THE CONTRIBUTIONS OF ISLAM TO THE DEVELOPMENT OF MODERN DAY MEDICINE

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INTRODUCTION

The landmark contributions of Islam and early Muslims to the understanding and practice of medicine have not been fully acknowledged by the West. Some indolent ‘scholars’¹ have even claimed that modern science and medicine have their origins in Western civilization while Islam represents ignorance and retrogression. Credible historical sources, however, prove these claims to be wrong.

Islam’s openness to new ideas and traditions that are not un-Islamic made it absorb and expound or challenge the knowledge of the prevention, diagnosis and treatment of diseases from the Greek and Roman traditions. When the Church regarded learning as heresy and persecuted scientists, the Islamic empire warmly took in the scientists and their scientific heritage.²

¹ These include Islamophobes like Robert Spencer, Eliana Benador, David Yerushalmi and Pamela Geller.

Muslims contributed immensely to the development and standardization of medical institutions, licensing, texts, documentation policies, ethics and other medicine-related fields such as Pharmacy. Baghdad became the global centre of learning and Arabic, the international language of scholarship. By the 9th century, a remarkable body of knowledge had evolved from these efforts, and this was soon to become the threshold of modern day medicine.

**DEVELOPMENT OF MEDICAL SCHOLARSHIP AND PRACTICE**

In the early days of Islam, some medical problems were prevalent: disease, pain, injuries, and child-bearing complications. So, medicine became a central part of the Islamic culture. The Prophet (SAW) whom Michael Hart, a Jewish scholar, ranked number one in his book, *The 100: The Most Influential Persons in History*, gave prescriptions on various aspects of health and treated people himself.

Islamic medical scholarship flourished tremendously because Islam lays utmost premium on seeking knowledge. In the words of the Prophet (SAW), “Knowledge is the lost property of the

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6 The first five verses (Qur’an 96:1-5) revealed to Prophet Muhammad (SAW) commanded him to read; knowledge was the singular criterion by which Allah elevated Prophet Adam above all
believer, so wherever he finds it, he has a better right to it.” Islam espouses inclusion of, and benefitting from, other societies and civilizations. This allowed the Islamic world to absorb the scholarship and scientific knowledge of other civilizations, and thus flourish.

During the Dark Age, a period when, for many centuries, Europe lay in blatant ignorance, Islam led the world, from 700 to 1200, in science and scholarship. The early Muslims adopted the practices of calligraphy and illustrations from the Byzantine and Persian cultures, and the practices of paper making and binding from the Chinese. This enabled them to record the fast-evolving medical knowledge in textbooks and transmit same across their lands and to future generations. Caliphs of the Abbasid Dynasty (750-1258) promoted knowledge and accelerated translation of Greek, Hindu, Syriac, and Persian texts into Arabic.

the angels who were ordered to prostrate before him (Qur’an 2: 30-34); and protection of intellect is one of the *maqasidu-sh-Sharia* (objectives of Islamic Law).

7 Al-Tirmidhi, 39:19.


12 Ibid, Dallal.
Aside the translated works, the early Muslim scholars produced a vast medical literature.\textsuperscript{13} They recorded landmark achievements in medical scholarship, the most remarkable of which are:

**A. Blood circulation:** A 2nd century physician, Galen, theorized that blood flowed from the right ventricle to the left ventricle via invisible passages in the septum.\textsuperscript{14} In the 13th century, Ibn al-Nafis, discovered that the septum was impenetrable, showing Galen’s explanations to be false.\textsuperscript{15} He discovered that blood flowed from the right ventricle to the left ventricle through the lungs – a discovery that was to become the first description of the pulmonary circulation.\textsuperscript{16} Unfortunately however, this discovery is often credited to the English physician, William Harvey.

**B. Vision:** The ancient Greeks explained that vision was due to light rays emanating from the eyes onto an object.\textsuperscript{17} Ibn al-Haytham, an 11th century Iraqi scientist, disproved this notion and explained correctly that visual perception is due to a refraction of light rays passing between 2 media of different densities.\textsuperscript{18}

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\textsuperscript{15} Ibid, Hehmeyer.

\textsuperscript{16} Ibid, Hehmeyer.

\textsuperscript{17} Ibid, Hehmeyer.

\textsuperscript{18} Ibid, Hehmeyer.
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C. **Structure of the eye:** Hunayn’s figure of the eye (left below) is the first known anatomical illustration, shown here in translated form by Meyerhof.\(^{19}\) It greatly influenced the figure of the eye (right below) by Vesalius (1514-1565).\(^{20}\)

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D. **Text writing:** The tenth-century book by Ali ibn Isa, *Memorandum Book for Oculists*, was the standard ophthalmology treatise for several centuries in Islam and Christendom.\(^{21}\) It describes over 100 eye diseases arranged by anatomical location and used novel


observations to build on existing knowledge.\textsuperscript{22} The existing knowledge was Greco-Roman, which had a poor scholarship, with only 5 works on ophthalmology in 800 years, all of them lost and none written by a specialist.\textsuperscript{23} During the 500 years of the Abbasid Dynasty, Muslim writers, 10 of whom were ophthalmologists with thorough specialty training, wrote 30 textbooks on the eye, with 13 of them surviving.\textsuperscript{24}

\textbf{E. New discoveries:} The Muslim physicians were skilled observers. They were the first to have diagnosed smallpox, measles, and hemophilia; developed pharmacology and advanced surgical techniques, especially to treat eye ailments; and adopted the use of cotton to dress wounds, the use of animal gut in sutures and the use of a “concealed” surgical knife to allay patients’ anxieties.\textsuperscript{25} Much of these breakthroughs was carried out at the \textit{Baytul-Hikma} (The House of Wisdom) in Baghdad, the first recorded Muslim university.\textsuperscript{26}

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\textsuperscript{22} Ibid, Shastid.
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\textsuperscript{23} Daren L. (2008), \textit{A Foundation of Western Ophthalmology in Medieval Islamic Medicine}. UWOMJ 78(1), p. 3.
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\textsuperscript{25} Ibid, Lyons.
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\textsuperscript{26} Shaikh M. G. (undated), \textit{“Medieval Islamic Economic Thought: Filling the “Great Gap” in European Economics}. Psychology Press, p. 126.
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MANY OF THE EARLY MEDICAL SCHOLARS WERE MUSLIMS

In the very apt words of Bazmee, “The art of healing was dead, Galen revived it; it was scattered and dis-arrayed, Razi re-arranged and re-aligned it; it was incomplete, Ibn Sinna perfected it.” Razi (commonly called Rhazes) and Ibn Sinna were both prominent Muslim scholars. Considered “the greatest physician of the Muslim World,” Rhazes, born in 865AD, was the chief surgeon in many hospitals in the cities of Rey and Baghdad. He compiled over 200 works, half of them on medicine and was the first to describe smallpox and measles accurately. Until the 17th century, his book, Kitab-al Hawi fi al-Tibb (The Comprehensive Book of Medicine) was regarded as the most comprehensive medical work ever written.


29 Ibid, Bazmee.


Ibn Sinna (Avicenna), born in 980AD, was known for his scientific works, especially those on medicine.\textsuperscript{32} He has the credit of discovering the possibility of airborne transmission of disease, diagnosis of many psychiatric conditions, prescribing forceps use in birth complications and describing guinea worm infections.\textsuperscript{33}

His most successful book, \textit{al-Canon fi al Tibb} (The Canon of Medicine) is the world’s most famous book in the history of medicine, according to Encyclopaedia Britannica. It remained authoritative both in Arabian and European institutions for a longer period than any other work\textsuperscript{34} and influenced the development of medical schools and the writings of physicians for many centuries.\textsuperscript{35}

Ibn Sinna opens the book: “\textit{In the first place we render thanks to God, for the very excellence of the order of His creation.}”\textsuperscript{36} His definition of medicine in the book bespeaks of his deep

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\item \textsuperscript{32} Moosavi, J. (2009). \textit{The Place of Avicenna in the History of Medicine}. Avicenna Journal of Medical Biotechnology 1 (1).
\item \textsuperscript{33} Sajadi, M. M. et al (undated), \textit{Ibn Sina and the Clinical Trial}. Annals of Internal Medicine 150 (9): 640–643.
\item \textsuperscript{34} Myers, E. (1964), \textit{Arabic Thought and the Western World: In the Golden Age of Islam}. New York: Frederick Ungar.
\item \textsuperscript{35} Ibid, Moosavi.
\item \textsuperscript{36} Ibid, Lyons.
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foresight: “the art whereby health is conserved and the art whereby it is restored, after being lost.”

Another prominent Muslim figure is Abu al-Qasim al-Zahrawi (Albucasis), born in AD936, who is regarded as the most famous of the Arab surgeons. He wrote the famous text on surgery, *Al-Tasrif* and invented many surgical instruments.

**THE EARLY MEDICAL INSTITUTIONS WERE BUILT BY MUSLIMS**

The Prophet’s mosque in the city of Madinah held the first Muslim hospital service. During the Battle of the Trench, the Prophet saw some wounded soldiers and he ordered the erection of a tent to provide treatment. The first true Islamic hospital was built during the reign of Caliph Harun al-Rashid. In no time, it was renowned and that inspired the development of other hospitals in Baghdad.

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37 Ibid, Lyons.


Although men and women were put in separate wards\textsuperscript{42} and patients were attended to by nurses and staff of the same gender,\textsuperscript{43} it is praiseworthy that the hospitals served everyone irrespective of religious affiliation, wealth status, citizenship or gender class.\textsuperscript{44} The hospitals adopted well-developed division of wards to separately cater to patients suffering different ailments.\textsuperscript{45} To cater to the sundry needs of the patients and their visitors, each hospital had a pharmacy, a kitchen, a lecture hall, a library, a mosque and in some cases, a church for the Christians.\textsuperscript{46}

The first hospital for lepers was built in Damascus. Such was unknown in Europe where even six centuries later, lepers were burnt to death by royal decrees.\textsuperscript{47}

Today, medical students are mandated to undergo special practical training at hospitals and laboratories as part of the requirements for the successful completion of their study. It is noteworthy that this practice started with Muslim hospitals which not only served as places to treat patients, but also medical schools to train students.\textsuperscript{48}

\textsuperscript{42} Ibid, Rahman.


\textsuperscript{44} Ibid, Nagamia.

\textsuperscript{45} Ibid, Miller.


\textsuperscript{47} Ibid, Hamed.

\textsuperscript{48} Ibid, Rahman.
In 707, Muslims built the first teaching hospital in Damascus. They subsequently established others in Baghdad, Cairo and Cordoba. Integrating study in the mosque with practice in the hospital, the system required students to learn the theoretical aspects of natural philosophy in the mosque, and the diagnosis of fevers, the dispensing of drugs, the setting of bones, and the treatment of cataracts, in the wards.\(^{49}\)

**ADVANCEMENT OF MEDICAL LAW AND ETHICS**

Ishaq ibn ‘Ali al-Ruhawi’s *Adab al-Tabib* (Practical Ethics of the Physician) is the earliest surviving Arabic work on medical ethics.\(^{50}\) In his book, *Ahlaq al-Tabeeb* (*Medical Ethics*) Rhazes expounded the importance of morality in medicine. He divided medical ethics into three concepts: the physician’s responsibility to patients, his responsibility to self, and the patients’ responsibility to physicians.

A fundamental ethics of Medicine is that no one may portray himself or practice as a medical practitioner, except he has undergone and successfully completed the requisite training and certification. To do otherwise is a criminal offence. This ethic – a potent protective shield – began during the Abbasid Caliphate.\(^{51}\) Due to a physician’s error, a subject of Caliph Al-Muqtadir had died in 931AD. In response, the Caliph directed his physician to prevent doctors

\(^{49}\) Ibid, Rahman.


\(^{51}\) Ibid, Miller.
from practicing unless they passed an examination.\textsuperscript{52} This is the origin of the licensing exam all doctors must pass today to practice medicine.

One of the most entrenched ethics of the medical profession is detailed and proper keeping of patients’ records. Except for emergency purposes, no patient may be treated without proper recourse being made to his clinic card detailing his medical history in the hospital. Interestingly, Islamic hospitals were the first to keep written records of patients and their medical treatment.\textsuperscript{53}

**EXPANSION OF MEDICAL SPECIALTIES, TERMINOLOGIES AND LITERATURE**

I have friends studying medicine. I also have friends studying pharmacy. Being a Law student, I asked in wonderment for a very long time, what differences exist between both. Only recently have I known that Pharmacy is an independent, well-defined field of study aside Medicine. In fact, the University of Ilorin finds it necessary to assign an independent faculty, not just a department, to Pharmacy, distinct from Medicine.

Commendably, it was Muslim scholars who facilitated the evolution of Pharmacy as a distinct profession in the early 9th century.\textsuperscript{54} Sequel to that, Sabur wrote the first text on the subject of Pharmacy.\textsuperscript{55}

\textsuperscript{52} Ibid, Shanks.

\textsuperscript{53} Ibid, Rahman.

*Firdous al-Hikmah* (Paradise of Wisdom) by Ali ibn Sahl Rabban al-Tabari was the first encyclopedia of medicine in Arabic language.\(^{56}\) Modern day terms for eye parts originated from Arabic, not Greek terms. For instance, cornea is today the part of the eye which the Muslim scholars called *qarniyah*.\(^{57}\) The words: drug, alcohol, alkali, syrup, jujube, spinach, benzoin, camphor, myrrh, musk, naphtha and senna all have Arabic origins.\(^{58}\)

**CONCLUSION**

The great value of Islam’s contributions to the development of medicine lies in the meticulousness of the conservation, systematic organization and translation of existing knowledge by the early Muslims. The Muslims complemented these with phenomenal establishment and development of medical institutions, ethics, terminologies and disciplines, as well as landmark discoveries especially in the areas of pharmacology, surgery, ophthalmology and blood circulation.

\(^{55}\) Ibid, O’Malley.


\(^{57}\) Ibid, Blodi.

As Campbell\textsuperscript{59} puts it, “The European medical system is Arabian not only in origin but also in its structure. The Arabs are the intellectual forbears of the Europeans.”

Unfortunately however, many of these groundbreaking contributions by Islam and the early Muslims are today taken for granted as quintessentially Western. The Western debt to Islam has been underpaid and sadly un-repaid in some aspects. Such is – as Lyons puts it, “both bad history and bad science.”\textsuperscript{60}

\textsuperscript{59} Campbell D. (1926), \textit{Arabian Medicine}. Paul, Trench, Trubner and Co. Ltd., London.

\textsuperscript{60} Ibid, Lyons.
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