(122), 10-14, Mayıs Haziran 2007.

Tekiner, H. *Gevher Nesibe Darüşşifası Ortaçağda Öncü Bir Tıp Kurumu*, Kalkan Matbaası, Ankara, 2006.

Temel, T., Özel *Hastaneler Sektör Profili,* İstanbul Ticaret Odası Yayınları, İstanbul, 2003.

Tengilimoğlu, D., Işık, O., Akbolat, M., *Sağlık İşletmeleri Yönetimi,* Nobel Akademik Yayıncılık, Ankara, 2012.

Tenon M., *Memoirs On the Paris Hospitals*. (Ed. Weiner Dora B.) *Resources In Medical History*. Science History Publications, Canton, MA, 1996.

Terzioğlu, A., *Bimaristan*', TDVİA VI, ss.163-178, İstanbul, 1992.

Theobald, H. and Ozanne, E., *Multilevel Governance and Its Effects On Long-Term Care Support - Long-Term Care Reforms in OECD Countries.* (pp. 271-292), Policy Press, Bristol, 2016.

Thompson, J. D., & Goldin, G., *The Hospital: A Social and Architectural History*. New Haven, University Press, Yale, 1975.

Tonbul, Z. ve Forta, Ö., *Tarihi Hastaneler Gureba Hastaneleri'nden Memleket Hastaneleri'ne İlk Sivil Hastaneler,* Novartis Kültür Yayınları, İstanbul, 2009.

Tontuş, H. Ö., Sağlık Turizmi Tanıtımı ve Sağlık Hizmetlerinin Pazarlanması İlkeleri Üzerine Değerlendirme, *Disiplinlerarası Akademik Turizm Dergisi,* 3(1), 67-88, 2018.

Turkey Statistical Institute, Health Statistics, 2017, url: http://www.tuik.gov.tr/PreTablo.do?alt_id=1095 , (Access Date: 03.01.2020)

Tüker, Ç., *An Analysis of General Hospitals and Developments Affecting Change in Desing*, Master of Thesis, The Middle East Technical University, The Department of Architecture, Ankara, 1996.

T.C. Sağlık Bakanlığı, *Sağlıkta Dönüşüm Programı Raporu*, Ankara, 2003.

T.C. Sağlık Bakanlığı, *80. Yılda Tedavi Hizmetleri (1923 - 2003) Kitabı*, Sağlık Bakanlığı Tedavi Hizmetleri Genel Müdürlüğü Yayınları, Ankara, 2004.

Uçar, E., *Şehir Hastaneleri Sunusu*, Ankara, 2017, url: https://ato.org.tr/files/documents/0274846001519029218.pdf , (Access Date: 12/01/2020)

Ulrich, R. S., View Through a Window May Influence Recovery. *Science*, 224 (4647), 224-225, 1984.

Ulrich, R. S., How design impacts wellness. *Healthcare Forum Journal*, 35, 20-25, 1992.

Ulrich R, Zimring C., Joseph A., Quan X., Choudhary R., The role of the physical environment in the hospital of the 21st century: A once-in-a life time opportunity. Center for Health Design: Concord CA., 2006. url: https://www.healthdesign.org/system/files/Ulrich_Role%20of%20Physical_2004.pdf, (Acces Date: 18/02/2020)

Unger, R., *More Proof That the American For-Profit Health Insurance Model Is Doomed*. Forbes Magazine, 2011. http://www.forbes.com/sites/rickungar/2011/12/28/more-proof-that-the-american-for-profit-health-insurance-model-is-doomed/, (Acces Date: 28/12/2019)

Uzunay, S., *Hastane Yapılarının Planlanması ve Hastanelerde Sirkülasyon*, Yayımlanmamış Yüksek Lisans Tezi, Haliç Üniversitesi Fen Bilimleri Enstitüsü Mimarlık Ana Bilim Dalı, 2011.

Valentinuzzi, M. E., and Leder, R., The Modern Hospital in Historical Context. *In 2009 Annual International Conference of the Engineering in Medicine and Biology Society* (pp. 1089-1091). IEEE, 2009.

Valins, M. S. and Salter, D., *Looking Back*, Futurecare-Chapter I, 1996.

Verderber, S., *Innovations in Hospital Architecture*, Routledge 270 Madison Avenue, New York, 2010.

Verderber, S. & DJ Fine, D.J., *Healthcare Architecture in an Era of Radical Transformation*, Yale University Press, Yale, 2000.

Volf, C., *Light, Architecture and Health a Method*, Linde Tryk., Denmark, 2013.

Yavuz, Y., Batılılaşma Döneminde Osmanlı Sağlık Kuruluşları, *ODTÜ Mimarlık Fakültesi Dergisi*, 8(2): 123, 1988.

Wall, B. M., Conflict and Compromise: Catholic and Public Hospital Partnerships. *Nursing History Review*, 18, 100-117, 2010.

Weir, D. R., *Economic Welfare and Physical Well-Being in France, 1750-1990*, (pp. 161 – 200), University of Chicago Press, Chicago, 1997.

Wilson, C. B., The Impact of Medical Tecnologies On the Future of Hospitals, *British Medical Journal*, 1287, 1999.

Willson, K., The use of biophilic strategies in the workplace. *People and Strategy*, 39(2), 14, 2016.

Yıldırım, N. *Tıpta Modernleşme - III. Selim İki Asrın Dönemecinde İstanbul,* (Ed. Coşkun Yılmaz), 2010, ss.141-153, Avrupa Kültür Başkenti Yayınları, İstanbul, 2010.

Yılmaz, S., *The Prominent Health Institutions (Darü'ş-şifas) and Their Functions in Anatolia from Turkic Conquest the Ottoman Era.* Bilkent University, Ankara, 2013.

Yoket, U., Eski Çağda Tıp, *Sürekli Tıp Eğitim Dergisi*, 12 (2), 77, 2003.

Yonek, J., Hines, S. and Joshi, M. A., *A Guide to Achieving High Performance in Multi-Hospital Health Systems*, Health Research and Educational Trust, Chicago, 2010.

Zegel, S., Le Corbusier'in Yeni Venedik Hastanesi, *Mimarlık Dergisi*, 3(7), 1965.

Zoom TPU Architectural and Interior Design Office, Project Report, 2018,

url: http://www.arkiv.com.tr/proje/memorial-ankara-hastanesi/4788 (Acces Date: 20/02/2020)

Zorlu, T., Klasik Osmanlı Eğitim Sisteminin İki Büyük Temsilcisi: Fatih ve Süleymaniye, *Türkiye Araştırmaları Literatür Dergisi,* 6(12),611-628, 2008.