Original Article

An overview of the history of medicine in Ottoman–Safavid relations (16th–18th centuries CE)

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Abstract

With the onset of the Safavid dynasty in 1501 and the simultaneous consolidation of Ottoman power, two major Muslim empires emerged as neighboring political and cultural centers in West Asia. Although Ottoman–Safavid relations have often been examined in light of political and military history, their medical interactions have received limited attention. This study investigates how medical knowledge circulated between the two empires from the sixteenth to the eighteenth centuries and examines the mechanisms through which these exchanges shaped medical practice and scholarly production. The study analyzes physician mobility, medical texts, pharmacological literature, and institutional structures within the broader Islamicate medical tradition.

Particular attention is given to the transmission and adaptation of medical knowledge across imperial boundaries. The findings demonstrate that Ottoman–Safavid medical relations extended beyond the transfer of isolated ideas and constituted a sustained process of intellectual exchange. Shared Galenic and Islamicate foundations sustained continuity in medical theory and practice, while physician migration, textual circulation, and scholarly networks facilitated the localization and transformation of medical knowledge across different imperial settings. The study argues that Ottoman–Safavid medical interactions should be understood as part of a broader interconnected medical world in which knowledge moved through overlapping scholarly, cultural, and political networks.

Keywords: *History of medicine; Persian medicine; Ottoman Empire; Persia.*

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Introduction

The emergence of the Ottoman Empire in 699 AH/1299 CE (1) and the establishment of the Safavid state in 907 AH/1501 CE marked the rise of two major political and cultural powers in the Islamic world (Figure 1). The ensuing exchanges had a considerable impact on the growth and dissemination of medical knowledge in the early modern Islamicate world (2,3). The simultaneous presence of the Ottoman and Safavid Empires, and the historical and cultural similarities between them, led to a wide range of cultural, social, economic, and military interactions (4). Across the early modern period, Ottoman–Safavid rivalry and contact created durable channels for the circulation of people, texts, and commodities, including those relevant to medicine and health.



Figure 1: *Map of Ottoman–Safavid borders in different eras (5)*

Recent scholarship has emphasized that Ottoman–Safavid medical relations should not be reduced to sporadic encounters or one-way transfers of knowledge. Rather, they formed part of a broader Islamicate medical tradition sustained through institutional practices, textual transmission, and the mobility of practitioners (3). Although previous studies have examined particular aspects of Ottoman or Safavid medicine separately, comparative analyses focusing simultaneously on medical institutions, pharmacological traditions, surgical practices,

and physician mobility across both empires remain limited (5). The present study aims to address this gap by providing a comparative historical overview of Ottoman–Safavid medical interactions between the sixteenth and eighteenth centuries. While contacts with European scientific traditions existed during this period, a more systematic and institutionalized engagement with European medicine emerged primarily during the late eighteenth and nineteenth centuries in connection with state reforms and the professionalization of medical education (6). By examining these interactions, this study contributes to a better understanding of the circulation of medical knowledge in early modern Western Asia.

Methods

This research is a retrospective historical study based on primary sources, new articles, manuscripts, reports, and historical documents. A search for related keywords, such as Ottoman medicine, Safavid medicine, Persian–Ottoman relations, Ottoman medical history, and Safavid medical history, was conducted across search indexes including Google Scholar, JSTOR, Academia.edu, PubMed, Web of Science, and others. In the next step, duplicate and invalid data were removed from the review, and the remaining information was categorized and analyzed, and the results were reported.

Results

Medical Structure in Ottoman and Safavid Empires

Although both the Ottoman and Safavid medical traditions were grounded in the shared Galenic–Avicennian heritage of Islamicate medicine, they differed in the organization and institutionalization of medical practice. The Ottoman Empire developed a relatively centralized medical structure supported by hospitals (*darüşşifas*), *waqf* endowments, court physicians, and the office of the *Hekimbaşı*, which collectively contributed to the regulation and transmission of medical knowledge (7,8–10). In contrast, Safavid medicine relied more heavily on court patronage, individual scholars, and informal scholarly networks, while maintaining continuity with earlier Timurid and Persian medical traditions (11–14). Despite these institutional differences, both empires participated in interconnected intellectual networks through the circulation of medical texts, shared pharmacological traditions, and the mobility of physicians. These similarities and

differences demonstrate that Ottoman–Safavid medical relations were characterized not only by the transmission of knowledge but also by the adaptation of medical traditions within distinct political and institutional contexts (3,11–14).

From the beginning of the Ottoman Empire until the nineteenth century, medicine in the empire was primarily grounded in the shared Galenic–Islamicate medical tradition, which incorporated Greek, Persian, Arabic, and broader Islamic scholarly influences. This medical framework remained dominant for centuries and underwent important transformations during the *Tanzimat* reforms of the nineteenth century, when increasing engagement with European medical institutions and practices gradually reshaped Ottoman medicine (7,15). Debates over reform and innovation in Ottoman medicine should nevertheless be interpreted within a framework of continuity. Work on the *tıbb-ı cedîd* discourse emphasizes that "newness" often took the form of selective adaptation and reinterpretation of existing traditions rather than a complete rupture (16).

Safavid medicine largely continued earlier Islamicate medical traditions, while being shaped by Safavid political, religious, and military contexts (11,17). It benefited from knowledge retained from the Timurid era (1370–1507 CE), which was carried forward by the Safavids, continuing the evolution and development of medicine in the Islamic world (12–13). However, significant advances in medical science during this period distinguished it from previous times. The beliefs, interests, and policies of the Safavid Empire, internal and external wars, foreign relations, as well as the achievements and manuscripts of the physicians of this period, played an important role in creating these changes (11,17). At this time, due to the strict laws enforced by the Safavids, a number of scholars, including physicians, migrated to India and the Ottoman lands; therefore, elements of Indian medicine have a stronger presence in Safavid-era medicine than in previous periods (12,13). This influence was reflected not only through the movement of physicians but also through the circulation of medical texts and pharmacological knowledge between Safavid Persia and Baburid India. For example, Persian-language medical works produced in the Indo-Persian world, including pharmacological compilations and therapeutic treatises, circulated widely among Safavid scholars and contributed to the transmission of medicinal substances and therapeutic practices across regional boundaries

(12,13,18). Jean Chardin, a French traveler who visited Persia during the Safavid era, believed that during that period, no country in the entire Middle East valued medicine as much as Persia. He emphasizes that Persian medicine during the Safavid era was based on the principles of Galenic medicine, and the books of ancient and medieval physicians such as Hermes, Sayyed Isma'il Jorjani, and Avicenna were among the medical sources of Safavid physicians (14). At that time, medical practice relied more heavily on court patronage and the authority of individual scholars (3). Among the prominent physicians of that period in Persia, we can mention Baha' al-Dawlah Razi (1456–1506 CE), the author of *Kholaseh al-Tajarob*, an important work that, according to some researchers, greatly influenced medicine in the Safavid era (11,12,17).

Both empires drew on the Galenic–Avicennian legacy of Islamic medicine while developing distinct organizational arrangements for medical education, practice, and authority. In the Ottoman case, hospitals *(darüşşifas)*, *waqf* infrastructures, and the office of the chief physician *(Hekimbaşı)* supported a comparatively centralized medical system; studies focusing on leading Ottoman physicians, including Emir Çelebi, show how court service, authorship, and bureaucratic position could reinforce medical authority within the imperial hierarchy (3,8).

There were three main discourses in Ottoman medicine:

1) Indigenous or folklore medicine

2) Religious medicine (*Tibb al-Nabawi*)

3) Scientific medicine (Persian medicine; humoral medicine) (9)

However, not all of these medical discourses were prevalent in Ottoman-era hospitals, and scientific medicine at that time, which was used both in the court and in hospitals, was based on the four humors, which had been passed on to the Seljuks and then the Ottomans in continuation of the prevailing paradigm in Islamic civilization (7,9,10,15).

The medical relationship between the Ottoman and Safavid empires extended beyond simple cultural proximity and reflected broader processes of knowledge circulation within the early modern Islamicate world. Recent scholarship has emphasized that medical exchange was facilitated not only through the movement of physicians and texts but also through shared intellectual traditions, court patronage, and interconnected scholarly

networks (3). While the Ottoman Empire developed more institutionalized mechanisms of medical training and administration, Safavid medicine maintained strong links with Persian scholarly traditions and benefited from intellectual exchanges extending to Central Asia and Baburid India (11–14,16). These interactions contributed to both continuity and innovation in medical theory, pharmacology, and clinical practice, demonstrating that Ottoman–Safavid medical relations constituted an important component of early modern medical exchange in Western Asia.

Recent studies have also shown that certain medicinal substances in Safavid Persia were valued not only for therapeutic purposes but also for protective and symbolic functions. Using medicinal plants for physical preservation of manuscripts and books illustrates how medical, practical, and cosmological understandings of natural substances could overlap within Safavid intellectual culture (18).

Pharmacy and Surgery in Ottoman and Safavid Empires

The pattern of pharmaceutical literature and the writing of medicinal works common in Islamic civilization reached the Ottoman Empire and the Safavids. Pharmacology constituted one of the most dynamic components of Ottoman–Safavid medical interaction. Within the Ottoman world, vernacularization and compilation contributed to the diffusion of pharmacological knowledge beyond narrow scholarly circles (19). The Ottoman contribution to pharmacological literature involved not only the increasing use of Turkish as a scholarly language but also the adaptation and localization of medical knowledge for new audiences. The vernacularization of medical texts was therefore more than a linguistic process; it facilitated the transmission of therapeutic knowledge beyond elite scholarly circles and encouraged the integration of local medical experience into existing pharmacological traditions (10,19). During the Ottoman era, the first Turkish pharmacopoeial works were written (20). *Edviye-i Müfrede*, attributed to İshak bin Murad, is treated in the literature as an early Turkish-language pharmacopeia that reflects the localization of medical knowledge and practical therapeutics (7,19–21).

Ottoman pharmaceutical literature followed established Islamicate genres, including encyclopedic works, *qarābādīns* (pharmacopeias), and specialized treatises. A group of pharmaceutical works also refers to

writings about a specific organ of the human body that, in addition to explaining and describing that organ and its diseases, introduce the medicines related to that organ (10). This model was inherited from Islamic tradition and followed in Safavid Persia as well (22). During the Safavid era, pharmacy was an important part of Persian medical discourse. Jean Chardin states that "Persia is the homeland of medicinal plants" (23).

The writing of pharmaceutical works in Safavid Empire is followed with greater emphasis on *qarabadins* (22). The first remaining *qarabadin* (pharmacopeia) is credited to a Persian scientist, Shapour Sahl, dating back to the 9th century CE (24). Among the most influential pharmaceutical works associated with Safavid and Persian medicine were *Tohfe al-Momenin* by Muhammad Mumin Tonekaboni, *Qarabadin-e Salehi* by Saleh ibn Mohammad ibn Mohammad Saleh Ghaeni Heravi, and *Qarabadin-e Shifai* by Hakim Shifai, which was later translated and published by Angelus de St. Joseph under the title *Pharmacopeia Persica* (11,13-25). *Qarabadin-e Qaderi* by Hakim Mohammad Akbar Arzani should be understood somewhat differently, as it was a Persian-language pharmacological work produced in Baburid India rather than Safavid Persia, illustrating the transregional circulation of medical knowledge across the Persianate world.

Textual circulation between Persian and Ottoman medical milieus is also illustrated by the reception of Ḥaji Zayn-i Aṭṭār's *Ikhtiyārāt-i Badī'ī*, which investigations identify as a contributor to Ottoman pharmacopeia literature and a vehicle for *materia medica* knowledge across regions (26).

Alongside texts, the circulation of therapeutic substances reinforced these connections. The case of *Mumia* demonstrates how a single substance could function simultaneously as a therapeutic, a luxury object, and a commodity embedded in wider networks of exchange linking Safavid Persia and Ottoman Turkiye (27).

During the Safavid era, Persian physicians preferred medical treatment to approaches like bloodletting, so they had good relations with pharmacists (*attars*). There were also apothecaries (*sharbatkhanehs*) where people could go directly without referring to a doctor and receive prescriptions. Apothecaries were inspected by the government for health reasons, and regulations were in place to control pollution in these establishments (11).

Most historians believe that, despite surgical interventions such as phlebotomy and cupping, surgery in general received little attention during the Safavid period (13,14). However, some researchers have noted that various surgeries were performed during the Safavid period, mostly due to injuries sustained in war (28). Perhaps the survival of the book *Dhakhira-yi-Kamilah* by Hakim Mohammad (a military surgeon of the Safavid era) as one of the few independent surgical works of that era is good evidence for this claim (28).

In the Middle Ages, as a medical science, surgery was at the end of the treatment line in the Ottoman Empire, and surgeons were sometimes denied the respect and closeness that society accorded doctors. Some characteristics of Islamic surgery in the Middle Ages, such as the use of anesthetics (e.g., opium) and the surgical instruments common in the Islamic era, were also adopted by Ottoman medicine (10). Until the 19th century, there was no formal institution for surgical training in the Ottoman Empire. Surgeons, whose presence was essential for the court and the army, were trained under the supervision of other surgeons in a master-apprentice system. At the court, an organization called *Ehl-i Hiref-i Hâssa* was established, which was responsible for training various artisans and supporting their industries (7,29).

Citing Şerefeddin Sabuncuoğlu, a famous surgeon of the Ottoman era, Ali Haydar Bayat claims that most surgeons and physicians in the Ottoman Empire lacked a high level of scientific literacy and were mostly considered experimental trainees rather than academic, educated physicians (7). He was one of the first Ottoman physicians to write medical works in Turkish and had a significant impact on the Ottomanization of science at the time. In his book *Cerrâhiyye-i İlhâniyye* (or *Cerrahiyetü'l-Hâniyye*), he specifically dealt with surgery and the use of surgical instruments (Figure 2). He was greatly influenced by *Al-Tasrif Leman Ajiz an al-Taalif* in composing this work and added beautiful and important illustrations to his book (10).



Figure 2. An image from *Cerrâhiyye-i İlhâniyye*, written by Şerefeddin Sabuncuoğlu; number 693 at Bibliotheque Nationale de France (30)

Migration of the Sages: The Political-Cultural Interaction between the Ottomans and the Safavids

Document number 3146 in the Topkapi Palace Museum Archives is a medical prescription written by a Persian physician for *Sultan Suleiman the Magnificent*. The text, in Persian, suggests that after observing a disease in the Sultan's court, this doctor was asked for guidance and assistance, and he responded with this letter (Figure 3).

Unfortunately, the doctor's name is not mentioned in this letter, and it is not possible to say with certainty whether the doctor was residing in Persia at that time. However, the point is the strong presence of Persian physicians in important medical practices within the Ottoman Empire, despite the political differences of that era (31).

The mobility of physicians between the Ottoman and Safavid realms extended beyond the movement of individual practitioners. These migrations functioned as important channels for the circulation of medical knowledge, therapeutic practices, and scholarly traditions across political boundaries. Court patronage, professional opportunities, religious affiliation, and changing political circumstances frequently influenced physicians' movement between the two empires. Through these networks, medical texts, pharmacological knowledge, and clinical experience were transmitted and adapted, contributing to both continuity and innovation within the broader Islamicate medical tradition. Physician mobility, therefore, played a significant role in sustaining intellectual exchange despite periods of political rivalry between the Ottoman and Safavid states (3,31).

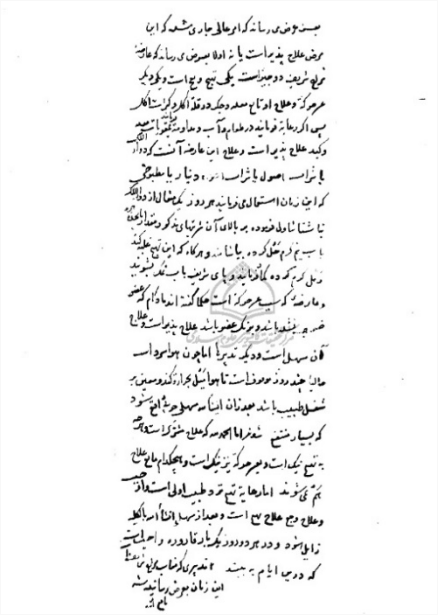


Figure 3. Persian letter containing a prescription by a Persian physician for Suleiman the Magnificent (31)

Beyond facilitating the movement of practitioners, these patterns of mobility contributed to the formation of shared medical epistemologies and interconnected systems of knowledge production across imperial boundaries. Physicians carried not only therapeutic practices but also scholarly methods, educational traditions, and professional norms between different political and institutional settings. In this sense, mobility functioned as a structural mechanism through which medical knowledge was transmitted, reinterpreted, and incorporated into evolving Ottoman and Safavid medical cultures (3, 32–36).

The migration of scientific elites, which began in the Timurid era and continued until the decline of the Safavid Empire, is an important example of cultural interaction between Persia, India, and the Ottoman Empire (33,34). Physician mobility constituted a key mechanism for cross-imperial knowledge transfer. Ottoman courts and urban centers attracted physicians trained in Persianate scholarly milieus, and these movements shaped Ottoman medical practice and scholarly production (35–37).

Many physicians and sages from these three lands migrated to other regions and served in various capacities, including Hakimbashi (Chief of the Physicians), medical masters, and ordinary

community physicians. They wrote numerous works in Persian, Arabic, and Turkish, which have provided an important treasure trove of medical resources of that era (33,34,38). Beyond physicians, broader patterns of mobility, including travel through eastern Ottoman provinces, also created contexts for interaction and exchange. For instance, discussions of Safavid/Acem pilgrims in Ottoman eastern provinces highlight the socio-geographic conditions that facilitated contact across imperial borders. During the reign of Mehmed the Conqueror, there were seven important physicians at the Sultan's court: four Persians, one Turk, one Arab, and one Jew (39). A prominent illustration is Hekim Lari, whose association with the Ottoman court exemplifies how Persian-trained physicians could be incorporated into Ottoman institutional settings and contribute to medical exchange (35).

Some of the most important Persian physicians who immigrated to Anatolia during the Safavid era are: Mahmud ibn Kamal Tabrizi (known as Ahi Çelebi), Hakim Ghiaseddin Sabzevari, Hakim Muhammad Sabzevari, Hakim Unsuri al-Khattabi al-Gilani al-Lahijani, Mohammad ibn Mahmoud Shirvani, and a military surgeon named Hakim Muhammad, who returned to Persia after participating in military campaigns between the Ottomans and the Safavids (40, 41,28).

Conclusion

The present study demonstrates that Ottoman–Safavid medical relations were neither incidental nor limited to the transmission of isolated medical ideas. Rather, they formed part of a broader and sustained process of intellectual exchange within the early modern Islamicate world. Despite periods of political rivalry and military conflict, both empires shared common medical foundations rooted in ancient and Islamicate traditions while simultaneously developing distinct institutional, scholarly, and therapeutic characteristics.

The comparative analysis presented in this study identifies three interconnected dimensions of Ottoman–Safavid medical interaction: the mobility of physicians and scientific elites, the transmission and adaptation of medical and pharmacological texts, and the circulation of therapeutic knowledge through scholarly and courtly networks. These processes facilitated both continuity and innovation, enabling medical knowledge to be preserved, reinterpreted, and localized within different imperial settings.

More broadly, the Ottoman–Safavid case demonstrates that the development of medical knowledge in early modern Western Asia was shaped not only by local traditions but also by sustained cross-cultural and cross-imperial interactions. By examining physician mobility, textual transmission, and shared intellectual traditions together, this study contributes to a deeper understanding of the mechanisms through which medical knowledge circulated across the Persianate and Ottoman worlds and influenced the history of medicine in Western Asia.

Conflicts Interests

The authors declare that they have no competing interests.

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