

ORIGINAL ARTICLE

Investigating the State of Medicine and Hospitals in the Islamic Maghreb from the Arrival of Islam to the End of the 4th Century Hijri

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Abstract


The Islamic Maghreb, encompassing modern-day North African countries, was a vast land. It had a rich history of medical practice. Since the beginning of the arrival of Islam in the Maghreb lands, the medical profession was common and the healers who came to this land with the Islamic armies called “fuqaha al-badan” (lit. “body jurists”), practiced the profession of medicine. The Bani Aghelab Muslim rulers pioneered hospital establishments in the Islamic Maghreb, founding the Damneh Qairwan. After them, the Touloni and Akhshidi rulers and others continued the tradition of building hospitals by building Damneh in Tripoli, Fes, Sousse, and Safaqs in today’s eastern Tunisia. Ibn Tulun also founded Atiq Hospital and Al-Asfal Hospital in Fostat, Egypt. The Muslim rulers stationed great doctors, such as Yohanna bin Maswayh, Ishaq bin Imran Israeli, Ain bin Ain, Ahmad bin Jazzar, Muhammad Jabali, Saeed bin Noufal, and Muhammad bin Abdulrahman Masri in these hospitals.

This article employs a descriptive-analytical approach to examine the role and contributions of Muslims in advancing medical knowledge, institutions, and hospitals within the Islamic Maghreb. The primary research question explores the extent of Muslim influence in this development. The findings of the study show that medicine in the Islamic Maghreb was predominantly experimental from the Muslims’ arrival until the third century of Hijri. However, between the third and fourth centuries of Hijri, in the light of the efforts of doctors, medical knowledge evolved into a science-based practice. This contributed to significant improvements in medical care, facilities, and services, as hospitals expanded and became increasingly effective.

Key words: History of medicine, Islamic Maghreb, Medicine, Hospitals

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Introduction

The Islamic Maghreb is a vast region stretching from the western borders of Egypt to the Atlantic Ocean. Historically, it is divided into three areas: Al-adhina Maghreb (Afrikiyah), with the center of Qairwan; Al-awist Maghreb (Middle Maghreb), with the center of Tlemcen, and Al-Aqsa Maghreb, (Morocco and Mauritania). (Abu al-Fida, 1970, p. 163; *Hudud al-ealam min al-mashriq el al-maghribi*, 1961, p. 177; Naseri Taheri, 2010, p. 3). Ibn Hawqal considers the land of the Maghreb from Egypt to Tangier in today's Morocco (Ibn Hawqal, 1938, p. 60) and the Moroccan historian Ibn Ozari considered the land of the Maghreb extending from the banks of the Nile River in Egypt to the city of Salah in today's Morocco (Ibn Ozari, 1983, p. 5). Today, this vast area includes the Muslim countries of Egypt, Libya, Tunisia, Algeria, Morocco, and Mauritania (Zaghloul, 1964, p. 61; Zenon Taha, 2004, p. 11). Before the Islamic era, the region was ruled by Phoenicians, Greeks, Romans, Vandals, and Byzantines. (Zenon Taha, 2004, pp. 54-52; Naseri Taheri, 2010, p. 8). Muslim conquests began in the Islamic Maghreb during the caliphate of Umar in 22 Hijri, starting with the peaceful conquest of Barqa and then Tripoli. (Balazari, 1988, pp. 325 -322; Ibn Ozari, 1983, p. 8). Conquests continued during the Umayyad period, and the entire North African region, known as the Islamic Maghreb, was conquered during the reign of Musa bin Nasir (86-92 AH) by 90 AH (Muanas, 1947, pp. 260-268; Naseri Taheri, 2010, p. 14).

Historical sources offer insights into the political, economic, and cultural developments within the Islamic Maghreb lands. (Chalongar, and Barzegar, 2014, pp. 44-85; Naseri Taheri, 2010, pp. 8-17). Unfortunately, little is known about the evolution of health, medical knowledge, and hospitals, particularly during the early Islamic period up to the 4th century Hijri in both historical texts and contemporary academic literature. This research aims to shed light on the role and contributions of Muslims in advancing medical knowledge and institutions within the Islamic Maghreb territories.

The purpose of choosing this topic is that those interested in the field of medical history find out that Muslims in the Islamic Maghreb lands, along with all the political, military, economic, and cultural developments they created, paid special attention to public health, medical knowledge, and hospital institutions that were the guarantor of the health of the general citizens, especially the princes, and governors. Therefore, knowing and investigating the medical condition and Muslim hospitals in the Islamic Maghreb lands from the beginning to the end of the 4th century Hijri and the important role that Muslims played in the field of health, treatment, and medical sciences in these lands can help those interested in the history of medical sciences in knowing the course of development of medical knowledge in Islamic civilization.

Regarding the background of the research, it should be said that by examining the historical sources and later research sources, we find useful information about the medical history of Muslims and their hospitals in the Islamic Maghreb. The following old sources, though brief, present valuable information about the topic discussed in this article: Ibn Jaljal (1955), a famous Andalusian physician and pharmacist of the 4th century in the book "*Tabbaghat Al-Atabba Val-hokama*", Ibn Abi Asiba'ah (1965), an ophthalmologist of the 7th century AH in the book "*Uion al-Anba fi Tabaqat al-Atiba*", Moghrezi (1988), a prominent historian of the ninth century Egyptian, in his book "*Al-Muva'ez wal-Etebar fi Zakr al-Khatat wal-Asar*". In addition, the following researchers and writers have pro-



vided valuable and extensive information on the topic under discussion: Beyk (1981) in the book *“Tarikh al-Bimarstanat fi Islam”*, Dabbagh and Ibn Naji (1968) in the book *“Maalam al-Iman fi Ma’rifa Ahl al-Qairwan”*, Takriti (1984) in the book *“Al-Asnad al-Tabi fi Jyush al-Arabiya al-Islamiya”* and Talisi (2003) in his book *“al-iatijahat al-thaqa-fiyh fay bilad al-gharb al-aslamiy”*.

Material and Methods

This is a descriptive-analytical research based on the library research method. Initially, historical sources and references that contain content related to the research topic or even refer to those contents were extracted and then categorized, analyzed, and finally, the article was written, and at the end, a solid and scientific conclusion based on historical data was drawn.

1- The position and status of medical knowledge in the Islamic Maghreb lands before the arrival of Islam in these lands

As previously mentioned, before the emergence of Islam in the region, the lands of the Maghreb or Africa were successively ruled by Phoenicians, Greeks, Romans, Vandals, and Byzantines. During the rise of Islam, the Byzantine Empire ruled over North Africa for centuries (Zenon Taha, 2004, pp. 54-52; Naseri Taheri, 2010, p. 8). Byzantine physicians, who were mostly Christians, Jews, or followers of other religions (Barbarians), who wrote in Latin, lagged behind others in medical knowledge (Sarton, 2004, p. 863). Although we do not have much information about the medical knowledge and treatment tools of North African countries, it is clear that they employed traditional tools used in bleeding, cupping, burning, and repairing broken bones. It is also well known that the medical tradition of North African countries was influenced by ancient Egyptian medical knowledge, which was enthusiastically spread among neighboring peoples (Sarton, 2004, p. 863). Therefore, it can be concluded that, apart from mummy issues, Egyptian priests had significant knowledge of the dissection of the human body, and special Egyptian therapists also demonstrated intelligent abilities in diagnosing and treating wounds and surgeries. It seems that other physicians or doctors did not have many opportunities to gain extensive knowledge about human anatomy, and in the era under discussion, medicine was closely linked to magic and religion.

In the pre-Islamic era of North Africa, healers sometimes applied ointments to the patient’s body and fed patients with castor oil. Since they strongly believed in medicinal plants, they often used ineffective, impure, and even toxic multi-component mixtures as remedies. Many of these remedies were also popular among other people and later found their way into the medical practices of Greek scholars such as Hippocrates (Buqrat) and Dioscorides (Discuridus), forming part of the knowledge base for subsequent experimental medical healers (Lucas, 1993, p. 75).

Similarly, in the Arabian Peninsula, which was connected to North Africa through the Sinai desert and trade through the Red Sea, Arabs treated their patients with the aforementioned remedies and primitive instruments, mixing medicine with priesthood. Each tribe had a priest or fortune-teller who intervened in healing affairs. It was only with the advent of Islam that the practices of priests and sorcerers in treating patients, both within the Arabian Peninsula and in the Islamic Maghreb lands, came to an end (Halabi, 1994,



pp. 213-212).

However, in the early days of Islam and its first centuries, most physicians were non-Muslims or did not adhere to the Islamic faith, and medical knowledge remained exclusive to Jewish, Christian, or Sabian physicians for quite some time.

2- How Muslim doctors and medical knowledge entered the Islamic Maghreb lands

From its inception, Islam endorsed, praised, and supported medical science to the extent that it considered it superior, stating, "Science is divided into two branches: the science of the body and the science of religion" (Damirchi, 2010, p. 81; Halabi, 1994, p. 213). This means that half of the scientific knowledge, known as medical science, was endorsed and accepted to the extent that special attention was paid to medical science in the religious texts and the theoretical and practical traditions of the Prophet (PBUH).

Islamic medicine, apart from the teachings of the Qur'an and the medical tradition of the Prophet Muhammad (PBUH) (Damirchi, 2010, pp. 88-79), was actually a collection of knowledge acquired from the medical practices of civilized nations before the advent of Islam (Halabi, 1994, p. 213).

After that, Muslim physicians, such as Muhammad ibn Zakariya al-Razi, Ali ibn Abbas al-Ahwazi, Abu Ali Sina (Avicenna), and others further advanced this field of science to its highest level through their efforts and dedication (ibid, p. 214).

Regarding the state of medical knowledge and the entry of Muslim physicians into the Islamic West, it should be noted that the medical profession has been prevalent since the early days of Islam's arrival in North Africa (the Umayyad period). In the first century AH, a group of Muslim scholars, accompanying the conquerors, were referred to as "*fuqaha al-badan*" (experts in the jurisprudence of the body) due to their expertise in local experimental medicine and traditional medical practice (Talisi, 2003, p. 489). The translators and regional authorities of Maghreb lands, such as Abi al-Asud Musa Qattan (Dabagh, and Ibn Naji, 1968, Vol. 2, p. 336), Sahnoun bin Said (Abu al-Arab, 1968, p. 184), Nafis Ghrabili Souse (Ayaz, 1968, p. 114), Nasr bin Fatah (Dabagh, and Ibn Naji, 1968, Vol. 2, p.340), and others, also translated this term in their works.

It seems that some of these physicians accompanied the conquerors during the establishment of Islam in Maghreb lands. They treated both military and civilian patients although historical sources do not provide much detail about their level of medical knowledge or the tools they used. It is known, however, that they employed methods to stop bleeding, dress wounds, and treat burns and fractures, which were common practices at the time. In addition, alongside the male physicians ("*fuqaha al-badan*") in the cities of the Islamic Maghreb, there were also female physicians ("*fuqahat al-badan*") who possessed similar expertise. These women also accompanied the Muslim soldiers during the conquest of North Africa and Andalusia. These female healers were responsible for using appropriate herbs and the medicines of their time to treat the wounded soldiers and their relatives. They typically gained their knowledge through practical experience or oral traditions passed down from mothers and other women in their tribes. In a sense, these women can be seen as precursors to the modern nursing profession (Talisi, 2003, p. 490).

In fact, the "*fuqaha al-badan*" (male body experts/local physicians) and "*fuqahat al-badan*" (female body experts/local physicians) were the first Muslim physicians who endeavored to treat patients and the wounded in the Islamic Maghreb. However, historical



sources have not provided a clear indication of the extent of their medical expertise, nor specified whether they were actually able to treat diseases or were merely providing care for physical injuries.

The beginning of medical science in the lands of the Maghreb in the Islamic period dates back to the mid-second century AH (after Hijri) during the Abbasid Caliphate's presence in these regions. The first physician of this era was a Christian Syrian physician named Yohanna Ibn Masuyeh (163-243 AH). He arrived in Qairwan in the company of Emir Yazid ibn Hatem Mehlabi and began serving the Abbasid governor and other government officials. The arrival of Yohanna Ibn Masuyeh and, subsequently, Ishaq ibn Imran Israeli (died 279 AH) in the Islamic Maghreb marked the end of local medicine based on empirical experience and the beginning of scientific medicine. This was due to the rulers' trust in the medical knowledge of the center of the Islamic Caliphate, namely Baghdad. Islamic medicine in the Maghreb was thus heavily influenced by practices and knowledge originating in Iraq, where Iranian, Syriac, Balkhi, and Hindi medicine had previously coalesced to form the foundation of Islamic medicine. Over time, these practices spread westward, shaping and defining the medical landscape of the Islamic Maghreb (Najmabadi, 2017, p. 6).

It is stated in the sources that: the Abbasids did not possess any independent scientific knowledge, so the rulers relied on importing it from other regions for their own use in the emirates. This led them to invite Ishaq ibn Imran Israeli, a renowned, skilled physician from Baghdad, to the Islamic Maghreb to lay the foundation of the medical school and science of the Islamic Maghreb. Numerous books, such as *Al-Bool* or *Al-Qarourah*, *Al-Aghaziyyah Wal-adawiyeh*, *Al-Hamiyat*, *Al-Madkhal al-Sanaa al-Tabb*, *Kitab fi al-Nabz*, *Kitab fi al-Tariaq* and the article *Al-kahal in Ophthalmology* have survived from this physician (Ibn Abi Asiba'ah, 1965, pp. 478-482; Ibn Jaljal, 1955, pp. 84-85).

3- The general condition of hospitals in the Islamic Maghreb lands from the beginning to the fourth century of Hijri

During the Aghlabian rule (184-296 AH) in the Islamic Maghreb, they established hospitals in every city to treat patients requiring long-term care. This was due to their concerns about the spread of infectious diseases among the populace, as well as the urgent need for medical facilities to treat wounded Muslim soldiers. Initially, hospitals were built in Qairwan, the center of their governance, and later in other cities under their control, such as Sousse, Safakish, Tunis and other cities of the Islamic Maghreb, such as Tripoli, Fez, and others.

The first hospital established in the Islamic Maghreb territories dates back to the reign of Ziad Allah Akbar Aglabi (AH 202-224). It was built between 210 and 220 AH (Moghrezi, 1988, pp. 124, 130). During this period, interest in medical care expanded, and numerous prominent jurists (foghaha) and physicians emerged in Maghreb lands. They managed to successfully treat patients afflicted with chronic diseases and notably curb the spread of epidemics by isolating and quarantining patients in designated chambers, following the services and care provided by a limited number of doctors and nurses (Talisi, 2003, p. 495).

Some sources refer to the first Islamic hospital in Maghreb as "Damneh," located near the Shanbeh mosque in Qairwan. The name "Damneh" might be derived from the name



of the area where the hospital was built and later transformed into “hospital” or its abbreviation “Maristan.” This area was known as the district of patients in Qairwan (Maliki, 1951, Vol. 2, p. 138; Abd al-Wahab, 1973, Vol. 1, p. 273-274). Moreover, the name “Damneh” has also been used to refer to a warm area in the city of Fez, where a Damneh or hospital existed (Ibn Abi Zare, 1973, p. 40).

Therefore, Damneh Hospital in Qairwan was the first hospital built in the Islamic Maghreb at the beginning of the 3rd century AH. Following this, numerous other hospitals were constructed in various cities of the Islamic Maghreb lands, such as Tripoli and Fez, particularly during the 4th century AH. The layout and structure of some hospitals in the eastern Tunisian cities of Sousse and Safakish resembled that of the Damneh hospital in Qairwan (Abd al-Wahab, 1973, Vol. 1, p. 274).

While historical accounts and geographical writings have documented the architecture and construction of cities in the Islamic Maghreb, they provide little information about the design, structure, and number of sections or rooms within the Damneh hospitals. However, by examining the activities of jurists and physicians and their interactions with patients, especially those suffering from chronic diseases, as reported in available resources, we can form a basic understanding of the earliest Islamic medical institution in the Maghreb territories, in the light of Damneh or Qairwan Hospital.

The available information about the layout and structure of the Damneh or Qairwan suggests that these hospitals were square or rectangular buildings with a high vaulted entrance hall (*dehliz*). The hospital’s roof was domed and elevated, while the entrance hall led to a courtyard without a roof surrounded by four corridors leading to chambers designated for various patients’ needs.

Small mosques were built within the Damneh for the patients and staff to perform their daily prayers and there was a large hall accessible through a separate corridor with several similar rooms. (Talisi, 2003, pp. 492-491). Additionally, a special section called *Dar al-Jadhama* was allocated for patients with leprosy (Dabagh, and Ibn Naji, 1968, Vol. 2, p. 342).

The Damneh hospital in Qairwan was equipped with special baths for patient hygiene, which isn’t surprising, considering that Qairwan and other cities of the Islamic Maghreb had numerous baths. Bekri mentioned that there were forty-eight baths in Qairwan alone (Bekri, 1985, p. 678), excluding those in the palaces of princes, the houses of government officials, and elders of the city. Water for bathing and washing was supplied to the hospital through wide deep wells. The hospital also had reservoirs for collecting rainwater for use throughout the year. In total, the Damneh hospital had approximately thirty rooms, with one or two patients, and sometimes more, with similar conditions sharing a room to prevent disease transmission and overcrowding. Hassan Abd al-Wahab estimated each room’s length to be about six cubits and its width to be roughly four cubits (Abd al-Wahab, 1973, Vol. 2, p. 277). Thus, the Damneh hospital in Qairwan comprised numerous patient rooms, waiting rooms, baths, a small mosque, and a lecture hall where physicians, assisted by female Sudanese nurses, attended to patients’ needs (Abd al-Wahab, 1973, Vol. 2, pp. 277-274; Hamarneh, 1997, p. 375).

At the Damneh hospital in Qairwan, apart from the hospital physicians, there were *fuyaha al-badan*, or medical jurists, who voluntarily assisted physicians, in examining patients, prescribing and preparing medicine. One of the notable physicians visiting the



Damneh hospital was the renowned physician Aghlaban named Ziyad bin Khalfun (died after 302 AH). He visited the Damneh hospital on specific days, treating patients and documenting their progress. The number of *fuqaha al-badan* was often greater than that of physicians, and they visited patients motivated by the hope of gaining divine rewards. These medical jurists also provided spiritual guidance and counseled patients on consequences and moral values (Talisi, 2003, p. 493). In addition to physicians and *fuqaha al-badan*, there were a number of nurses who were responsible for caring for patients and ensuring limited interaction between patients and visitors, except for regulated and scheduled appointments (Maliki, 1951, Vol. 2, p. 141).

Jurists of the body, whose number was more than the number of doctors, usually went to see patients in the hope of obtaining divine reward, taking care of their conditions, and providing them with comfort (Talisi, 2003, p. 493). Apart from doctors and Jurists of the body, there were a number of nurses in the Demneh or hospital permanently who took care of the comfort of the patients and prevented the clients from communicating with them except in a lawful way and at the time of meeting (Maliki, 1951, Vol. 2, p. 141).

After the hospital in Qairwan, built during the Aghlabian period, it's important to mention the Ibn Tulun Hospital in Fustat, Egypt. It was constructed in the mid-3rd century AH (259 AH) by Ahmad ibn Tulun (reigned from 254 to 270 AH) in the Askar neighborhood of Fustat and was historically known as the 'Atiq Hospital or Al'aelay Hospital. Prior to this, there were no hospitals in Egypt during the Islamic era (Isa Beyk, 1981, p. 67; Taj Bakhsh, 2000, p. 59).

'Atiq Hospital or Al'aelay Hospital holds great significance in medical and psychiatric history. Located near the Ibn Tulun Mosque. It provided patients with specialized clothing and focused on their medication and nutrition (Moghrezi, 1988, pp.124, 130). Ibn Tulun built separate baths for men and women next to the old hospital. Also, next to the hospital, Ibn Tulun Mosque was located. A pharmacy was established in Ibn Tulun's Grand Mosque by the order of Ibn Tulun, and a doctor was stationed there, who after examining the sick worshipers, prescribed and supplied them with the medicine they needed. Among the famous physicians at this hospital were Muhammad bin Abdoun Jabali al-eadadi, Saeed bin Noufal, and Muhammad bin Abdullah bin Abdurrahman Masri (Isa Beyk, 1981, p. 73). Camphor (reign: 334-357 AH) Naib al-Sultaneh, the fourth Emir of the Akhshidid dynasty, established another hospital in Fustat in 346 AH, called *al-Asfal*. The hospital was equipped with facilities like patient baths, a laundry room for washing the dead, separate bathrooms for men and women, and various other amenities (bid, P. 74). It appears that the Tulunians and Akhshidids were inspired by the example set by the Abbasids in building hospitals in Egypt. With the expansion of medical knowledge and the education of more physicians at the medical school established by Ishaq bin Imran Israeli in Qairwan, the construction of hospitals in Egypt and other regions of the Islamic Maghreb was facilitated and accelerated.

4- Treatment methods and observance of public health in the lands of the Islamic Maghreb from the arrival of Islam to the fourth century of Hijri

Following the establishment of the first Muslim hospital in Qirawan, North Africa, at the beginning of the 3rd century AH, the Islamic Maghreb witnessed significant cultural development in the 4th century AH. Consequently, the efficiency and performance of



physicians improved, particularly after the translation of numerous Greek medical texts, leading to more extensive and effective medical services. It is worth noting that in the 4th century AH, physicians adopted scientific methods for both preparing medicine and treating wounds. For instance, in the treatment of various types of wounds, they emphasized the protection of wounds from contamination and infection prevention, even in cases where specific treatment methods had not yet been discovered. The field experiences and observations of physicians practicing in the Arabian Peninsula and Islamic Maghreb territories during this period served as a logical basis for them to implement new treatment techniques. One such treatment method, popular both in the Arabian Peninsula and Islamic Maghreb lands before and after Islam's emergence, involved the use of heat and fire. This technique included direct heating or applying boiling oil, hot tar, coal, and gum to promote healing (Takriti, 1984, p. 198; Ghorfani, and Tanehai, 2012, pp. 37-49).

The therapeutic methods that surgeons and physicians of the Islamic Maghreb adopted were, in fact, part of the traditional practices employed by Arab physicians in Arabia, Iraq, and other ancestral regions to prevent wound infection, ensure cleanliness, and maintain the hygiene of wounds in order to facilitate healthy and uncomplicated healing processes.

The physicians of the Maghreb were also able to control the bleeding of wounds by preparing and applying sterile powders derived from the leaves of certain plants with hemostatic properties. Controlling hemorrhaging was essential, as uncontrolled bleeding made wounds susceptible to infection and inflammation, potentially endangering the patient's life.

Additionally, doctors relied on stitching deep wounds using special needles, and they also employed scientific methods of wound cauterization to ensure cleanliness and promote healing (Talasi, 2003, p. 496).

It is important to note that while physicians in both the Islamic East and West drew from Greek medical experiences, the physicians of Islamic lands did not stop where Greek physicians had halted. Instead, they significantly expanded medical knowledge and developed new theories and treatment methods in various fields of medicine, particularly surgery. The best evidence to support this claim is the wealth of information, surgical procedures, and treatment methods compiled by Abul Qasim Al-Zahrawi, which became the foundation upon which modern surgical structures were built and served as a formal recognition of the treatment methods of Muslim physicians, who were at the forefront of medical and surgical advancements in the Middle Ages (Dafaa, 1983, pp. 53-52).

In addition to surgery, Maghreb physicians in the Islamic era were also interested in ophthalmology, or Kahali as it is commonly known. They had semi-specialized physicians who were pioneers in this field. In his book "*Riyaz al-Nufus*", Maliki mentioned that 'Aeyn bin 'Aeyn was a skilled and proficient ophthalmologist in Qairwan. Due to his expertise in treating chronic eye diseases, he was renowned as a skilled ophthalmologist and treated numerous patients, including scholars such as Muhammad bin Abi Zaid Qairwani, Sharif Ahmed bin Awan, and his son (Maliki, 1951, Vol. 2, p.501; Dabagh, and Ibn Naji, 1968, Vol. 3, p.67).

Due to 'Aeyn bin 'Aeyn's knowledge and skill in ophthalmology, Muez al-Din Allah (reign: 341-365 AH), the last Fatimid caliph in the Maghreb, chose him over other Maghrib physicians to accompany him on his journey to Egypt and continue his work there (Ibn Abi Asiba'ah, 1965, p. 87). Ibn Abi Asiba'ah praised his skill, saying that he



was an excellent physician with a good name and treatment (Ibn Abi Asiba'ah, 1965, p. 87; Abd al-Wahab, 1973, Vol. 1, p. 305). 'Aeyn bin 'Aeyn authored a book on ophthalmology and the treatment of various eye diseases, as well as another book on medicine (Ibn Abi Asiba'ah, 1965, p. 78).

Regarding medical fees, it appears that physicians in the Islamic Maghreb at that time did not receive full payment for their services until the patient's complete recovery. Apparently, the physician's fee was determined based on the patient's financial status. Ibn Jaljal mentions that after the healing of his son, Nu'man bin Muhammad, he paid three hundred dinars to his physician, Ahmad bin Ibrahim bin Jazzar. (Ibn Jaljal, 1955, p. 89). Ahmad bin Ibrahim bin Jazzar was one of the most prominent physicians in the Islamic West and authored numerous works on medicine and pharmacy, including the "*Siyasat al-Sabiyan wa Tadbirham*", "*Zad al-Masafir fi-Alajah alamiraz*", "*Tibu alfaqra walmasakyn*", "*alaimad fy al-Adawieh al-Mufarda*", "*Abdal al-eaqaqyr*", "*al-Baghiyyah*", "*al-Khawas*", etc. (Ibn Abi Asiba'ah, 1965, pp. 478-482; Ibn Jaljal, 1955, pp. 84-90). This indicates that the physician's fee was based on the patient's financial means, rather than a fixed rate for all patients.

In Andalusia, where they followed the medical traditions of the Islamic Maghreb, physicians also did not receive payment until the patient had fully recovered. Ibn Sahil al-A Ibn Sa'id Andalusi alluded to this practice in one of his books, stating, "*In our country, a physician does not take anything from the patient until after their recovery, and if the treatment is ineffective, the physician does not ask for anything from the patient*" (Andalusi, 1983, p. 74).

In the Islamic Maghreb, public health held great importance, with a strong focus on both preventative and curative measures. People preferred wearing white cotton clothing, as it was more suitable for warmer climates, did not absorb excessive sunlight, and maintained body heat in cold weather. Additionally, they wore loose garments to facilitate air circulation for skin respiration and protect vital organs like the liver and stomach from pressure.

In the Islamic Maghreb, cleanliness was highly valued and considered an integral part of faith, often (*Al-Nazafa Man Al-Ayman*) As a result, the population placed great importance on personal hygiene and the construction of public baths. Bekri mentioned that Qairwan alone had forty-eight public baths (Bekri, 1985, p. 678). This approach extended to other cities and villages within the Islamic Maghreb, as Al-Bakri also mentioned the presence of baths in "*Ajdabiya*" (Bekri, 1985, p. 665), "*Sirt*" (Bekri, 1985, p. 651), and "*Tripoli*" (Bekri, 1985, p. 653; Tijani, 1981, p. 238). In the far western city of Fez in Maghreb al-Aqsa, abundant water resources led to numerous public baths. Ibn Abi Zare mentioned that both hot and cold water were available in the baths throughout the year, reflecting the Islamic emphasis on cleanliness and ablution for prayers (Ibn Abi Zare, 1973, p. 44).

It appears that from the advent of Islam in North Africa and the lands of the Islamic Maghreb until the 3rd century AH, medicine in this region was mainly based on the empirical knowledge inherited from the Maghrebian elders. However, during the third and fourth centuries AH, with the efforts of Muslim physicians, medical science made significant strides in the Islamic Maghreb. This led to advanced stages of medicine grounded in science, marking a shift towards science-based practices.



5- The financial resources of hospitals and medical centers in the Islamic Maghreb lands from the arrival of Islam to the fourth century AH

In Islam, Muslim rulers, following the example set by the Prophet (PBUH) in caring for the wounded at the Battle of al-Khandaq (lit. the Trench), prioritized the establishment of medical centers from the beginning. The system of establishing and administering hospitals in Islamic civilization was more advanced compared to pre-Islamic times. Although Islamic states did not consider it their duty to intervene in public education, public health, and food supervision for the lay people and laypersons, they saw the construction of hospitals as a form of charity or a means to earn divine reward and serve humanity (Isa Beyk, 1981, p. 3, Dashti, 2018, pp. 109-122). During that era, the importance of health and treatment was such that hospital management, which was typically considered part of governmental affairs, was entrusted to a deputy of the sultan, who was chosen from the highest-ranking and most reputable scholars of the time. The deputy, in turn, would delegate tasks to his chosen scribes and officials (ibid, pp.22-23) (Isa Beyk, 1981, p. 3). This reflects the overall emphasis on medicine and well-being throughout the Islamic world.

Therefore, the spiritual motivation for constructing hospitals and donating funds and resources to them in the Islamic era led to the establishment of numerous hospitals and charity healthcare institutions throughout the Islamic lands, from Samarkand in the eastern Islamic regions to Fez and Granada in the Maghreb lands. These institutions received extensive endowments, allowing for the creation of some of the largest hospitals in human history within the realm of Islamic civilization and the Islamic Maghreb. A notable example is the grand hospital of Tunis, which accommodated 4,000 patients and continues to astound historians in the field of medical history (Gonergun, Atkar, and Ebrahimnejad, 2014, p. 2).

Regarding the financial resources for the construction of Damneh of Qairwan, the first hospital built by Muslims in North Africa or the Islamic Maghreb, historical sources indicate that the entire cost of its construction and equipment was covered by the Emir Aghlabi (Moghrezi, 1988, pp.124, 130). Furthermore, there are records of continuous financial support for the hospital, including charitable donations for patients and afflicted individuals admitted there, from the era of Ziyad Allah Akbar, the founder of the hospital, to their last princes, Ziyadullah III 296 AH (end of the 3rd century AH). It continued in the era of the Fatimids and their successors, the Zirians. This financial support never stopped until the middle of the fifth century of Hijri (Abd al-Wahab, 1973, Vol. 1, p.279).

Visiting patients at Damneh of Qairwan on specific religious occasions became a tradition for the Aghlabi princes, dating back to the reign of Ziyad Allah. Maliki documented this practice, stating that “the Emirs of Bani Aghlab used to visit the Qairwan Mosque on the 15th night of Sha’ban and the 15th night of Ramadan, where they would generously donate some money. They would then proceed from the mosque to the hospital and visit it” (Maliki, 1951, Vol. 1, p. 318). During these visits, the rulers would provide various forms of assistance, including monetary donations, to the hospital, which was often quite substantial. For example, Ziyada Allah Aghlabi once ordered a contribution of 600 gold dinars to the hospital (Dabagh, and Ibn Naji, 1968, Vol. 2, p. 117).

In some instances, the Bani Aghlab princes would personally visit patients at Damneh of Qairwan on holidays and special occasions, providing them with gifts, like charitable benefactors. They would either deliver these gifts themselves or send them through trust-



ed individuals. Additionally, they provided donations, such as bread, meat, and cooking oil to those working at the hospital (Talisi, 2003, p. 494). Inspired by the examples set by the emirs and princes of Bani Aghlab, other notable figures, scholars, and even ordinary citizens participated in the pious and benevolent act of endowment. These endowments served as a crucial financial backbone for Damnehs or hospitals, ensuring continuous care for patients and the injured. People committed themselves to offering various forms of aid, such as food, clothing, blankets, and any other necessities for patients' recovery and comfort, to the best of their ability.

It is noted that a baker named Hisham ibn Masrur, who owned a bakery in Qairwan, made a charitable endowment (waqf) by dedicating the bread from his bakery to the people of Damneh or the hospital. He instructed his employees to provide the bakery's bread in its entirety to the poor and needy patients at the hospital. When customers came to purchase bread, Hisham would tell them that he sold bread to those who were willing to pay a higher price, so that the additional amount could be contributed as an aid to the hospital (Maliki, 1951, Vol. 2, p.144).

After discussing Damneh of Qairwan, which was built during the Aghlalian period, it is important to address the financial resources and methods of funding Ibn Tulun Hospital (or Atiq Hospital) in Fustat, Egypt. Ibn Tulun Hospital was the first Islamic hospital in Egypt (Isa Beyk, 1981, p. 67; Taj Bakhsh, 2000, p. 59).

The construction and equipment cost of Atiq Hospital (or Ibn Tulun Hospital) amounted to 60,000 dinars, entirely funded by Ibn Tulun himself. He personally oversaw the management of the hospital, visiting every Friday to inspect the hospital's inventory. He would then inquire about the well-being of patients, newborns, and mentally ill patients (Gonergun, Atkar, and Ebrahimnejad, 2014, pp. 2-3; Dashti, 2018, p. 115).

While Ibn Tulun had endowed the hospital with the revenues from 'slave' markets, shops, and other sources like water fountains and a mosque, a fee of twelve dirhams was charged to each patient admitted to the hospital who could afford it. The Ibn Tulun Hospital in Egypt remained operational and active until the 9th century AH/15th century AD (Isa Beyk, 1981, p. 68).

Conclusion

From its inception, the Islamic religion regarded medicine as a beneficial science for humanity and included it as a subject of interest within religious texts and the teachings of the Prophet Muhammad (PBUH) and other prominent figures in the faith. This support encouraged Muslim physicians to make significant strides in advancing medical sciences and related branches.

While Muslims began studying medical sciences following translations of works from other nations, primarily the Greeks and Iranians, they eventually expanded upon this scientific heritage with their contributions. People from various regions within the Islamic world played a part in the growth and development of medical knowledge.

Research findings indicate that since the arrival of Muslims in North Africa in the first century AH (Umayyad period), there has been attention and interest in the medical profession. A number of scholars (known as "*Faqih Al-Abdan*",) who accompanied the Islamic armies and learned the profession of medicine empirically and through inherited tradition. *Faqih al-Abdan* were the first Muslim physicians responsible for treating pa-



tients and the injured in the lands of the Islamic Maghreb. From the mid-second century AH, coinciding with the arrival of the Abbasid rulers in the Islamic Maghreb, the interest in modern medical sciences accelerated. This period marks a noticeable distinction between trained physicians and those relying purely on traditional medicine based on experimental practice.

The third century of Hijri marks the beginning of construction of hospital in the Islamic Maghreb. The first Islamic hospital in the region was built in the early part of the century during the Aghlabid rule in the city of Qairwan and became known as Damneh. The hospital had various departments, including a general ward, surgery, mental health, and specialized wards for leprosy patients. It also had additional facilities such as a bathhouse, mosque, and other amenities.

Following the Aghlabian, the Tulonians also built a well-equipped hospital in Fustat, Egypt, known as *Atiq* or *Al'aelay* Hospital. Later, they built another hospital in the same city named *Al-Asfal*. In the fourth century AH, the performance and efficiency of physicians in the Islamic Maghreb improved, owing to the translation of Greek medical works. Their medical practices became more extensive and influential. A notable aspect of medical practice in that era is that physicians were increasingly employing scientific methods both in the preparation of medicine and the treatment of wounds.

Another notable aspect of medical practice by physicians in the Islamic Maghreb during the fourth century AH was their use of scientific methods in the treatment of wounds. This included discovering the anti-hemorrhagic properties of certain medicinal plants, which played a significant role in controlling and treating wounds.

Among other findings of the research, Muslim doctors in the third and fourth centuries of Hijri were able to introduce and innovate new theories and therapeutic methods in the field of surgery. They also achieved significant advancements in ophthalmology. According to the findings, the Maghreb physicians of that time did not ask for any fees for their services until the full recovery of the patient.

One of the significant contributions of Muslims from the first to the fourth centuries AH in the Islamic Maghreb was their emphasis on preventive medicine alongside therapeutic medicine. This approach was pursued through observing public health principles, promoting a healthy lifestyle, and choosing appropriate clothing for the environment. The people of the Islamic Maghreb also had a particular interest in constructing bathhouses and maintaining personal hygiene, inspired by the hadith, "*al-Nizafah Men al-Ayman*" (lit., "Cleanliness is part of faith.").

Another research finding reveals that spiritual motivations for building hospitals and allocating endowments and facilities in the Islamic Maghreb contributed to the establishment of several hospitals and charitable healthcare institutions. Additionally, substantial financial resources were endowed upon these institutions, enabling their sustainability and ensuring that they provided accessible healthcare services to the community.

And finally, it is important to note that during the time of Muslim expansion into North Africa and the lands of the Islamic Maghreb until the mid-second century Hijri, the prevailing medical practices were primarily based on the traditional medicine inherited from the senior and indigenous people of Maghreb. This form of medicine was mainly empirical in nature. However, from the third and fourth centuries AH, Muslim physicians in their pursuit of medical knowledge, achieved significant progress in science-based medi-



cine. Through relentless efforts and dedication, these physicians successfully transitioned their practices to advanced stages, leading to remarkable advancements in healthcare and the medical field within the Islamic Maghreb.

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Conflict of Interest

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