
Commented Summary from Current Medical Literature

“Ibn Sina and the Clinical Trial”

Summary: A well-written paper on history of medicine was recently published by Sajadi and co-workers in the "Annals of Internal Medicine".¹ The paper focused on one of the major scientific contributions of the reputable medieval Iranian scholar, Ibn Sina (in Latin Avicenna), to medicine and pharmacology. The authors looked mainly at Ibn Sina's impact on applying logic to drug testing as the basis for further development of modern pharmacologic and clinical trials. Later, in the 18th century, Dr. James Lind (1716 – 1794), the Scottish physician, started formal experimentation with drugs and as Mellinkoff says: "he had conducted the first scientific, controlled experiment in the history of clinical medicine."² In addition, the paper of Sajadi and colleagues also briefly introduces Razi (Rhazes), the Iranian medical scholar of the 10th century AD, as the first known physician who used a control group in a human trial.¹

Comment: The Iranian medical heritage has played a great role that is usually credited and presented by historiographers of medicine. Some important remarks are mentioned here.

The oldest written sources of our knowledge on Iranian medicine are Zoroastrian religious texts. The ancient Persians who lived in a vast territory with great variations in its climate and vegetation soon became familiar with various medicinal plants and their therapeutic effects. Several medicinal herbs are mentioned in Zoroastrian religious texts, i.e., Avesta and Bundahishn.^{3,4} The Jundishapur (Gondishapur) School of Medicine was founded during the Sassanids period (226 – 652 AD). It was one of the earliest well-known medical centers in antiquity and it had a crucial impact upon further development of medicine in the Islamic period.⁵ For instance, Shapur Ibn Sahl (d.869 AD), the Christian Iranian physician, working at Jundishapur School, wrote a book in Arabic entitled Qarabadyn or pharmacopoeia.⁶

In the Islamic era, the so-called "Golden Age of Medicine in Iran" was between 9th and 14th centuries AD.⁷ During that period, the most influential Persian physicians such as Ali Ibn Abbas Majusi who is called Ahvazi or Haly Abbas (d.994 AD) described the pharmacologic properties of simple drugs in 57 chapters of his famed book, Kamil al-Sina al-Tibbya (Kitab al-Maleki or the Royal book, known in West as Liber Regius). He also discussed comprehensively the compound drugs in a separate section of his book, but the entire book is full of interesting prescriptions.⁸ Mohammad Zakariyya-e Razi (251 – 313 AH/865 – 925 AD) and Abu-Ali Hossein Ibn Abdulla better known as Ibn Sina (370 – 428 AH/980 – 1037 AD), were also flourished in the Golden Age of Medicine in Iran.

Razi was a prolific writer and based on the historical bibliographic references, he wrote 273 books and treatises in various fields including medicine, pharmacology, philosophy, cosmology, and theology, even though many of them have been lost.⁹ He was a superb clinician who gave the first accurate description of smallpox and measles. He was also an outstanding researcher who added instrumental contributions to medicine and pharmacy. For instance, Razi suggested using control group for a more precise clinical assessment. According to Hajar, he said: "if you want to study the effect of bloodletting on a condition, divide the patients into two groups, perform bloodletting only on one group, watch both, and compare the results."¹⁰ In the field of pharmacy, he examined proposed drugs on animals in order to evaluate their side effects. Razi wrote several valuable chemical and pharmaceutical treatises on pharmacy and considered it as a separate profession.¹¹ His most celebrated medical book, al-Hawi (the comprehensive book of medicine) in 22 volumes, known in Europe as Liber Continens, remained as the main textbook for European medical students for nearly 700 years.¹² Two parts of al-Hawi (parts five and seven) are devoted to compound drugs and pharmacology. As Modanlou states "indeed pharmacy can trace much of its historical foundations to singular achievements of Razi".¹³

More than 200 books are attributed to Ibn Sina. His works exerted a great influence on thinking in medieval Europe. William Osler (1849 – 1919), the renowned professor of medicine, described Ibn Sina's medical masterpiece, the Qanun fi-Tebb (Canon of Medicine), as "the most famous medical textbook ever written."¹⁴ It consisted of five books including Mofradat or Materia Medica (the second book), which deals with simple

drugs, and Qarabadyn or pharmacopoeia (the fifth book), which is devoted to compound remedies. Ibn Sina is given credit for the first explanation of several drugs and diseases.¹⁵ One good example is the first description of the association between goiter and orbital disease by Ibn Sina about 800 years before Robert Graves (1795 – 1853) and Carl von Basedow (1799 – 1854).¹⁶ As Sabra points out: "the Qanun is a systematic digest of all medical and pharmacologic experiences available to him... it enjoyed great prestige in Europe, where it was used until the second half of the 17th century."¹⁷ Ibn Sina believed that: "an ignorant doctor is the myrmidon of death."¹⁸

Mohammad- Hossein Azizi MD, Academy of Medical Sciences of I.R. Iran, Tehran, Iran
E-mail: Azizi@ams.ac.ir

References

1. Sajadi MM, Mansouri D, Sajadi MRM. Ibn Sina and the clinical trial. *Ann Intern Med.* 2009; **150**: 640 – 644.
2. Mellinkoff SM. James Lind's legacy to clinical medicine. *West J Med.* 1995; **162**: 367 – 369.
3. Davies G. *The Time Chart History of Medicine*. First ed. Hong Kong: Worth Press Limited; 1999: 16.
4. Kodabakhshi S. *Medicine in Ancient Iran*. Tehran: Farwahar Publishing and Cultural Institute; 1997: 61 – 62.
5. Azizi MH. Gondishapur School of Medicine; the most important medical center in antiquity. *Arch Iran Med.* 2008; **1**: 116 – 119.
6. Moein M. *Persian Dictionary*. Vol.5, 9th ed. Tehran: Amir Kabir Publication. 1996: 687.
7. Ibrahimnejad H. *Medicine, Public Health, and Qajar State; Patterns of Modernization in Nineteenth Century Iran*. Leiden-Boston: Brill Publication; 2004: 5.
8. Levey M. *Early Arabic Pharmacology*. Leiden: E.J. Brill; 1973: 108 – 109.
9. Nayernouri T. Zakariya Razi: the Iranian Physician and Scholar. *Arch Iran Med.* 2008; **11**: 229 – 234.
10. Hajar R. Al-Razi; physician for all seasons. *Heart Views.* 2005; **6**: 1 – 5.
11. Al-Ghzal SK. The valuable contributions of Al-Razi (Rhazes) in the history of pharmacy, foundation for science, technology, and civilization; April 2007: 1 – 5. Available from: URL: <http://www.FSTC.co.uk>
12. Sebastian A. *Dates in Medicine, A Chronological Record of Medical Progress Over Three Millennia*. New York, London: The Parthenon Publishing Group; 2000: 5.
13. Modanlou H. A Tribute to Zakariya Razi (865 – 925 AD), an Iranian Pioneer Scholar. *Arch Iran Med.* 2008; **11**: 673 – 677.
14. Modanlou HA. Avicenna (AD 980 – 1037) and the care of the newborn infant and breastfeeding. *J Perinatol.* 2008; **28**: 3 – 6.
15. Nasr SH. *Science and Civilization in Islam*. UK: Islamic Texts Society; 1987: 221.
16. Nabipour I, Burger A, Moharreri MR, Azizi F. Avicenna, the First to Describe Thyroid-related Orbitopathy. *Thyroid.* 2009; **15**: 7 – 8.
17. Sabra AI. Avicenna. In: Fisher WB, ed. *Encyclopedia Americana*. Vol.2, USA: Scholastic Library Publishing Inc.; 2004: 877.
18. Haeger K. *The Illustrated History of Surgery*. London: Harold Starke Publishers; 2000: 77.