

Review Article

The missing link in the history of urology: A call for more efforts to bridge the gap

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Abstract

With few exceptions, most of the current publications on history of urology still ignore the scientific and technological events of the more than a thousand years between the Greco-Roman times and the modern era. This has broken an important link in the globally continuous line of progress and evolution of world civilizations.

Another aggravation of that missing-link problem in the history of urology, and history of medicine, in general, is the large number of articles based, only, on copying from secondary sources without checking the primary sources (the edited and published original manuscripts). Such articles easily propagate omissions, deficiencies, misunderstandings, distortions, and unfounded claims.

On the other hand, in the Arabic and Islamic world, though many original authentic medical manuscripts written by famous scholars of the Islamic era were authoritatively edited and published during the twentieth century, the number of primary source studies based on them by historians or medical researchers remained few and were limited to individual efforts. Therefore, we focused on this missing-link era and performed several primary source studies of the published medical works of ten scholars who lived and practiced between the ninth and the thirteenth centuries and whose Latinized books were available in Europe as early as the twelfth century with their influence lasting until the eighteenth century. Our results confirm that those scholars of the Islamic era were not mere compilers or sheer transmitters of Greco-Roman medical literature. On the contrary, they critically reviewed the translated heritage of previous civilizations rejecting what is superfluous and accepting only what proves to be true. They added original contributions to the progress of urology and pioneered new fields of medical knowledge and practice such as medical ethics, medical education, medical certification, health education, preventive medicine, hospitals and hospital training, medical-practice quality control, clinical medicine, differential diagnosis, experimental medicine, experimental surgery, beginnings of specialization, pharmacology, use of anesthetics, and many other new discoveries in anatomy, physiology, pathology, therapeutics, surgical instruments, and surgical techniques.

Key Words: History of medicine, history of uro-anatomy, history of uro-physiology

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INTRODUCTION

In agreement with many historians, in the history of science, as in that of any expression of human intelligence and emotion, the past is never past, but continues and is very active in every form and at every manifestation of the present. Therefore, as stated by George Sarton, “we shall not be able to understand our science of to-day, if we do not succeed in penetrating its genesis and its evolution.”^[1] This statement of Sarton can

be further extended to include the following, “and if we do not understand our science of today we will not be able to add to it.”

More than 1000 years ago, Abu Bakr Muhammad ibn Zakariyya Al-Razi, stressed on the same point saying that the scholar who attains complete knowledge of the achievement of those who came before him will be able to add original contributions to it.^[2,3]

Such knowledge of the history of medicine has to be complete and uninterrupted in order to enable a person to make new advances to his contemporary practice.

The history of progress of man to his modern condition is a fascinating story. The interest, as described by John Glub,^[4] is lost, however, when the continuity is concealed by the omission of periods of several centuries and the presentation of bits and pieces of history, gathered from here and there, in accordance with our own emotional prejudices or our national vanity.

The line of evolution of history of medicine is continuous and uninterrupted. It has gone through several phases accumulating contributions of different civilizations, and numerous nations extending across several phases of evolution. Indeed, the medicine of today is a joint global contribution of the whole world.

However, even up till now such an attitude of the universality of science is rare among the scholars of the contemporary Western civilization. As Philip Rehbock put it, “the situation for truly global treatments of the history of science has been especially barren. Ever since Europeans began to write it in the late eighteenth century, the history of science has meant the history of *Western* science. Like the courses for which they have been intended, textbooks in the history of science have largely followed this orientation.”^[5]

This is in marked contrast to the scholars of the Islamic era who respected the universality of knowledge, and paid tributes to all contributors regardless of their color, tongue, religion, or ethnic and national origin. Accordingly in their works, Ibn Al-Nadeem,^[6] Ibn Juljul,^[7] Saed ibn Ahmad ibn Saed Al Andalusi,^[8] Ibn Abi Usaibiaa,^[9] and many other Islamic scholars looked upon the history of the progress of medicine as a global contribution by all nations, a heritage of all mankind.

In his book *Uyoon Al Anbaa Fi Tabaqat Al-Atibbaa*,^[9] Ibn Abi Usaibiaa reviewed the progress of medicine from its beginnings up to his life time, following a thorough, accurate, and unbiased system, covering in a chronological order all civilizations in all parts of the world over all phases of development of medicine.

PHASES OF EVOLUTION OF MEDICAL KNOWLEDGE

The line of evolution and progress of medical knowledge from antiquity up till now followed several phases of successive eras and civilizations. Phase after phase, the progress circles of medical theory and practice continued to expand:

1. Creation of Adam (peace be upon him) and prehistory
2. Ancient civilizations: Assuro-Babylonian, Ancient Egyptian, Indian, Persian, and Far Eastern

3. Greco-Roman and Alexandrian
4. Islamic civilization
5. Western civilization

Where is the missing link?

It is noticeable that, in any contemporary article on urology or any other surgical or medical specialty, the more than 1000 years between Greco-Roman times and the modern era, are commonly overlooked; giving the appearance that during this period nothing worthy of mention happened in medicine. And the same holds true with respect to mass media resources and curricula at schools and colleges. In Europe, this period is usually referred to as the Dark Ages, in which the great era of the Greco-Roman medicine came to an end and no progress in medical science was made until the Renaissance. The state of decline of medicine in Europe during that period is well documented in details by all Western historians. As stated by Cumston, “at the time when the Arabs appeared in the Orient, Greek sciences were in total decadence and the practice of magic reigned supreme.”^[10]

However, in the East, according to Dickinson,^[11] Sarton,^[12] Cumston,^[10] and Margota,^[13] the firm establishment of the Muslim supremacy, coincided with the development of botany, pharmacy, and chemistry – branches of science that the Muslim world is given credit for having established. With the spread of Islamic civilization between the ninth and the sixteenth centuries, the study of medicine and other branches of science revived and acquired a scientific basis.

Nevertheless, with few exceptions, most of the current studies on history of medicine still ignore the scientific and technological events of the period. This has broken an important link in the globally continuous line of progress and evolution of world civilizations. As stated by Al-Hassani,^[14] students, who are trained to think critically, suddenly face a sullen darkness of ten centuries, and then are told things appeared, as if by miracle, all at once in the Renaissance [Figure 1]; this defies logic. Things, as any scientist knows, do not appear by chance. Continuity is basic, especially in the birth and rise of sciences; it is almost so in every other field of study.

In agreement with Al-Hassany,^[14] Ghazanfar,^[15] Dawson,^[16-18] Gilson^[19,20] Haskins,^[21,22] Makdisi,^[23] Cumston,^[10] and Sarton,^[12] this period of ten centuries set aside as ‘vulgar and dark’, and given scant notice in books, curricula, and at universities, is actually the period when the grounds of modern science were mapped out and amplified; the period when the multidimensional development of Arab-Islamic thought, provided the stimulus for developing the human intellect further, and for bringing about the forces of rationalism and humanism that led to the twelfth century Medieval Renaissance,

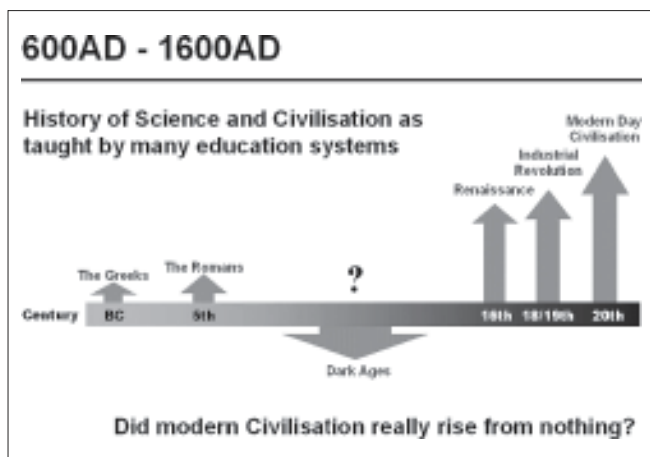


Figure 1: A timeline graph showing the thousand years missing history. (Courtesy of The Foundation for Science, Technology, and Civilization^[14])

the fifteenth century Italian Renaissance, and indeed, for sowing the seeds of European Reformation.

The examples for this literature gap in history of urology during the Islamic era are too many to list. It is quite a common finding in the current references and textbooks. In the West it has inevitably been the tradition to highlight Eurocentric culture, based on endorsing and attributing all, exclusively and solely to the Roman and Greek cultures. This is the case not only with the historiography of medicine and other applied sciences, but also with that of all other venues of human thinking.

VARIOUS MANIFESTATIONS OF THE MISSING-LINK PHENOMENON

1. While Haskins^[21,22] and a few other science historians emphasize ‘continuity and change’ as the hallmark of Middle Ages, one typically observes ‘discontinuity’ and an almost exclusive ‘universalization’ of European Dark Ages in literary history, pertaining to almost all branches of knowledge. Much of the literature reflects painstaking efforts to completely omit, negate, or minimize the significance of Islamic linkages; the Greek heritage is the primary emphasis.
2. The role played by the scholars of the Islamic era is only acknowledged as mere transmitters of the Greek heritage to Middle-Ages Europe, denying them any other achievements, additions, or original contributions. Although few Western historians in the first half of the twentieth century, like Briffault,^[24] Ronan,^[25] and Sarton,^[12] did not approve such posturing; the current literature in history of medicine and history of science is still replete with such mistaken erroneous claims minimizing the role of the whole Islamic era to mere preservation of Greek science.
3. Another manifestation of the missing link is the toleration of the names of only few medieval Islamic scholars, as if they were exceptional individuals who sporadically existed

and as if there were no others like them, in the whole Islamic era. This ignores the fact that a fully developed Islamic civilization involving all aspects of life existed in that era, and led to the flourishing of an original school of medicine which regulated medical education, medical ethics and certification, established hospitals as genuine medical facilities, and provided health services at primary care level in urban, rural, and military settings. There are documented biographies already available for hundreds of famous medical pioneers and professors, indicating that thousands of practitioners existed during that era. Even with the few names like Rhazes and Avicenna commonly quoted in the Western references, because their original works are not checked or studied, nothing much is mentioned about their original contributions.

4. Another form of exclusion of the Islamic era from the history of progress of medicine is plagiarism, publishing the Latinized works of the Islamic scholars under the names of medieval European authors. The famous example for that is Constantinus Africanus, who as stated by Campbell,^[26] suppressed the names of the Arabic authors whose works he produced Latin versions of in the eleventh century. Even more worse is the attribution of the commentaries of the Muslim scholars on the works of Galen, to Galen himself. Same happened with the Muslim’s commentaries and additions to the important work of the first-century eminent herbalist Dioscorides. That is why Cumston^[27] noted that many of the medicinal remedies reported by Dioscorides are of Islamic origin.
5. The missing-link phenomenon is also well represented by the many distortions and misunderstandings copied from one secondary source to another. The examples for those distortions, misunderstandings, and even accusations are too many to list. They are abundant both in reference books, scientific articles, newspapers, information media, and Internet. Most typical is the following quotation currently found on several online encyclopedias: “*Independent investigation in the fields of exact science, anatomy, and physiology was forbidden by the laws of the Koran.*”^[28]

FACTORS THAT AGGRAVATE AND PROPAGATE THIS LITERATURE GAP IN THE HISTORY OF MEDICINE

1. First of all, very little or no studies are based on primary sources. Most of current resources are copied from previously published secondary source articles, without checking the edited and published original manuscripts. Such articles easily propagate omissions, deficiencies, misunderstandings, distortions, and unfounded claims.
2. Furthermore, almost all history of medicine research centers, worldwide, focus only on their local history and

pay little attention, if any, to further studies in the medicine of the Islamic Era.

3. Moreover, with few exceptions, there is no academic interest in the history of medicine in the universities of the Arabic and Islamic world, and in contrast with the whole of the Western world, history of medicine, is not yet included in their undergraduate or postgraduate curricula.
4. Similarly, although many original authentic medical manuscripts written by famous scholars of the Islamic era were authoritatively edited and published during the twentieth century, the number of primary source studies based on them by historians or medical researchers remained very little. This is possibly because of the lack of academic departments or research centers devoted to history of medicine in those countries. Additionally, hundreds of medical manuscripts are waiting for editing and publishing. This represents a great obstacle as no one else cares for this neglected world treasure of knowledge.

AN ONGOING STUDY AIMING AT RESTORING THE MISSING LINK IN THE HISTORY OF UROLOGY

Since the early seventies of last century, we focused on this missing-link era and performed several primary source studies utilizing the already published original medical works of Al-Razi,^[29-32] Ibn Al-Jazzar,^[33] Al-Zahrawi,^[34-37] Ibn Sina,^[38] Ibn Zuhr,^[39] Ibn Rushd,^[40] Muhaddhab Al-Deen Al-Baghdady,^[41] Ibn Al-Bitar,^[42] Ibn El Quff,^[43] and Ibn Al-Nafis,^[44-48] who lived and practiced between the ninth and the thirteenth centuries.

Our study critically evaluated the contributions of this list of Islamic scholars to the progress of, not only urology but also clinical medicine, anatomy, physiology, preventive medicine, medicine, surgery, anesthesiology, antenatal care, pediatrics,

social pediatrics, pharmacy, health education, medical services, hospitals, hospital training, medical education, and medical ethics. Their original works were compared with those of their predecessors and with those who came after them. Their influence on Medieval Europe and European Renaissance was traced, evaluated, and documented. Furthermore, original translations into English were made of relevant excerpts of all the works studied.

The Latinized works of all those Islamic scholars [Figures 2–6] were available in Europe as early as the twelfth century, with their influence lasting until the eighteenth century as documented by Sarton,^[12] Cumston,^[10] Cambell,^[26] Friend,^[49] Margotta,^[13] Radbill,^[50] Garrison,^[51] and by Ulman.^[52]

Up till now, out of this ongoing long-term research project, several original contributions to the progress of urology by those scholars during the Medieval Islamic era have been documented.^[53-61] This includes contributions to the progress of anatomy, physiology, pathology, clinical urology, therapeutics, operative urology, and instrumentation.

Our results also confirm that those scholars of the Islamic era were not mere compilers or sheer transmitters of Greco-Roman medical literature. On the contrary, they critically reviewed the translated heritage of previous civilizations rejecting what is superfluous and accepting only what proves to be true. They added original contributions to the progress of urology and pioneered new fields of medical knowledge and practice such as medical ethics, medical education, medical certification, health education, preventive medicine, hospitals and hospital training, medical-practice quality control, clinical medicine, differential diagnosis, experimental medicine, experimental surgery, beginnings of specialization, pharmacology, and use of anesthetics.^[62-66]



Figure 2: A Latin edition of the Kulleyyat of Ibn Rushd and the Taisir of Ibn Zuhr; the first ever example of joint authorship of a medical textbook. Printed at Venice in the year 1542. (Courtesy of Biblioteca Histórica de la Universidad Complutense de Madrid)



Figure 3: Another edition of the two-volumes-in-one book shown in Figure 2 printed at Venice in 1553. (Courtesy of Biblioteca Histórica de la Universidad Complutense de Madrid)



Figure 4: A Latin edition of Ibn Sina's *Canon of Medicine* printed at Venice in 1520. (Courtesy of Biblioteca Histórica de la Universidad Complutense de Madrid)



Figure 5: Another Latin edition of Ibn Sina's *Canon of Medicine* printed at Rome in 1593. (Courtesy of Biblioteca Histórica de la Universidad Complutense de Madrid)



Figure 6: Another Latin edition of Ibn Sina's *Canon of Medicine* printed at Louvan in 1658. (Courtesy of the Koraes collection, Koraes Central Library of Chios)

MUCH MORE FUTURE EFFORTS ARE NEEDED

However, much more efforts are still needed to fill this wide literature gap and to restore the missing continuity in the line of evolution of urology and all other surgical and medical sciences. Individual efforts, though of help, are not enough. All universities, research centers, heritage-revival centers, museums, and historical libraries in all the Arab and Islamic countries have to shoulder their responsibilities in fulfilling the following badly needed essential measures:

1. Establishing departments for history of medicine in every university.
2. Encouraging academic staff to do primary source research in history of medicine; each in his own specialty. This can be made as one of the promotion requirements, perhaps one paper for each promotion cycle.

3. Including history of medicine courses in undergraduate and postgraduate curricula of the colleges of medicine, pharmacy, and science.
4. Encouraging editing manuscripts in Master, PhD, and Postdoctoral studies.
5. Encouraging publications in history of medicine aimed for both the higher and the general education levels and for public information.

Hopes are high; there is no shortage of resources and there is plenty to be done. Sincere efforts have already started in several parts of the Arab and Islamic countries.

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