

## The Place of Avicenna in the History of Medicine

Jamal Moosavi \*

*Department of History and Civilization of Islamic Nations, University of Tehran, Tehran, Iran*

### Abstract

Avicenna, a Muslim scientist of the tenth and eleventh centuries has an important place in the history of medicine in Iran and the world. Furthermore, the modern medicine is laid upon the infrastructure of his medicine. In this article, the position of Avicenna in the medical history and the scientific influence of his medical works in particular *Al-Canon* in the development of medical literature and medical educational programs have been studied in a historical approach. In reviewing the position of Avicenna in the history of medicine in the Islamic world and the Europe, it was concluded that during 11th to 17th centuries, the scientific and educational activities of medicine in the world were moving on the pivot of Avicenna medicine or was under its intensive influence.

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**\*Corresponding author:**  
Jamal Moosavi, Ph.D.,  
Department of History and  
Civilization of Islamic  
Nations, University of  
Tehran, Tehran, Iran  
**Tel:** +98 21 61117295  
**Fax:** +98 21 88742635  
**E-mail:** jmoosavi@ut.ac.ir  
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### Introduction

Avicenna, an Iranian philosopher and physician of the tenth and eleventh centuries (4<sup>th</sup> and 5<sup>th</sup> century A.H.) is without doubt one of the eminent scientists and talented scholars of his own age.

His scientific fame and influence was not only spread in Iran and the Islamic world, but also extended to the whole world. He is still known as a universal scientist in particular in medicine in the views of the researchers and historians of the science history. The Indexes 1952 and 1980 by UNESCO as the World Year of Avicenna <sup>(1,2)</sup> and holding various international congresses and festivals in different countries in the world during 1937 to 2004 <sup>(3,1,4)</sup> and also publication of about 750

articles and books in different European languages during 1906 to 2006 about him <sup>(5)</sup> and also the formation of the scientific educational network entitled "Avicenna Knowledge Centers" (A.K.C.) over the Europe as well as the World Network of Medical Sciences Data Bank under the name of Avicenna, all confirm the above mentioned claim. Medicine is one of the scientific dimensions of influence by Avicenna which dominated the world of medical science for at least six centuries (11<sup>th</sup> to 17<sup>th</sup> centuries). The Avicenna's medicine-which became the representative of Islamic medicine- is mainly manifested in his important and famous work *al-Canon fi al Tibb* (The Canon on medicine).

Other valuable treatises have also remained from him in different medical subjects such as angelology <sup>(6)</sup>, heart medicines <sup>(7)</sup> and treatment of kidney diseases <sup>(7)</sup>.

Despite the fact that the medicine of Avicenna and in general the Islamic medicine was based on Hippocrates and Galenus, but according to the views of the researchers of history of medicine <sup>(2,8,3)</sup>, Avicenna could over-ride both in theoretical medicine and practical medicine from his predecessors and his book of Canon could overshadow all previous scientific works <sup>(8)</sup>.

Opposite to the views of Ullmann <sup>(9)</sup> who believes the fame of Canon is due to the fame of its author, the majority of the researchers of the history of medicine believe that the prevailing fame of this book in the course of many centuries in the east and the west of the world is due to its comprehensiveness, enlightening and innovations <sup>(8,10,11,12)</sup>.

According to some researches, the views of Avicenna in diagnosis and treatment of some diseases, such as asthma is more precise and effective than the findings of modern medicine <sup>(13)</sup>, or in jaundice, biliary obstruction and liver indigestion, his prescribed medicines are in conformity with the findings of new researches <sup>(14)</sup>.

Due to the important and lofty position of Avicenna and his book of Canon in the history of medicine, this article aims at reviewing the position of Avicenna medicine and his scientific influence in the history of the world medicine including the Islamic world and the western world from the 11<sup>th</sup> to 17<sup>th</sup> centuries.

### Materials and Methods

In order to achieve the objective of the article, i.e. the study of the position of Avicenna medicine in the history of world medicine, at least, two methods can be practiced: The first is the detailed study of the contents of all important medical works which has written after Avicenna, to show the rate of his impact and adaptation of physicians and authors of medical works from the

medical works of Avicenna, in particular his book of Canon.

The second method is to study the historical reports and facts on the position and importance of Avicenna among physicians, medical works and also in the medical education. In the present study, the second method is applied. The main material in this research is the historical data in particulars summaries of works, annotations and teaching of his medical works, in particular his book of Canon in the educational centers and institutions.

Moreover, the findings of case studies by some researchers of the history of medicine have been used (in accordance with the first method). The text of the article is also organized in two parts. The first part is the position of Avicenna medicine in Iran and the Islamic World and the second part is the position of Avicenna medicine in the Europe and the west.

#### *1. The place of Avicenna medicine in Iran and the Muslim world*

In the heritage of Islamic medicine, the names of tens of outstanding physicians and hundreds of medical works are shining, but the name of Avicenna and his book of *Canon* in the Islamic east and the Christian west (See: Part Two) enjoys a specific position. Since the age of Avicenna up to the present, more than 200 commentaries, annotations, abridgements and translations in different languages of his book of Canon have been made <sup>(15)</sup>. These statistics is unprecedented as compared with the works of other Islamic physicians.

Commentaries, annotations, abridgments, translations and frequent manuscripts of Canon indicate that the book was used as a textbook and instructors and students of medical sciences were giving attention to the medical school of Avicenna <sup>(3)</sup>.

The date from which the Canon was taught dates back to the age of Avicenna himself. According to Abu Ubayd al-Juzjāni, a pupil and a close companion of Avicenna, the students used to come together at the resi-

dence of Sheikh al-Raiss (Avicenna's title) every night and studied his book of Canon and Shifā one by one under his instruction <sup>(16)</sup>.

Ibn Abi Usaybaa also in presenting the biography of Ibn Abi Sādiq, one of the students of Avicenna, speaks about the great fame, broad knowledge and multiplicity of the students of Avicenna <sup>(16)</sup>.

In the history of Islamic medical education, the book of Canon has a specific and out-standing position <sup>(17)</sup>. According to Elgood <sup>(8)</sup>, it was the most prevailing text book in the Islamic World.

Qifti <sup>(18)</sup> also reiterates that the students were primarily reading the book of al-Maliki by Ali Ibn Abbass al-Ahawazi, but after the emergence of Canon, the book written by Ahwazi was gradually forgotten <sup>(17)</sup>. Arudhi Samarqandi also in Chahar Maqaleh <sup>(19)</sup> considers Canon as the successor of all medical works and as the best textbook. In Iran and Persian speaking territories, after the compilation of Zakhira Khawrazmshahi, teaching the original text of Canon was diminished.

Elgood states: In the Safavid period, two books were used by the students of medicine: One of them was Canon by Avicenna (usually its annotations and Persian summary) and the other was Zakhira Khawrazmshahi <sup>(20)</sup>. Of course Elgood <sup>(20)</sup> is in the opinion that Zakhira does not have a big difference with Canon and in writing the book of Zakhira, Jurjani was so much under the influence of the book of Canon by Avicenna <sup>(21)</sup>.

In the Indian sub-continent also the main text of medicine was Canon by Avicenna and its summaries such as Al-Mūjaz fi al-Tibb by Ibn al-Nafis from Damascus and Canuncha by Chaghmini <sup>(9, 17)</sup>.

In addition to Iran and Indian sub-continent, in Egypt and Sham (the former Syria), the book of Canon was also received warmly.

Based on the reports of Ibn Abi Usaybaa, it is learned that teaching and interpreting Canon was prevalent in Egypt and Sham. Afzal al-din Alkhonji, Hakim Baha al-din, Fakhr al-din al-Mardini and Hakim Mohazzab

al-din were among the instructors of Canon in Cairo and Damascus <sup>(16)</sup>.

The last mentioned instructor encouraged his students to memorize the first book of Canon (Kitab al-Kolliyyat, The Generalities).

One of his students, Hakim Shams al-Din, memorized the first book of Canon fully and for this reason he was titles as Al-Kolli, attributing to the book of al- Kolyiyat by Avicenna <sup>(16)</sup>.

The story of the scientific trips of Qutb al-din of Shiraz, the scientist of the 7<sup>th</sup> century A.H, to Iran, Iraq, Egypt, Sham and Anatolia (The Minor Asia) in order to compile a book on annotations of Canon known as al-Tohfatal-Saadiah and his access to different explanations about Canon and his meeting with experts of Canon (Canonologist) and the famous instructors of Canon indicate the extraordinary significance of this book and its prevailing influence in the Islamic territories outside Iran <sup>(22)</sup>. It seems that the book of Canon by Avicenna was not received warmly in Andalusia (Spain).

Possibly, the Spanish physicians were intending to make the medical school of Andalusia (Islamic west) independent from the medical school of the Islamic east (Avicenna medicine).

This claim is confirmed by the sharp and frantic reaction of Ibn Zuhr (b.525), when a tradesman from Iraq for the first time brought the book of Canon to Andalusia and offered that to him <sup>(16)</sup>.

Though, Smith <sup>(21)</sup> believes that it needs further study to confirm that whether or not, the medicine of Islamic Spain had a less reliance on the Avicenna medicine. However, the historical documents confirm the superiority of Avicenna medicine over medical school of Andalusia, because in the Translation House of Toledo and universities of the Europe, it was the Canon of Avicenna which absorbed the attention of the western physicians to itself not the works of the Spanish physicians (See: Second Part).

In addition to all these explanations, annotations and summaries it is worthy of

mentioning among others for example a supplement that has written by Ibn Sāātī on the Treatise of Colic by Avicenna <sup>(16)</sup>, critics, in particular a critic by Ibn Nafis from Damascus, on duties of the organs of body (Wazayif al-Aazā) in the book of Canon (which led to the discovery of blood lung circulation) <sup>(9)</sup> and translations (see: second part) which indicate the influence of Avicenna on enrichment of the literature of Islamic medicine. Perhaps, this word by Nasr can be cautiously accepted who said: "The book of Canon by Avicenna is the combination of all medical knowledge of the past and infrastructure of all later publications" <sup>(23, 24)</sup>.

The contextual review of books such as Zakhira Khawrazmshahi in the 12th century <sup>(17,20)</sup> and the Khulāsa al-Tajāribb by Bahā al-Dawla in the 16th century <sup>(8,20)</sup> confirm the mentioned claim <sup>(8,16,21,25)</sup>.

## ***II. The place of Avicenna medicine in the Europe and the West***

Since the second half of the twelfth century when the Canon of Avicenna was translated into the Latin in Toledo in Spain, gradually, the Avicenna medicine dominated the atmosphere of the western medicine. Since then, most of the medical works of Avicenna has been translated into different languages and also hundreds of scientific and research works were written about his medicine <sup>(1)</sup>. The fame and scientific dominancy of Avicenna in the western lands was to the extent that he was named as Emir (Ruler) of the Physicians <sup>(3)</sup> and his book of Canon was termed as the Medicine Bible <sup>(26)</sup>.

For centuries in the west, the standard of ability in medicine was skillfulness in the Avicenna medicine <sup>(9,27)</sup>. Despite the anti-Arabic/ Islamic movement in the beginning of the 16<sup>th</sup> century in some European countries and the hard stances of figures such as Davinchi and Paracelsus against the Avicenna medicine, there was a strong fortress round the Avicenna in the west which was never collapsed <sup>(8)</sup>, and even his influence continued up to first half of the past century in some of the western countries such as Belgium <sup>(2, 8)</sup>.

Ternovsky <sup>(11)</sup> also believes that the medical science of the former Soviet Union in subjects such as physiology, diagnosis of internal diseases, sport and health, pediatrics and pharmacology in the first half of the 20<sup>th</sup> century were following and relying on the traditions of the Avicenna medicine <sup>(10)</sup>. However, the high importance and the immense influence of Avicenna in the history of medicine in the west should be pursued in the position and presence of his medical works in the curriculum of some of the prestigious faculties of the Europe.

There are evidences indicating that book of Canon by Avicenna was noticed up to the early 20<sup>th</sup> century in some of the scientific centers of the west (See: above). But at least for five centuries – since 13<sup>th</sup> to 17<sup>th</sup> – it was one of the textbooks of most of the faculties of medicine in the Europe <sup>(3)</sup>.

The first university in the Europe which put the book of Canon formally as the base of its medical education was the University of Bologna (the oldest European university) in Italy in the 13<sup>th</sup> century <sup>(28)</sup>. Other European universities in which teaching the book of Canon was presented in their educational programs were Leuven in Belgium, Montpellier in France <sup>(3)</sup> and Krakow in Poland <sup>(27)</sup>. When in the 14<sup>th</sup> century, the first faculty of medicine in the Krakow University of Poland was established, the works of Avicenna were the bases of educational materials. It was envisaged in the approved curriculum of the mentioned faculty (approved in 1536) that the students of medicine should study parts of the first and the fourth book of Canon for their theoretical and practical courses <sup>(27)</sup>. Moreover, in (1475), Professor Jelonk also published a book as a guide to teach the first book of Canon, Kitāb al- Kollyāt, <sup>(27)</sup>.

The various translations and frequent prints of the book of Canon in the Europe was the result of the global importance of this book and a response to the needs of the medicine educational centers. The book of Canon was for the first time translated into Latin by Gerard de Cremona – the greatest



translator of the school of Toledo – in the late 12<sup>th</sup> century <sup>(8)</sup>. Later on, in the early 16<sup>th</sup> century, Andréa Alpago, the physician and orientalist, corrected and edited the translation of Gerard <sup>(9)</sup>.

This very Latin translation of Canon and also along with its Arabic text have been printed and published for about 40 times in the Europe including Milan (1473), Padua (1476), Venice (1482, 1507, 1544, 1591, 1708) and Rome (1593) <sup>(1,3,17,29)</sup>. In addition to the Latin language, all or parts of Canon has been translated and published in the European languages such as Russian <sup>(11,4)</sup>, Polish <sup>(27)</sup>, German <sup>(1)</sup> and English <sup>(8)</sup>. The Hebrew translation of Canon was published in Napoli in 1941 <sup>(3)</sup>.

In addition to Canon, other medical works of Avicenna has been received by the translators and physicians of the west. Al-Urjūza fi al-Tibb which is the summary of Avicenna medicine in poetry form (including 1326 couplets) was translated by Gerard de Cremona in Latin and published for six times in the Europe during 15<sup>th</sup> to 17<sup>th</sup> centuries <sup>(3)</sup>. The first print of this translation along with the annotations by Ibn Rushd was published in Venice in 1485 <sup>(3)</sup>. The French translation of the mentioned work also (along with Arabic text and Latin translation) were printed and published in 1956 <sup>(3)</sup>. One of the important works of Avicenna is a book about the treatment of kidney diseases which was translated by Andrea Alpago into Latin and published in Venice in 1547 <sup>(3)</sup>. Also, the Latin translation of heart medicines under the title *Medicamenta Cordialis* was translated by Arnold of Villanova and published in 1482 (3, See also: 8).

## Results

Reviewing all the past discussions, it can be concluded that medicine in the 11<sup>th</sup> to 17<sup>th</sup> centuries both in the Islamic world and the Europe was greatly under the influence of Avicenna medicine with the focus on his great book of Canon. The impact of the Avicenna medicine in the history of medicine has

emerged in different dimensions: Treatment, publications and education. In the present article, the impact of Avicenna in the treatment dimension has not been tackled-with the exception of a short reference-and this issue is in need of an independent research. But in the two other dimensions, it was clearly observed that to a great extent, the medical works of Avicenna were received by the author physicians and medical educational centers. Of course, the two educational and publishing dimensions of Avicenna medicine were interacting with each other. That is to say that teaching the book of Canon (as an example) gave rise to the emergence of various and different publications (including annotations, summaries and translations) about Canon. These various publications in turn, made the thriving state of teaching Canon in the medical centers and among the instructors of medicine.

Based on this, the works which had appeared in the world of Islam (with the exception of Andalusia) relying on the works by Avicenna are innumerable, and the superior position of Canon among the reference medical book in the formal and informal institutions of medical education in India, Iran, Iraq, Egypt, Sham, Rum (the Minor Asia) and the Europe is unique as compared with the works of other Muslim and non-muslim physicians. Finally, it can be claimed that the medical school of Avicenna is the base and mother of the new medicine, as his Canon was the complete set of the medical views before him and the infrastructure of the medical works after him. Of course, as in the past century, some of the researchers of medicine in different countries casted doubt on some of the modern medicine in some cases or reconsidered them based on the diagnosis and prescriptions of Avicenna, it will be appropriate that this view to be followed by the researchers of medicine.

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