



The Arab Scholars and Evolution of Medicine

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The Primary sources of Arab history and the bibliographical and biographical works, such as al al- Fihrist (index) of Ibn Nadim(987), Qifti's History of The Philosophers (1227), Classes of Physicians of(1242) Ibn Abi Usaybi'a, Hajji Khalifa's (1068-1658) Kashfu al Zunoon and other sources as like, are available today and these sources provide a large account of Arab medicine and the contributions of great Arab scholars of medical science to this subject. Apparently, they are available today in beautiful and excellent editions, and have attracted both the Western and Eastern scholars with an increased interest to select Arabian and Islamic medicine as their specialised area of research and study (1).

The Abbasid dynasty, which ruled from the mid-8th to the mid-13th century CE, was one of the most influential dynasties in the history of Islamic civilization. This period is often referred to as the golden age of Islam, marked by rapid advances in natural sciences like medicine, astronomy, geography, Chemistry, etc, and philosophy, education and art and literature. Not only did the Abbasid Caliphate was known as a powerful political force, but it also it was distinguished succeeded in establishing an intellectual ecosystem that enabled a systematic and sustainable development of science and philosophy. Baghdad, the capital of Abbasid Caliphate, grew into an international centre of knowledge and learning.

To avoid the difficulty of understanding Arabic medical books and determining the accurate meaning of the Arab medical terminologies and their "exact scientific signification", now as Edward Browne said: "history of Arabian medicine can only be studied in connection with the general history of Islam, which, as you all know, first began to assume political (and also social) significance in A.D. 622" . It is suggested just to overcome the problems we face during the study of Arabian medicine because of Mediaeval translations of the Latino barbari languages, who often communicate the distorted and less precise sense translating from the Arabic words.(2) For example, the first unit of the first discourse of the first part of Ibn Sina (In Latin Avenenna)'s famous and great book - al Qanun (القانون) is entitled Sermo universalism de Soda, in Latin version, a person, who don't have the original knowledge of Arabic, could simply drive the meaning of word Soda that stands for the Arabic صداع, as a local Arabic word for headache, while it regularly and originally, as a noun of this word stands for the medical term 'pain', from the verb صدع - to dpilit. Ibid (3)

Arabic Language-A Perfect Medical Language

The students of history of Arabs commonly face a question: whether dissection was ever practiced by Arab Islamic scholars. It is generally assumed that Arabic language "entirely lacks the Greek facility of forming compound words to express new and complex Ideas". (4) However, in spite of this assumption, Arabs successfully developed a scientific language that very much expresses the spirit of medical science, they paraphrased the Greek technical terms and created many new terms to interpret their medical sense. Soda (صداع) fairly stands for a splitting headache, Zukam (زكام) was generated for Catarrh.

The Golden Age of Arabian literature and learning reached its apex between 750 and 900 CE. This intellectual flourishing thrived under the great Abbasid Caliphate, which was cantered in the advanced metropolis of Baghdad. Distinguished Caliphs—such as Al-Mansur, Harun al-Rashid, and Al-Mamun—were celebrated for their generous patronage of science and philosophy. These enlightened rulers demonstrated profound intellectual curiosity and broadminded tolerance. Driven by a desire for knowledge, they championed the translation of significant

philosophical and scientific works from Greek, Persian, and Sanskrit into Arabic. This inclusive, open-minded approach allowed them to respectfully evaluate alternative perspectives and new philosophical concepts rather than dismissing them out of fear (5).

This golden age of the Abbasid Dynasty (750–1258 CE) is considered a crucial phase in the history of Islamic civilization by all great historians, marked by rapid advances in science, education, and culture. The caliphs, particularly Harun al-Rashid and Al-Ma'mun, played a significant role in the development of science and Mediaeval Philosophy promoting scientific activity in Arabia through the establishment of academic and research centres such as the Baitul Hikmah (House of Wisdom) and Nizami Education Method in Baghdad, which served as centres for translation, scientific research, libraries, and philosophical studies. This Arabic developed into the primary and most scientific language for study of science and philosophy and progress of Islamic civilization in the Mediaeval period, especially during the 8th and 9th centuries; it almost replaced Greek and Syriac, and became a medium for the investigative exploration, communication, transmission and innovation of knowledge and learning. This is why Sarton has no hesitation in calling it (the ninth century) the century of Muslims, and Arab-Muslim intellectuals:

"I said that this century was initially a Muslim Century. This is more true of second half than the first, for with exception of king Alfred, particularly all the significant leaders (of research and innovation) were Muslims, or at any rate working with and for Muslims and wrote in Arabic" (6). There are two main reasons for the broad-minded reception of medicine and medical terminology in the Arabic language. One is that, following the rise of Islam, Arabic matured into a universal and highly comprehensive language well before the region's scientific awakening, allowing for a uniform, standardized relevance in translating ancient texts, especially that of the ancient Greek works. EG Browne describes the significance of their enthusiastic attachment to the ancient works the established the famous grand research centre- Bait al Hikma (بيت الحكمة) or royal library during this Golden Age, and they stored a number of old manuscripts of various languages from different countries and smartly managed to get them translated into Arabic by the most authoritative scholars who were attracted by Abbasid Caliphs to their court, either directly from the Greek, Persian and Sanskrit or through other "intermediary of Syriac Language" (7) The second reason is related to the two fundamental sources of Islam: the Holy Quran and the Sunnah of the Prophet. Both of these sources (Quranic verses and Prophet's traditions) frequently attract our attention to medical knowledge and health care guidance. The Quran emphasizes eating good, hygienic food and calls it Tyyib (طيب) (8), Quran strictly prohibits consuming (maytah) (الميتة) dead meat, blood, and swine. These restrictions inherently serve as a prophylactic measure against diseases, bacterial contamination, toxins and unhygienic consumption (9).

Translation Works

Arabic translations of Greek and Syriac texts played a pivotal role in establishing Arab medicine. These translations were largely driven by Christian, Sabian, and Jewish scholars. Many of these physicians belonged to prominent medical dynasties that served the Abbasid royal court for generations. The most celebrated figures from these families include Yuhanna ibn Masawayh, Qasta ibn Luqa, and Hunayn ibn Ishaq, with Hunayn and his lineage achieving the greatest and most important influence (10). Hunayn ibn Ishaq and his family spearheaded a monumental translation movement under the Arab Caliphate during Middle Ages, converting hundreds of foundational Greek scientific and philosophical texts into Arabic. Their methodical, rigorous approach firmly established Arabic as an international language of science.

The edited, organized text is as follows:

Under the Abbasid Caliphate, Hunayn ibn Ishaq and his family achieved the historic feat of translating hundreds of Greek books on medicine, botany, and geography into Arabic. Operating out of the Bayt al-Hikmah in Baghdad, Hunayn led a dedicated group of ninety students who conducted the bulk of this translation work. Personally translated about one hundred books on philosophy and medicine from Greek into Syriac, and forty-nine books directly into Arabic. Hunayn's son, Ishaq, and his nephew, Hubaysh, collaborated with him to translate a combined sixty books into Arabic and thirteen into Syriac, the vast majority of which focused on medicine.

Following the same rigorous standard. Yuhanna ibn Masawaih (circa 777–857) is another prominent scholars who belongs to this galaxy of Abbasid translators, who translated dozens of medical books into Arabic from Greek and other (11). To come to the prominent medical writers, of whom I need to introduce the most famous are Ali Ibn Sahl Rabban al Tabari, (C 783–858) one of the prominent Arab-Persian scholar and physician, Al Razi, Abu Bakr Muhammad Ibn Zakariya of Ray known as al Razi (865–925 CE), an all-time great physicians, chemists, Ali Ibn Abbas or (in Latin) Halay Abbas, (661–.736 ca) a great Persian physician and psychologist,

Ibn Sina, Abū ‘Alī al-Ḥusayn bin ‘Abdallāh bin al-Ḥasan bin ‘Alī bin Sīnā al-Balkhī al-Bukhārī, known in the European world as Avicenna, an all-time great, a preeminent physician, scientist and philosopher of the Golden Age of the Arabs, a seminal figure of the Islamic history, Ibn Al Nafis, Alauddin Abu al Hasan Ibn Abi Hazm al Qarshi, one of the most prominent Arab polymaths of Islamic Golden Age, and great physician, surgeon, physiologist, anatomist and biologist, known as Ibn al-Nafis (1210-1288 ca), Abu al-Qasim, Khalf Ibn Abbas al-Zahrawi, known in Europe as Albucasis (936–1013, ca), an Arab physician, surgeon and chemist of al-Andalusia (Spain) during Umayyad dynasty, who is considered one of the greatest surgeons of the Middle Ages and even 'Father of Surgery.

The West was still in its Dark Age when the Arab scholars and theoreticians were busy to produce their most important researches in the fields of botany and most distinguished discoveries medical science and medical discoveries. The medical knowledge if Western world was very insignificant and poor. The Muslims who met Western physicians or Frank Physicians during the Crusade wars wrote their experiences about their ignorance and barbaric and backward medical system expressing much scorn for their wrong and ignorant perceptions. Thabit, a Christian physician of Usamah, a prince of Syriac Royal family has observed two such cases (C 1140) that ended with "fatal account of barbarous surgery of a Western physician, (Frank) (12).

The imminent historian Sarton describes the state of medical knowledge in Europe very poor comparing with efforts made by Muslim scholars in this field, his words are as follows: St. Cyril, Errigena, and king Alfred were undoubtedly great men; yet in spite of their presence in Europe we may still maintain that the main advance of civilization in those days was due to Muslim initiative.....Yet all that of which I have spoken (about the medical knowledge of the West) was relatively unimportant as compared with the efforts which was accomplished all the same time in Islam." (13)

Dr. Robert Briffault, an Eminent scholar of the West says about the origine of the modern Allopathic system of medicine considering it and outcome of remarkable Arabs' contributions to medicine: "The Pharmacopoeia created by the Arabs is virtually that which but for the recent synthetic and organotherapic preparation, is in use at the present day; our common drugs, such as Nux vomica, Senna, Rhusbarb, aconite, Gentian, Myrrh, Colmel, and the structure of our prescriptions, belong to Arabic medicine". He further explains that the famous medical schools of Montpellier, Padua Pusa were founded on the fundamental principles of that of Cortova under Arab and Jew doctors and physicians, trained in the medical colleges established by the Arabs in Muslim Spain.(14)

All Time Great Arab Physicians

Al Razi is one the most towering and illustrious Physicians of the Mediaeval period, especially ninth century was Abu Bakr Zakariya al Razi (in Latin Rhazes), the greatest, clinician, chemist, philosopher, and probably the greatest physician of entire Middle Ages. He was officially the chief physician of advanced hospital of Baghdad.

SI Razi wrote about 113 major books and 28 minor books on various topics with a broad range of subjects from Chemistry to medicine. Many unpublished works of Al Razi are preserved in different libraries of Europe and Asia. His most important work is a treatise that discovered new theories on smallpox and measles. One of al Razi

work is focused on the stone in the kidneys and urinary bladders; it has been published in French translation with its original texts in Leyden in 2896. (15) The most illustrious and greatest medical work of al Razi, and it is a vast encyclopedia of medicine, and according to a Western scholar, "perhaps the most extensive ever written by a medical man", is his book "Al Hawi" (The Comprehensive Book). This Razi's work contains Arabic, Greek, Syriac and early Arabic medical information, he gathered whatever he read and collected extract from different works on medicine throughout his life along with his own experiences and discoveries. (16) Sarton, truly considers him the " Greatest physician of Islam and of the whole Middle Ages" for his outstanding discoveries in medicine, he even calls this entire period " the time of Razi"(17).

Another great physician of Mediaeval period was Ali Ibn Abbas al Majusi, (Latin: Haly Abbas) , a native of Ahwaz in South West Persia, he was closely attached to the court of Addud Dawlah, for whom he wrote monumental work and a great medical encyclopaedia entitled " Kitab al Milki" or " Kamil al- Sanaah al Tibbiyyah". According to the historians the people from East to West intensely depends on this great work for their medical learning until the appearance of Ibn Sina's medical discovery, Al Qanun (Canon). (18). Another or perhaps the greatest name in the medical history of Mediaeval period is the name of Ibn Sina who is considered the Prince of the Physicians by the European scholars, and he was the greatest medical man throughout the Mediaeval times. He was Associated with the court of Al Mamun at the age of 21, his chief work on the medicine is entitled al Qanun (Latin Canon). The Historian PK Hitti Introduced his book Al Qanun calling it a 'Bible of medicine ', as he writes:

In the words of John Osler, "it has remained a medical Bible for a longer period than any other work". (19).

Because of its perfection, new discoveries, innovative perceptions and "intrinsic value", Ibn Sina's "al Qanun superseded Raz's Hawi, and Ali Ibn Abbas'Milki, and even the works of Galen and remained supreme for six centuries" (20).

Distinctive Achievements and Discoveries

The contribution of Arab and Muslim scholars to the field of medicine during the medieval period represents one of the most remarkable chapters in the history of science and civilization. Between the eighth and fourteenth centuries, the Islamic world became the centre of intellectual and scientific activity, preserving, developing, and transmitting medical knowledge that later contributed significantly to the rise of modern medicine in Europe. Arab physicians not only translated the medical works of the Greeks, Persians, and Indians into Arabic but also expanded upon them through observation, experimentation, and clinical practice. Their achievements laid the foundations for many branches of medicine, including surgery, pharmacology, ophthalmology, anatomy, epidemiology, and hospital administration.

The rise of medical science in the Islamic world was closely connected with the expansion of the Abbasid Caliphate and the establishment of centres of learning such as Baghdad, Damascus, Cairo, Cordoba, and Bukhara. The translation movement initiated under the Abbasid rulers, especially during the reign of Caliph al-Ma'mun, encouraged scholars to collect and translate scientific texts from various civilizations. Greek medical writings of Hippocrates and Galen, Indian Ayurvedic works, and Persian medical traditions were translated into Arabic and critically studied. Muslim scholars did not merely preserve this knowledge; they corrected errors, introduced innovations, and developed a more systematic and experimental approach to medicine.

Another important feature of Islamic medicine was its ethical and humanitarian foundation. Medicine was considered both a science and a moral duty. Physicians were expected to possess knowledge, compassion, honesty, and dedication toward patients. Hospitals, known as bimaristans, were established throughout the Islamic world and provided free medical treatment irrespective of religion, ethnicity, or social status. These institutions also functioned as centres for medical education and clinical training. The achievements of Arab physicians greatly influenced medieval Europe. Through translations from Arabic into Latin, medical works entered European

universities and remained standard textbooks for several centuries. Thus, the Arab contribution to medicine served as a bridge between ancient and modern scientific traditions.

Development of Medical Knowledge

The rapid growth of medical science in the Islamic world was made possible by a favourable intellectual environment. The Qur'anic emphasis on learning and reflection encouraged scientific inquiry. Muslim rulers patronized scholars, physicians, and translators, leading to the establishment of libraries, observatories, and educational institutions. One of the earliest and most significant institutions was the Bayt al-Hikmah (House of Wisdom) in Baghdad. It became a major centre for the translation of scientific and philosophical works into Arabic. Scholars such as Hunayn ibn Ishaq translated the medical writings of Hippocrates and Galen with great accuracy. Hunayn also wrote original medical treatises and contributed to the development of medical terminology in Arabic.

The Islamic world benefited from its geographical position, which connected different civilizations through trade and cultural exchange. Medical knowledge from Greece, India, Persia, and even China was brought together and synthesized. Muslim physicians adopted a rational and observational approach. They emphasized clinical observation, diagnosis, experimentation, and documentation of diseases. Unlike many medieval societies where disease was often attributed solely to supernatural causes, Muslim physicians recognized natural causes of illness. They studied environmental factors, diet, hygiene, and psychological conditions affecting health. This scientific attitude enabled them to make substantial progress in medical research and practice (21).

Ibn Sina and the Canon of Medicine

Another towering figure in Islamic medicine was Ibn Sina, known in the West as Avicenna. Born near Bukhara in 980 CE, Ibn Sina was a philosopher, scientist, and physician whose influence on medicine lasted for centuries. His masterpiece, *Al-Qanun fi al-Tibb* (The Canon of Medicine), became one of the most important medical books in history. The Canon of Medicine systematically organized medical knowledge into five volumes covering anatomy, physiology, pathology, diagnosis, treatment, pharmacology, and hygiene. Ibn Sina combined the teachings of Hippocrates and Galen with his own observations and innovations. One of Ibn Sina's greatest contributions was his emphasis on experimentation and clinical trials in determining the effectiveness of medicines. He discussed contagious diseases and recognized that tuberculosis could spread from one person to another. He also emphasized the importance of quarantine in controlling epidemics.

Ibn Sina paid special attention to preventive medicine. He stressed proper diet, exercise, cleanliness, and mental well-being as essential elements of health. His understanding of psychosomatic illnesses was highly advanced for his time, and he recognized the relationship between emotional conditions and physical health. The Canon of Medicine was translated into Latin in the twelfth century and became a standard textbook in European universities such as Montpellier and Bologna until the seventeenth century. Its influence demonstrates the central role of Arab medicine in shaping global medical traditions. (22)

Contributions to Surgery

Arab physicians made extraordinary advances in the field of surgery. The most prominent surgeon of the Islamic Golden Age was Abu al-Qasim al-Zahrawi, known in Europe as Abulcasis. Born in Cordoba in Islamic Spain during the tenth century, al-Zahrawi is often regarded as the father of modern surgery. His famous medical encyclopaedia, *Al-Tasrif*, consisted of thirty volumes covering various aspects of medicine and surgery. The final volume focused entirely on surgical techniques and instruments. It included illustrations of more than two hundred surgical instruments, many of which were designed by al-Zahrawi himself.

Al-Zahrawi introduced innovative surgical procedures for treating fractures, wounds, bladder stones, and dental problems. He performed complex operations and emphasized careful surgical training. His methods for cauterization, ligation, and suturing greatly improved surgical practice. He also made important contributions to obstetrics and gynaecology. He described procedures for difficult childbirths and developed instruments for

examining the female reproductive system. His work influenced European surgery for several centuries and was widely studied in medieval medical schools. Arab surgeons also improved the use of anaesthesia. They used substances such as opium, mandrake, and henbane to reduce pain during operations. The development of surgical instruments and techniques by Muslim physicians paved the way for modern surgical science (23).

Advancement in Pharmacology and Chemistry

The Islamic world also witnessed remarkable progress in pharmacology and medicinal chemistry. Arab scholars systematically studied medicinal plants, minerals, and chemical compounds. They established pharmacies and developed methods for preparing medicines. Muslim pharmacists introduced new drugs and refined techniques such as distillation, crystallization, and filtration. They produced syrups, ointments, pills, and aromatic waters used for treating various illnesses. The physician and chemist Jabir ibn Hayyan made significant contributions to chemistry, which later influenced pharmacology. His experimental methods helped establish chemistry as a scientific discipline. Muslim scholars classified drugs according to their properties and effects, creating detailed pharmacological manuals. Hospitals in the Islamic world often included pharmacies where trained pharmacists prepared medicines under professional supervision. Regulations were introduced to ensure the quality and safety of drugs, demonstrating an advanced understanding of medical ethics and public health (24).

Ophthalmology and Specialized Medicine

Arab physicians excelled in ophthalmology due to the prevalence of eye diseases in the Middle East. They developed specialized techniques for diagnosing and treating eye disorders. Ali ibn Isa, one of the greatest ophthalmologists of the medieval period, wrote *Tadhkirat al-Kahhalin* (Notebook of the Oculists), which described more than one hundred eye diseases and their treatments. His work remained influential for centuries.

Muslim physicians performed delicate eye surgeries, including cataract operations. Ammar ibn Ali al-Mawsili developed a hollow needle for removing cataracts by suction, representing a major innovation in ophthalmic surgery. The Islamic medical tradition also encouraged specialization. Physicians began focusing on particular branches such as ophthalmology, pediatrics, orthopedics, and psychiatry. This specialization improved the quality of medical care and advanced professional expertise (25).

Hospitals and Medical Education

One of the most significant Arab contributions to medicine was the establishment of organized hospitals. The *bimaristan* system represented a highly advanced model of healthcare for its time. Hospitals in cities such as Baghdad, Damascus, and Cairo provided free treatment to patients regardless of background. These institutions included separate wards for men and women, pharmacies, lecture halls, libraries, and bathing facilities. Patients received food, medicine, and proper care during their recovery.

Physicians and medical students conducted clinical rounds, examined patients, and discussed diagnoses. This system of practical training resembled modern teaching hospitals. Medical licenses were also introduced in some regions to ensure professional competence. Mental health care received special attention in Islamic hospitals. Patients suffering from psychological disorders were treated with compassion and provided with therapy, music, and relaxation techniques. This humane approach contrasted sharply with the treatment of mental illness in many other medieval societies. The emphasis on hygiene, sanitation, and patient care reflected the advanced nature of Islamic medical institutions. These hospitals later influenced the development of healthcare systems in Europe (26).

Transmission of Medical Knowledge to Europe

The medical achievements of Arab scholars became known in Europe primarily through translation movements in Spain and Sicily during the twelfth and thirteenth centuries. Latin translations of Arabic medical texts introduced European scholars to advanced scientific knowledge. Works by al-Razi, Ibn Sina, al-Zahrawi, and

other Muslim physicians became central textbooks in European universities. The Canon of Medicine by Ibn Sina remained a standard reference for medical education for hundreds of years.

European physicians adopted many Arab medical practices, including clinical observation, pharmaceutical methods, surgical instruments, and hospital organization. The influence of Arab medicine played a crucial role in the intellectual revival of Europe and contributed to the later development of the Renaissance. The transmission of knowledge from the Islamic world demonstrates the interconnected nature of human civilization. Arab scholars preserved ancient knowledge at a time when much of it had been lost in Europe and then enriched it through original research and innovation.

Conclusion

The contribution of Arab and Muslim scholars to the field of medicine represents one of the greatest achievements in the history of science. During the medieval period, the Islamic world became a centre of medical learning, research, and innovation. Arab physicians preserved the medical heritage of earlier civilizations while making original contributions that transformed medical science. Scholars such as al-Razi, Ibn Sina, and al-Zahrawi advanced clinical medicine, surgery, pharmacology, and medical education through observation, experimentation, and rational inquiry. Their writings became foundational texts studied across the world for centuries. The establishment of hospitals, pharmacies, and systems of medical training reflected a sophisticated understanding of healthcare and public welfare.

Arab medicine emphasized ethics, compassion, hygiene, and scientific reasoning. Physicians treated patients with dignity and sought to understand diseases through careful observation and experimentation. Their contributions to surgery, ophthalmology, epidemiology, and pharmacology laid important foundations for modern medicine. The influence of Islamic medicine extended far beyond the boundaries of the Muslim world. Through translations into Latin, Arab medical knowledge entered Europe and contributed significantly to the rise of modern scientific thought. The achievements of medieval Muslim physicians therefore represent not only a major chapter in Islamic civilization but also an essential part of the shared intellectual heritage of humanity.

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