In today's political borders of the Republic of Turkey there exists very old institutions that train physicians according to Islamic medical science. In this study, 19 health institutions, whose locations have been determined and documents have been finalized, are approached in chronological order and classified according to historical periods: XIth-XIIIth centuries (Seljukian period) - 10; XIVth century (Ilkhanate dominion) - 1; XVth-XVIIth centuries (Ottoman period) - 8 institutions. Some of them have a history of 900 years (Konya Maristant-ı Atik, 1113; Mardin Eminüddin Bimaristanı, 1122). Some of them are in the form of a medical madrasah and an application hospital (Kayseri, 1206; Sivas, 1217). In these institutions, great masters of Islamic medicine (Razi, Farabi, Biruni, İbni Sina) and ancient authorities (Hippocrates, Dioscorides, Aretaeus, Galenos) were taught. They had builders, rulers (sultan, melik) or mothers, wives, daughters, sisters (the presence of female builders in 6 institutions attracts attention). Powerful viziers also built such institutions during the Seljuk period. Free health services were provided in these hospitals, which are accepted as "charities" according to the religion of Islam. The financing of the institutions was obtained from the sources of income donated via the “foundation” method (shops, inns, Turkish baths, bridges, mills, vineyards, gardens, fields and annual taxes of many villages). Donations were made in front of the witnesses in the presence of the "kadi" (muslim judges) with the written document "endowment" and subsequent monarchs did not touch these foundations. The board of trustees met the fees and daily expenses of physicians and assistant personnel and repaired the buildings. 12 of these institutions are still in use for public interest (polyclinic, museum, health museum, library, university, education center). When modern medical schools (1827) and hospitals (1842) began to be established as of the XIXth century, these historical buildings were allocated to mental patients, some of them were devastated by neglect. In the Republic period, they have been restored and used for health and educational purposes.

Keywords: medical history, Islamic physician training institutions, Islamic foundations, historical hospital buildings

This study covers the oldest Islamic institutions that train physicians according to medical science in today's political borders of the Republic of Turkey. We can relate these medical schools to three historical processes: I. Early period: Seljuk period – XIth and XIIth centuries. These vassal statesmen, which were established under the Great Seljuk Empire (1038-1194), were then subjected to Konya (Iconon) Seljuk Sultanate (1074-1308) in the center of Anatolia and were gradually annexed and eliminated by this Sultanate. II. Intermediate period: the period of the reign of İlhanlı (İlkhanid) – XIVth century. As a result of the Great Mongolian invasion, the İlhanlı State (İlkhanid, 1256-1335), founded by Hulagu Khan the grandson of Genghis Khan and based in Tabriz has placed Konya Seljuks and other principalities in Anatolia under its guardianship and administrated them by means of a general governor in Amasya (Amasseia). III. Late period: Ottoman period – XVth-XVIIth centuries. The Ottoman Principality, sprouting in the northwestern corner of Anatolia, by benefiting from the weaknesses of the Byzantine in the west and of the Seljuk and Ilkhanid in the east, conquered the Balkan Peninsula and Istanbul (Constantinopolis), and eventually became a powerful empire by annexing all the states in Anatolia (1299-1923). The Turkish speaking communities in Central Asia accepted Islam as of the Xth century and spread through the Iranian territory to the Middle East and Asia Minor (Anatolia) in the XIth century. The Great Seljuk Sultan Alparslan destroyed the Byzantine army in the Battle of Manzikert in 1071 and captured the Emperor Romanos.
Diogenes IV. When all Asia Minor was defenseless and helpless, the commanders sent by Alparslan gradually turned to the west, and they dominated the lands of Eastern Anatolia and Central Anatolia (1). Since the beginning of the Xlth century, the independent Konya Seljuk Sultanate and some vassal emirates (kings) have built enormous and durable buildings by establishing educational, health and social institutions according to Islamic traditions, some of which have survived to the present day (2). Architectural designs in Baghdad, Damascus and Aleppo were taken as examples, knowledgeable and experienced physicians were invited; Abu Bakr er-Râzî (Rhazes, 854-925), Fârâbî (Alpharabius, 872-950), Birûnî (Alberuni, 973-1050) and Ibnî Sinâ (Avicenna, 980-1037) books were read as the main opus (3).

As the civilization in these lands is very old [Göbeklitepe, 10,000 years BC], the medical knowledge is very old as well. The most famous physicians and pharmacists of ancient times grew up in Anatolia, absorbed and systematized the accumulation of the generations before them, and became the founders of medicine, dentistry and pharmacy education in the world. These rudiments were not destroyed, when the Muslim Arabs conquered Eastern Anatolia in the VIIth century AD. On the contrary; the Greek, Latin, Syriac, Armenian, and Hebrew medical books have been translated into Arabic and Persian for the benefit of the physicians. An extraordinary exchange of information and synthesis has emerged in this multilingual and multi-religious society that lived together in harmony. Bukrat (Hippocrates of Cos, 460-377 BC), who is of Western Anatolian origin, was accepted as the “Father of Medicine”, and Calinus (Galenos of Pergamon, 130-210), who greatly influenced Islamic Medicine, were accepted as undisputed authority and thought (3-4). The great clinician Abû 'Ali al-Hûrâtî (Arataeus of Cappadocia, 80-136) who was born in Kayserî (Caesarea) and Skoridos (Pedanius Dioscorides of Anazarbus, 40-90) who was born and raised on the lands of Çukurova (Cilicia) have taken their respected places in (5).

The most advanced medical knowledge of the time was transferred to young physicians, and rational arrangements were made in the field of public health. A “head physician” (chief doctor, “münir-ül-etiibba, şeyh-ül-hükêma), who was the equivalent of the Minister of Health, made the appointments, transfers and investigations of the physicians and subjected them to the “false physicians” examination. Builders of these physician-educating organizations became either rulers (“sultan” or “melîk”), or made buildings or on behalf of their mothers, wives or daughters, buildings were made. It is noteworthy for female builders to exist within an Islamic society. As the sense of compassion of women was more evident in the care of patients, the power and reputation of women were at the highest level in these first Turkish states.

In order to guarantee the needs and expenses of these institutions for many years, a “foundation” was established on the basis of Islamic principles and an official written document (“endowment”) was issued. Taxes of real estates (inns, baths, bridges, shops, fields) that yielded income through local endowments that were regulated in the presence of local “kâdi” and witnesses, as well as the taxes from many villages were donated, and the board of trustees of the foundation were granted powers. The future of these “charities” made for religion and humanity were secured so well that these facilities operated until the XIXth century and their physical spaces were still partially standing. These health facilities, established as charities, provided free services - patients who received an outpatient exam or patients who received inpatient treatment were given free medication. No discrimination based on race, language, religion, sex or gender had been made in this regard. Three meals and hospitalization, heating and lighting expenses of inpatients were also covered by the foundation. The foundation also paid the salaries of the chief physician, other physicians, “kehhal” (ophthalmologist), surgeons and pharmacists (staff-accounting-teller, cleaning and maintenance staff). Daily medical allowance was given to medical students (“Şakîrd”) who received free boarding education. Subsequent Islamic rulers (Ottomans) did not touch the foundation properties and businesses that were donated before their time, approved the endowments, and also contributed materially and morally. The Ottoman Sultans (their mothers, wives and daughters as well) also continued the same tradition in the Western Anatolia and European lands (Rumelia), which were later Islamized, and established and dedicated new health and welfare institutions. Although a portion of said endowments were lost, most of them have survived until today, and they are safeguarded by the General Directorate for Foundations of the Republic of Turkey. Information can be gathered from the rich archive of the Ottoman State, which has kept extraordinary bureaucratic, meticulous and detailed records, about the ones that disappeared.

In terms of physician training models, we can divide these institutions into two:

1) “Master-apprentice” model: Next to an experienced physician (“master”) who had made a name for himself in inpatient treatment institutions that carried out diagnosis and treatment of patients young candidates (“apprentice”) starting from scratch had learned the secrets of the profession by observing and questioning for years to come. They personally undertook issues such as patient care, preparation and administration of medicines, and they discussed the theoretical knowledge by reading the books given by the master. The number of these would be one or more people, their training period was individually determined by the master (not less than three years), they would eventually receive "consent" (qualification) according to the personal opinion of the master. Different names have been used in Anatolia for this type of inpatient treatment institutions: "bimaristan" (Persian "bimar = patient +" -istân = place) or just "maristan; "Şifahane" (Arabic "şifa" = healing + Persian "-hane = "home") and compound terms derived therefrom from "dâr-üs-şifâ" (home of healing), "dâr-üş-
Siha” (home of health), “Dar-ül-afiyé” (home of well-being). In the Ottoman period, the term “dar-ül-tibb” (medical dormitory) was also used. The term “Hastahane” (hospital) is quite new (1845, Bezmâleım Gureba Hastanesi).

2) "Medrese" (madrasah) model: It was different from general madrasahs (theology, philosophy, law, administration) and specialized higher education institutions were formed to only train physicians: more students were taught in there (10 and more), “lessons” (→ madrasah) were taught by more than one teacher; general culture, oratory and foreign language (Arabic and Persian) were taught as well. These were called “medrese-i etibba” (faculty of medicine). Adjacent to these, there was always an application hospital (dârüşşifa). In some cases, a general madrasah and a medical madrasah were built side by side (double madrasahs). The education period would be between four years and six years, exams were applied and the sultanate possessors would attend the graduation ceremonies. Graduates were given diplomas.

I. Early period (Seljuk period)

The biggest Turkish state established in Anatolia at the end of the XIth century was the Konya Seljuk Sultanate. They became relatives with the Great Seljuk Dynasty in Iran (uncle's sons), and they had been able to unite smaller emirates with their military superiority and spiritual reputation, as well as their strategic positions and rational governments in the center of Anatolia, they also took the Black Sea (Sinop, Synope) and the Mediterranean (Antalya, Attaleia) beaches. Seljuk Sultans, who undertook extensive zoning activities in the lands they dominated, built hospitals and institutions training physicians in the cities of Sivas, Çankiri, Kastamonu and Tokat, especially the capital city of Konya (6,7).

A) Konya Darüşşifaları (hospitals) - According to written documents and some archaeological remains, three health institutions started operating in Konya in the XIIth and XIIIth centuries:

1) 1113, Mâristan-ı Atik was founded in the period of Sultan Melikşah. According to our present knowledge, it was the oldest medical training institutions established in the territory of Turkey: 1 Şaban 506 Hicri (= Gregorian calendar January 21th, 1113). Endowment of this facility was found in the Ottoman Archives and its first translation by Hakki Ocal was published in 1937 (8). It is believed that today it is located in the Sıfhane Neighborhood in Konya. According to the definition of physicians and officers in the endowment, there are not only treatment services, but also physician training duties (“Sekâr-i tabib” is mentioned).

2) 1221 In the period of Sultan Alaeddin Keykubat, the establishment of a second health institution, Alâeddin Darüşşifasi (Dârüşşifa-i Alâi) was implemented and served for many years (until 1858). As a result of the Crusades, the previous Mâristan-ı Atik, which was established 90 years ago, became unusable and was built once again at the same location by Konya Kadi Izzeddin Muhammed bin Mahmud upon the order of the Sultan. For this reason, it is referred to as “Kadi Izzeddin Mâristani” in his foundation. However, it was mentioned in the later Ottoman documents as "Konya Alaeddin Darüşşifasi" (9,10). This health facility with its buildings such as complexes, madrasahs and masjids in a complex style has reached today with only its masjid in ruins ["Şifahane (Sakahane) Mescidi"] and was repaired and opened to visitors by the Municipality of Konya in 2018 (Fig. 1a).

3) 1254 As a third health institution, Kemâliye Darüşşifasi (Karatay-ı Sağır Madrasah) came into service and its buildings survived until 1960 (Fig. 1b). After the famous Seljuk vizier Celâleddin Karatay built the Great Karatay Madrasah (nowadays a Museum) in 1251, he built the Karatay-ı Sağır (i.e. Küçük Karatay) Madrasah right across it for medical education and care of patients on a large field in 1254. He appointed his brother, Kemâleddin, who was a physician in his foundation of the same date, as the trustee of this facility. For this reason, this facility, which is called "the first private foundation medical school", was later called Kemâliye Darüşşifasi (11). Our famous medical historian, who visited Konya in 1956 and 1960, Distinguished Professor Doctor A. Süheyl Ünver saw and told about the buildings that were not used but still standing. In his visit in 1972, he regretfully found out that local administrators were expanding the road passing through there, which ended up destroying 700 years of historical artifacts.

B) 1122, Mardin, Eminüddin Bimaristan: The southeastern corner of today's Republic of Turkey passed into the hands of Arab Muslims in as early as 640. With the weakening of the Baghdad Caliphate, these lands were left defenseless and after the Manzikert War, the House of Turkmen "Artuklular" (Artuqids) was established under the command of Artuk Bey (1102). Necmeddin Ilgazi (1104-1122) was the head of the Mardin segment of this House, which was torn as a result of internal conflicts. His brother Melik-ul-Cebbar Eminüddin (referred to in the Ottoman records as Şeyh Eminüddin) started the construction of a large-scale complex (mosque, madrasah, bimaristan, Turkish bathhouse, fountain) as a charity, but when he passed away, Necmeddin, who was the ruler, completed it in 1122 (12,13).

It is placed as stepped landings on the sloping land with natural hot healing water springs at the southwest end of the historic city of Mardin, located at the foot of a rocky hill overlooking the northern Mesopotamian plains. It has survived until today in the territory of Turkey as the oldest mosque complex, which benefit from natural water sources that can be counted as a hydrotherapy (spa) center (Fig. 1c). Although his endowment did not reach today, it was mentioned as Eminüddin Bimaristan Foundation in the Ottoman Archives from 1518 until the
beginning of the XXth century and his staff had two physicians. Today, the Maristan Turkish Bath and Maristan Fountain are still in use, but other parts are in ruins.

In the XIIIth century, the Turkish states in Anatolia experienced their brightest periods and built many new health institutions besides rich zoning activities. The Seljuk Sultans personally led the way and equipped large cities (Kayseri, Sivas) outside the capital with imposing madrasahs and hospitals. Viziers and commanders at their disposal have also built health facilities in northern provinces (Çankırı, Kastamonu and Tokat). The people of Mengiğek, who were vassal leaders, also built an extraordinary Cami-Darüşşifa complex in Divriği.

C) 1206, Kayseri Gevher Nesibe Darüşşifası: Sultan Gıyâseddin Keyhüsrev built “Gevher Nesibe Darüşşifası ve Tip Medresesi” in the name of his sister Gevher Nesibe Sultan, who died due to tuberculosis in Kayseri in 1204 (historically Caesarea, the birthplace of Aretaeus) and built “Gıyâsiyye Medresesi” (open courtyard, adjacent “double madrasah”) right adjacent to it. The tomb of Gevher Nesibe is also in the madrasah. Even if the foundation can not be found, the Ottoman records (1500,1584) mention professors and students. Until 1890, it carried out its purpose and physicians were trained. According to S. Ünver “It is Turkey's first medical school” (17,18).

II. Interim period (Ilkhanid sovereignty period)

D) 1217, Sivas İzzeddin Keykavus Darüşşifası: İzzeddin Keykâvus I, son of Gıyâseddin Keyhüsrev I, came to the throne in 1211 and used Sivas (historically “Sebaste”) as the capital. In 1217, he built a large health institution (“Darüşşifahlâ” or “Şifaiye Medresesi”) on his own behalf. The endowment was found and published in 1938 - this was a training school for physicians, and was characterized as “Turkey's second medical school” by S. Ünver (19,20). The tomb of Sultan, who died of tuberculosis in 1220, was also here. The architectural work, with an open courtyard, portico and three iwans, has also been renovated and open to visitors (Fig. 2b).

E) 1228, Divriği Ulu Camii ve Darüşşifası (Grand Mosque and Hospital): The smallest House established in Anatolia is the House of Mengiğek (1080-1252). Divriği branch of this House, which was divided into two in 1142, brought a very exceptional work to our history - Mosque and Hospital complex adjacent to each other. In Hijri calendar 626 (Georgian calendar 1228), Ulu Camii (Great Mosque) on behalf of the Divriği judge Melik Ahmetşah, and Darüşşifâ (Hospital) on behalf of his wife Melike Turan Hatun were built and survived to the present day and have been on the UNESCO World Heritage list since 1985. There is also the tomb of the monarch family (15 sarcophagi) within the Hospital. Although the original foundation of 1243 is no more present, the Mahmut Bey foundation of 1397 has attributed to the said foundation and informs about Hospital staff. Hospital in Divriği, which lost its importance in the Ottoman period, was used as a general madrasah (21).

Apart from the main roads, Divriği, which is in a mountainous area that is difficult to reach, is a small town today (10,000 population, altitude 1225 m), but thanks to the Ulu Camii-Darüşşifâ complex, which is a masterpiece of stonemasonry, it invites architecs and medical historians from all over the world (Fig. 2c).

Regional administrators working under the command of the Konya Seljuk Sultans with the title of "atabey" or "pervâne" also did not fall behind and built health facilities as charities (25,26):

F) 1235, Çankırı Atabek Cemâleddin Darülâfiye: Atabey Cemâleddin Ferruh, who was the trustee of Sivas Darusshâfi, built an interesting complex in his name in Çankırı (formerly Gangra city of Galatia). According to his inscription, in the year H. 635 (1235 AD), he added a “Darülâfiye” for patients and 7 years later a two-storey building adjacent to the north (in 1242), the upper floor Darülhadis, the lower floor Mausoleum. In the 1940s, Süheyl Ünver witnessed the Şifahane part (hospital) in an unrecognizable ruin. It was being used as a Mevlevihane (mevlevi lodge) with wooden additions (27). Darülhadis and its tomb, which are known as “Taşmescid” today, were restored by the Special Administration in 2011, and the foundations of Darülâfiye were revealed by excavation (Fig. 3a).

G) 1272, Kastamonu Pervâneoglu Ali Bey Darüşşifası (Kastamonu Mâristanı): Ali Bey, the son of the famous Seljuk vizier Pervâne Muîneddin Süleyman, built a comprehensive complex in the city of Kastamonu (Timionion of Paphlagonia) in 671 (M. 1272): Darüşşifâ, Mosque, Imaret, Library, Mausoleum and two fountains. The original Hospital building was burnt down in 1837, only its inscription on the portal door left buried on the ground (Fig. 3b) and a sidewall has survived to the present day. Known as the “Yilan Külliyesi” (Snake Complex) (due to the snake reliefs as a health symbol), the building was used by the Kadiri sheikhs until the lodge and hermitages were closed (1935). The General Directorate of Foundations restored the Yılanlı Camii, Abdullahtahâ-Veli Tübesi (tomb) and fountains in 2009 (28).

H) 1277, Tokat Muîneddin Süleyman Darüşşifâ: In the years when Konya Seljuk Sultanate came under the guardianship of the Mongols, Pervâne Muîneddin Süleyman, an influential politician, also built a magnificent “double madrasah” in the city of Tokat (former Comana Pontica) with two iwans and open courtyard. Although neither its foundation nor its inscription has survived, the main building undergoing repairs stands in the city center under the name “Gök Medrese” (or “Kırkızlar Medresesi”) and has been used as a Museum since 1926 (Fig. 3c). It is a typical example of Anatolian Seljuk architecture. When the banned Muîneddin Pervane, who was accused of treason, was put to trial and executed by the Mongols on August 2nd 1277, it was completed by the daughter of Konya Seljuk Sultan Gıyâseddin Keyhüsrev III, who was his spouse (29,30).
The first half of the XIVth century was difficult for the Anatolian Turkish states under the exploitation of the Mongols, and many powerless houses struggling for existence could not engage in large-scale development activities. However, during the Gazan Khan period (1295-1304), the Ilkhanians accepted Islam and started building charitable institutions belonging to the Islamic civilization. An important Darüşşifa (hospital) was built in Amasya (Amasseia, the capital of the historical Pontus state and the birthplace of Strabon) in the name of Ilduz Hatun, the wife of Öljiutku Khan (= Muhammad Khodabander), who was on the throne between 1304-1316 (25.34).

A) 1308, Amasya Darüşşifası: In the inscription of the Amasya Darüşşifası, which is the most elegant hospital that has survived to the present day, it is written that it was built in the name of Ilduz Hatun by his free slave Anber bin Abdullah in H. 708 (1308) (Fig. 4a). However, it is mentioned in the Ottoman archives as “Sultan Alaeddin Darüşşifası” (there are documents showing that it was active until 1837). It is a typical Anatolian Seljuk work in terms of its architecture. Newly found documents also indicate Sultan I. Alâeddin Keykubat as its builder (1220-1237). Since the original foundation had not recovered, it was repaired during the period of the Ilkhanians, who captured Amasya in 1308, and a new inscription was put in place. “Kitab-ül Cerrahîye-i İlhanîyye” (1465), written by Sabuncuoğlu Şerefeddin (1385-1468), who was a chief physician for 14 years, was considered as the reference work of Ottoman physicians (1465) (Fig. 4b). It was restored by the Municipality of Amasya in 2011 and opened as a “Sabuncuoğlu Tıp ve Cerrahi Tarihi Müzesi” (Sabuncuoğlu History of Medicine and Surgery Museum).

III. Late period (Ottoman period)

The Ottoman state was established in Western Anatolia (Bithynia), a former Byzantine land, as a small House affiliated to Konya Seljuks and Ilkhanians, and declared its independence in 1299. Expanding against Byzantium [Bursa (former Prusia) 1326 first capital], conquered Edirne (Adrianopolis) in 1361 and made it the second capital by passing through the Dardanelles to the European territory. After the conquest of Istanbul (Constantinopolis) (1453), it spread to three continents (Europe, Asia and Africa) under the order of the Empire (37). The Ottoman state was established in Western Anatolia (Bithynia), a former Byzantine land, as a small House affiliated to Konya Seljuks and Ilkhanians, and declared its independence in 1299. Expanding against Byzantium [Bursa (former Prusia) 1326 first capital], conquered Edirne (Adrianopolis) in 1361 and made it the second capital by passing through the Dardanelles to the European territory. After the conquest of Istanbul (Constantinopolis) (1453), it spread to three continents (Europe, Asia and Africa) under the order of the Empire (37).

Physician training institutions emerged relatively late in the Ottoman state, because experienced physicians from the Muslim principalities in Anatolia, from Iran, Azerbaijan, and the Islamic Middle East, flocked to this state in the ascension period. The Ottomans preserved the hospitals in Central and Eastern Anatolia, and they established 8 new hospitals based on Islamic principles in Western Anatolia and Thrace (5 of them are in Istanbul). This distribution, which is an expression of extreme centralization, shows that an absolute monarchy put the need for physicians for the palace and the army first. Only the Sultan and his family (mother or wifes; sultanas) were able to establish these "Medrese-i etibba" type (educating more physicians) large size, large capacity rich foundations. Their foundations and inscriptions are preserved, and their buildings are still standing - they are being used as health museums, libraries or for educational purposes (two of those in Istanbul were destroyed by an earthquake and no attempts at renewal were made).

A) 1400, Bursa Yıldırım Bayezid Darültıbbı: The first Medical Faculty of the Ottoman Empire (under the name "Dâr-ü-tıbb") was founded in Bursa on May 12th, 1400. It was located in a large Islamic complex (Yıldırım Kâhiyyesi) built by the fourth Ottoman monarch, Bayezid I (Yıldırım). Patients were treated for many years here with its open courtyard with portico, 70 wards and a staff of 25, as well as training physicians. Famous physicians, who were affiliated with Islam, served here. Since 2001, it has been allocated to a private foundation and continues to distribute treat to patients as the “Bursa Darüşşifa Göz Merkezi” (Eye Hospital) (Fig. 5a).

B) 1470, Istanbul Fatih Darüşşifası (hospital): Sultan Mehmet II, who conquered Istanbul (Constantinople) in 1453, and briefly known as “Fatih” is considered as the founder of the Ottoman Empire. Mehmet II, who made the city the capital, built a large Islamic complex (mosque, mausoleum, 16 madrasahs, hospital, imaret, inn, library, Turkish bathhouse) between the years of 1463-1470 besides palaces, bazaars, harbors and military facilities. Fatih Darüşşifası (Fatih Hospital), which had 70 cells, 80 domes and 200 staff, had its own masjid and bath. It was considered as the state's top-ranked “royal/imperial” hospital and medical school (today's Istanbul Faculty of Medicine basis its foundation on the FatihDarüşşifası (hospital) as 1470). However, despite the dangerous cracks, the building suffered from during the Istanbul earthquakes (1509, 1557, 1754, 1766), it continued to provide healthcare service until 1824, the hospital part was demolished with the offer of the trustee, the private masjid (“Masjid Masjid”) lasted until 1877 (Fig. 5b). It was not rebuilt due to the presence of other hospitals in Istanbul and European type Medical schools started being preferred more. Hospital ruins apparently could be seen until 1970. Today, “Eski Şifahane Sokak” (street), which lies outside the northeast corner of the complex, is the heirloom of this magnificent work.

C) 1488, Edirne Bayezid II Darüşşifası (hospital): Although Sultan Bayezid II (son of Fatih Sultan Mehmet) came to the throne in Istanbul, he did not forget Edirne, where he was born and grew up, and built an enormous complex on the coast of Tundzha River between 1484-1488 (mosque, inn, hospital and medical school, imaret, Turkish bathhouse, bridge and mill). Rich foundations donated for daily spending and annual repairs. The architectural plan of the hospital was unique and functional, and the inpatient section included a hexagonal plan,
a dome with a lantern, a central space and patient rooms that could open up all around them, and ceilings. The water sound of the fountain in the middle, the chapters performed by the musical committee on the bottom.

It was unprecedented in Turkish hospital architecture due to its inside-porched outside courtyard for outpatients with rooms for physicians and pharmacists opening up to the inner courtyard. Medrese-i ettiwa was sharply separated (a square courtyard, surrounded by a gallery with columns, domed cells with furnaces to each of the 18 boarding students, and a large classroom with a library), yet it was located right next to the application hospital (38). Three foundations have been found and all three inscriptions can be read in the mosque. The hospital, which served until 1911, was closed in the Balkan War and World Wars, and it was allocated to the newly established Trakya University in 1984. The Hospital section was opened in 1997 and the Madrasah section was repaired and opened to visitors as a museum in 2008. It won the “Council of Europe Museum Award” in 2004 and entered the UNESCO World Heritage Temporary List in 2016. Situated in Turkey's European territory, it is the best preserved and most well-organized health museum (Fig. 5c).

D) 1539, Manisa Hafsa Sultan Darüşşifası (hospital): Ayşe Hafsa Sultan, the wife of Sultan Selim I and the mother of Suleiman the Magnificent, lived in Manisa for 8.5 years during the governorship of her son, got sick there and was treated by the famous doctor Merkez Efendi. She is the first woman to take the role of “sultan” in Ottoman history. Although she moved to Istanbul Palace with her son's taking the throne in 1520, she started the construction of a large Islamic complex (“Sultaniye Kulliyesi”: mosque, madrasah, school, imaret) in Manisa in 1523. When she passed away in 1534 before completing, Suleiman the magnificient added a bathhouse (1538) and a hospital (1539) to the complex on behalf of his mother. This structure with three iwans without a porch and nine rooms around a rectangular open courtyard was located in the yard of the Sultaniye Mosque. According to the documents, 25 staff members received salaries from the foundation. According to Evliya Çelebi, “disciple physicians” were taught two days a week (1671). When Modern Hospitals were being established in the second half of the XIXth century, it assumed the role of “Bimarhane” (“madhouse” among the people) for the mentally ill. It was transferred to Celâl Bayar University in 1996 and opened to visitors as “Tıp Tarihi Müzesi” (History of Medicine Museum) in 2013 (Fig. 6a).

In the XVIIth century, the Ottoman Empire experienced its strongest years in military and economic terms. Suleiman the Magnificent period (1520-1566) was its brightest period. In said years, two Islamic complexes in the heart of the capital, Istanbul, had risen as the works of famous architect Sinan, one dedicated to Suleiman the Magnificent and the other on behalf of his beloved wife Hürrem Sultan.

E) 1551, Haseki Hürrem Sultan Darüşşifası: First of all, the small-sized "Haseki Külliyesi" was built in the name of Hürrem Sultan (Europeans know it as "Roxelana"), who was Sultan's wife with civil marriage and went everywhere he went; this was the first work of Mimar Sinan. It was placed on the seventh hill (former Arkadius Forum) of the city, overlooking the Marmara Sea and the Old Women's Market, where female slaves were sold (Hürrem Sultan wanted to serve the women in need). First Mosque (1538), a year later Madrasah and Primary School (1539), and 12 years later imaret and hospital (1551) were built. Hürrem Sultan died in 1558, her tomb is in the Süleymaniye Mosque in a fenced-off burial area. Although the hospital is small in size, it has an original architectural plan that has not been encountered before: an octagonal open courtyard, 6-quarters in two symmetrical sections, a double domed iwan. The foundation of 1551 is in the Süleymaniye Library. It provided healthcare services until 1873, and was used as the Women's Hospital, “Nisa Tevkifhanesi,” as a Dormitory, and was renovated in 2011 (Fig. 6b). Since 1976, it has been serving as the Training Center of the Religious Affairs Directorate. It is closed to visitors.

F) 1557, Süleymaniye Darüşşifası: This enormous complex of Suleiman the Magnificent was built by Mimar Sinan in the historical center of the city between 1550 and 1557 (“Süleymaniye Külliye”: Great Mosque, Shrines, Darülkurâr (madrasah for reading Qur'an), Darülhadias (madrasah for reading Prophet Muhammed's sayings, Primary School, four Madrassas (Evvel, Sâni, Salis, Râbi ), inn, Imaret, hospital, Medical Madrasah]. This Darüşşif (hospital) was the largest imperial health institution seen in the Ottomans with two courtyards (for patients and physicians), partly two storey, own bathhouse, bakery and medicine production (drug house), separate place for medical education (Dâr-ü-Tıbb, Medrese-i ettiwa) and was superior to other hospitals ever (Fig. 6c). It continued to function as a hospital until 1873, then it was used as a printing house and today it is home to the Süleymaniye Manuscript Library. It is closed to visitors. The adjacent Medicine Madrasah became the highest-ranking physician training institution of the empire, and was combined with the “Süleymaniye Dogumevi” (Süleymaniye Maternity Hospital) built in 1946. The existing building of Gynecology and Obstetrics Hospital was added to Süleymaniye Manuscript Library when it’s health care services was moved to Zeytinburnu in 2009 and to Halkali in 2011 (42).

In the years after Suleiman the Great, the Empire hit a period of stagnancy, the construction of new health and welfare institutions had become sparse and lost their former glory. However, until the beginning of the XVIIIth century, islamic complexes containing some new hospitals were seen.

G) 1583, İstanbul-Üsküdar Atik Valide Sultan Darüşşifası: Bride of Suleiman the Magnificent, Sultan Selim's wife and Nurbanu Sultan; who was the bride of Suleiman the Magnificent, Sultan Selim's wife and mother of
According to the order that they were established, Sultan Murad III, donated a great charity to the Anatolian side of Istanbul (Toptaşı district of Üsküdar) in 1583 (Atik Valide Sultan Külliyesi: Mosque, Madrasa, Darülkurra, Darülhadis, Imaret, Hospital, Library, Double Turkish Bathhouse and Halveti Tekke). In this last known work of Mimar Sinan, the hospital section has a rectangular courtyard and two floors, but it has undergone many changes in the past years: In 1805, during the reign of Sultan Selim III, it was transferred to the barracks of Nizam-ı Cedid soldiers, then to the Military Hospital, to the biggest mental hospital of Istanbul under the name of "Toptaşı Bimarhanesi" between 1865-1927, to Imam-Hatip High School in 1970 and to Fatih Sultan Mehmet Foundation University in 2010. In the restoration of 2011-2013, its originality was impaired by concrete and glass panes and the Faculty of Letters of the relevant university was placed here (Fig. 7a).

H) 1621, Sultan Ahmet I Darüşşifas: Sultan Ahmet I, who ascended to the throne at the age of 14 in 1603, had a very ambitious project, when he was 20 years old, and started the construction of a large islamic complex ("Sultanahmet Külliyesi": mosque, madrasah, darülkurra, shrine, bazaar, baths, inn, imaret and hospital) in the center of the historical "Constantinopolis" across Hagia Sophia (1609). Its architect was Sedefkâr Mehmet Âğâ. The best piece of this complex was the Sultanahmet Mosque with 6 minarets and 16 balconies [Mavi Camii, Blue Mosque] when it had been completed in 1617, it was the most magnificent mosque in Istanbul, but at the end of the same year, Sultan Ahmet I passed away at the age of 28 due to a disease with fever. Other complex units mentioned in his foundation of 1614 was completed by his son Sultan II Osman (Genc Osman) (Fig. 7b). The buildings of this complex are in a non-contiguous scattered order, because they were built on the ruins of the Great Palace of the Roman-Byzantine Constantinopolis and partly on the Hippodrome (Hippodrome) tribunes. For this reason, "Imaret" and "Darüşşifa" (hospital) units are located on the Sfendon (Sphendone) ledge, which is the continuation of At Meydani in the direction of Marmara. When the Hippodrome area for horse car races came up short, Roman architects found the solution of "sphendone" (round extension, ergo the back of the goal net" of football stadiums), building it on the dip slope going down towards to see by using Roman bricks and mortar, enormous carrier arches, galleries and corners. This 1700-year-old fortification still carries multi-storey buildings on top of it despite the earthquakes. After the conquest of Istanbul (in 1454), "Kılıçhane Binası" (building for forging swords) was built in this area, and the foundry and iron processing workshops of the army were located here. In 1615, Kılıçhane was moved to another place and the Imaret of the Sultanahmet Külliyesi (kitchen, pantry, bakery, dining hall) and the Hospital (square plan, porched courtyard, single row domed spaces, own masjid and bath) were built (1621). This last hospital of the Ottoman State was allocated only to the mental patients in the beginning of the XIXth century (Sultanahmet Bimarhanesi), then became a military sewing room in 1846, "Islah-ı Sanayi Mektebi" (industrial school) in 1868 and it is today "Sultanahmet Mesleki ve Teknik Anadolu Lisesi" (Sultanahmet Vocational and Technical Anatolian High School). After the additional construction and repairs; only the bath, entrance door and marble bowls of the pool in the courtyard remain from the hospital. Contraction of the imaret on the front that was facing the hippodrome square was abandoned in 1883 with the construction of "Hamidiye Ticaret Mekteb-i Âlisi" (Neo-Ottoman and Art Nouveau style, architect Raimondo D’Aronco), and it was transferred to Istanbul Academy of Economic and Commercial Sciences in 1959; In 1982, it became the Sultanahmet Campus (Rectorate and Senate Hall) of Marmara University. According to the order that they were established, 12 of the 19 health facilities (Fig. 8), about which we provided brief information, have been restored by various institutes (General Directorate of Foundations, Municipalities, Universities) and used as follows: 4 of which as the Museum of Health and Medical Education (Kayseri, Amasya, Edirne and Manisa), 4 of which as general Museum Buildings (Mardin, Sivas, Divrigi, Tokat), 1 of which as modern health clinic (Bursa), 1 of which as modern university faculty (Istanbul-Üsküdar), 1 of which Manuscript Library (Istanbul-Süleymaniye), and 1 of which as a Training Center (Istanbul-Haseki). Unfortunately, there are either no traces left or only trivial remnants can be found from 3 hospitals in the capital of the Seljuk Sultanate, from 2 hospitals in the capital of the Ottoman Empire (Fatihi, Sultanahmet), from 1 hospital in Çankırı, and from 1 hospital in Kastamonu.

In the Ottoman Empire, very detailed population and real estate counts were made and recorded periodically in books (cadastral record books) and maintained in a central archive. The edicts, charts, donations and foundations signed by the sultans have survived to the present day. “Kadi registers” (court minutes, notary contracts) belonging to every region of the empire were also collected in the central archive. There was no other empire with similar archives. Some records are documented by experts, we can collect information about the health institutions such as Darüşşifa or hospitals, which were once active in Anatolia (Erzurum, Erzincan, Niksar, Aksaray, Harput, Silvan, Kütahya) and in the Balkans (Thessaloniki, Skopje, Sofia, Sarajevo, Belgrade, Budin).
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Figure legends

Fig. 1a-c. Early period Darüşşifaları (hospitals): Konya, the masjid of Sultan Alâeddin Darüşşifası, which was rebuilt in 1221 instead of Maristan-ı Atik which was built in 1113 at Sultan Melikşah’s period (After 2018 restoration) (a) (14); Konya, Küçük Karatay Madrasah (Kemaliye Darüşşifası [hospital]) built in 1254 opposite Büyük Karatay Madrasah (used as a museum today) established in 1251 [photo dated 1960] (b) (15); Mardin, Bimaristan section of Eminüddin Külliyesi (Islamic complex) dated 1122 which remained today as a ruin (c) (16).
Fig. 2a-c. Classical Seljuk Medical Madrasahs: Kayseri, “Çifte Medrese” dated 1206: Gevher Nesibe Darüşşifası (hospital) and Giyasiyye Madrasah, “Turkey’s first medical school” (a) (22); Sivas, Sultan Izzeddin Keykâvus I Dârüssıhha (hospital) dated 1217, “Turkey’s second medical school” (b) (23); Divriği (town), Melike Turan Hatun Darüşşifası (hospital) and Melik Ahmetşah Mosque dated 1228. They are on UNESCO World Heritage list since 1985 (c) (24).

Fig. 3a-c. Medical facilities built by Seljuk viziers: Çankırı, 1235, “Taşmescid” (Darülhadis and tomb) which remained from Atabey Cemaleddin Ferruh Darülafiyesi (hospital) (a) (31); Kastamonu, 1272, Epitaph remaining from Pervaneoğlu Ali Bey Darüşşifası (hospital) (b) (32); Tokat, 1277, Crown gate (portal) of Pervane Muineddin Süleyman’s “Çifte Medrese” (c) (33).

Fig. 4a,b. Interim period of İlhanlı sovereignty: Amasya, 1308. Inner courtyard with portico of the Amasya Darüşşifası (hospital), which renewed on behalf of the wife of Olcaytu Han, İlduz Hatun. After 2011 restoration, “Sabuncuoğlu History of Medicine and Surgery Museum” (a) (35); The manuscript written by Sabuncuoğlu Şerefeddin, a doctor from Amasya, about surgery; “Kitab-ül Cerrahiyye-I İlhaniye” (b) (36).

Fig. 5a-c. XIVth century Ottoman Darüşşifaları (hospitals): Bursa, 1400. First medical school of Ottoman Empire: Bayezid’s I “Dar-ût-tıbb”. After 2001 restoration, it continues to serve as “Bursa Daruşşifa Göz Merkezi” (Eye Hospital) (a) (39); İstanbul-Fatih, 1470. Darüşşifa Mescidi, which remains from Ottoman Empire’s first comprehensive educational and health institution in Istanbul, Fatih Külliyesi (Islamic complex). (Engraving of A.G. Paspatis dated 1877, before it collapsed) (b) (40); Edirne, 1488. Darüşşifa and Medical Madrasah from Sultan Bayezid II Külliyesi (Islamic complex). Today, “Medical Museum” – Council of Europe Museum Award (2004), in UNESCO World Heritage temporary list (2016) (c) (41).
Fig. 6a-c. Magnificent Süleyman era Ottoman Darüşşifaları (hospitals): Manisa, 1539. Manisa Darüşşifası on behalf of Hafsa Sultan, the mother of Magnificent Süleyman. Since 2013 “Medical History Museum” (a) (43); İstanbul-Haseki, 1551. Darüşşifa in Haseki Hürrem Sultan Külliyesi (Islamic complex) (on the left side), who is Magnificent Süleyman’s ex-wife (b) (44); İstanbul-Süleymaniye, 1557. The greatest Darüşşifa and Dar-üt-tıbb (medical faculty with the highest degree) of the Ottoman Empire, in the Külliye (Islamic complex) of Magnificent Süleyman (c) (45).

Fig. 7a,b. The last Darüşşifalar (hospitals) of Ottoman period: İstanbul-Üsküdar, 1583. Open courtyard of the Darüşşifa of the Külliye (Islamic complex) (2010), built on the Anatolian side in the Topbaşi district on behalf of Atik Valide Sultan (Nurbanu Sultan, the mother of Murad III). Today “Fatih Sultan Mehmet Foundation University Faculty of Literature” (a) (46); İstanbul-Sultanahmet, 1621. Bath ruins (2010) from last Ottoman Darüşşifa (hospital) in Sultan Ahmet I Külliyesi (Islamic complex). It was built on Shendone extension of Hippodrome of Constantinople (b) (47).

Fig. 8. The distribution of islamic health institutions that trained physicians in the geography of today’s Turkey (48).