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Textual Evidence of the Transfer of Ancient Iranian Medical Knowledge to the Islamic Era through Gondishapur: A Review-Analytical Study

Abstract

Among the sciences of the Islamic era, medicine holds a very prominent and ancient position. Iran, as one of the leading civilizations of the ancient world, played a decisive role in the formation and development of medical science. This contribution can be examined from several perspectives, including the fundamental knowledge of ancient Iranians, which was rooted in their unique worldview, ancient Iranian language, and the cultural and economic factors that led to the establishment of the Gondishapur scientific center during the Sassanid period. The influence of this institution can also be traced into the Islamic era.

Many studies have highlighted Gondishapur's important role in the transfer and development of various sciences, especially different branches of medicine. Part of medical education there was carried out by Iranian scholars in Middle Persian (Pahlavi). Many medical texts were translated and written in this environment and were later transferred to Baghdad and other centers of Islamic civilization, and eventually to the wider world. Iranians played a key role both in establishing and managing this institution and in its scientific progress.

In this review-analytical study, we examined the Avesta and Middle Persian texts from the Sassanid period to the early Islamic period (based on Zoroastrian teachings and the holy Avesta, from about 1200 to 1000 BCE), along with selected Persian medical works from the Islamic period. Common medical concepts were extracted and compared with Greek medical texts and ideas from Greek physicians and philosophers.

The findings show that several concepts found among Iranian Muslim physicians are expressed differently in Greek medical sources, while the same concepts appear in some Middle Persian texts. Despite the dominance of Hellenistic interpretations in previous research, the conceptual contributions of Iranians have not been sufficiently examined. By highlighting these dynamics,

this study offers a clearer theoretical understanding of knowledge transfer as a process of selective continuity and intellectual reconstruction, rather than a simple linear preservation through the Gondishapur scientific institution.

Keywords: Islamic Civilization, Jundi-Shapur (Gondishapur), Iranian Medicine, History of Medicine, Iran.

Introduction

The city and scientific center of Gondishapur was one of the most important centers of knowledge in the late Sassanid period. It played a central role in the formation and continuation of sciences, especially medicine, in the Iranian plateau. From the 3rd to the 7th century CE, this center served not only as a place for medical education and treatment, but also as an institutional space where different scientific traditions — Persian, Greek, Indian, and Syriac — existed together and interacted.

Historical reports show that medicine in Gondishapur was more than practical skills. It was organized as a systematic field based on textual learning and clinical education. The importance of Gondishapur lies in institutionalizing, teaching, and reinterpreting medicine within the Iranian Sassanid framework. Medical families such as the Bukhtishu (769–1058 CE) and physicians like Ibn Masawayh (809–876 CE), who later played key roles in the Islamic world, were products of this scientific environment.

After the Islamic conquest, this institutional tradition continued through translation and medical networks and was transferred to Baghdad and other scientific centers. Therefore, Gondishapur can be seen as a connecting link that made the conceptual and institutional continuity of pre-Islamic medicine possible in Islamic civilization. This is reflected and transmitted in the works of other Iranian physicians of the Islamic period, such as Rabban al-Tabari (9th century), Haly Abbas (10th century), Rhazes (865–925 CE), and Avicenna (980–1037 CE).

Classic studies of the history of medicine in the Islamic world have often followed a Greek-centered narrative. They look for the main origin of Islamic medical knowledge in Hellenistic traditions, especially in the works of Hippocrates and Galen. In this view, the flourishing of medicine in the early Islamic centuries is presented as a direct result of the translation movement in Baghdad. Greek texts were translated into Arabic through Syriac intermediaries, and Muslim physicians are mostly shown as commentators, compilers, or organizers of this inherited knowledge.

As a result, even when Syriac translations or centers like Baghdad are mentioned, they are often described as passive channels for transferring Greek knowledge. Other historical elements, especially Sassanid medicine and native Iranian healing traditions, are pushed to the margins.

The present study aims to examine the formation of medical concepts in the Islamic world by considering the connections between pre-Islamic Iranian medical traditions and early Islamic medicine. It traces the transfer and transformation of some key medical concepts from Middle

Persian and Sassanid contexts, through the institutional environment of Gondishapur, into the works of selected Islamic physicians, using native Iranian intellectual frameworks.

Materials and Methods

This is a qualitative historical-conceptual study based on textual analysis and comparative examination of selected medical writings from pre-Islamic Iran and early Islam. To determine the roots of concepts, their equivalents in Galen's works were also examined.

The main concepts chosen for analysis were: definition of health, disease and treatment, and temperament (*mizaj*). These were selected because they form the theoretical foundations of medical systems and shape diagnostic and therapeutic reasoning. These concepts appear — explicitly or implicitly — in pre-Islamic Iranian sources, Islamic medical writings, and Galenic texts, allowing systematic cross-cultural and chronological comparison.

In addition, more specific topics such as the physiological role of the heart and the origin of the vital spirit were examined for a more precise assessment of intellectual continuity and innovation.

Physicians and texts were selected through purposeful sampling to show the successive stages of Iranian-Islamic medical development from the late Sassanid to the classical Islamic synthesis. Selection was based on three criteria: institutional-intellectual identity, chronological position, and conceptual richness of the works.

The analyzed concepts from pre-Islamic Persian sources were compared with major Islamic medical collections, including *Firdaws al-Hikma* by Rabban al-Tabari, *al-Hawi fi al-Tibb* by Rhazes, *Kamil al-Sina'a al-Tibbiya* (al-Maliki) by al-Ahwazi, and *al-Qanun fi al-Tibb* by Avicenna. Selected Galenic treatises, especially on temperaments, preventive medicine, and treatment methods, were examined for comparative analysis.

After concept extraction, the Iranian origin and intellectual independence of these ideas were evaluated using three complementary criteria: similarity in conceptual definition, textual continuity over time, and connections with environmental conditions, climate, preventive practices, and Iranian cultural lifestyles.

Findings

1. Definition of Health

- In pre-Islamic Iranian medical thought, health is closely linked to bodily balance and proper nutrition. In the third book of *Dinkard*, health is described as a state achieved

through balanced food: “Health of the organs is obtained through moderate consumption of food.”

- Ali ibn Rabban al-Tabari, a 9th-century Iranian physician, summarized the main humoral theory in the introduction to his medical encyclopedia *Firdaws al-Hikma*: “There is no health except through the balance of the four humors.”
- Rhazes, in his *al-Hawi fi al-Tibb*, emphasized the central role of moderation: People who practice moderation in their professional activities are the most reliable and enjoy the best health and rarely get sick.
- Al-Ahwazi (Haly Abbas) defined health as a two-step causal chain: health of the body depends on balance of the humors, and balance of the humors depends on balance of the temperament.
- Avicenna in *al-Qanun fi al-Tibb* defined health as a positive functional capacity: “Health is a faculty or state from which natural actions emerge correctly.”
- Galen viewed health as the preservation of balance in quantity and quality of bodily causes.

2. Definition of Disease

- In pre-Islamic Iranian thought, disease is seen as a disorder caused by improper nutrition and deviation from balance. The *Dinkard* defines disease as disruption of an organ due to unsuitable, excessive, or insufficient food.
- Rabban al-Tabari described disease as something that harms the organs and weakens their function.
- Rhazes linked the severity of disease to the quantity and quality of pathological humors.
- Al-Ahwazi explained that deviation from balance in humors, organs, or functions leads to disease or symptoms.
- Avicenna and Galen also defined disease as the opposite of health — a state resulting from imbalance.

3. Concept of Temperament (Mizaj)

- In pre-Islamic Iranian medical cosmology, the concept that later became “mizaj” (temperament) appears as the manifestation of vital fire active in living beings. According to the *Bundahishn*, Ahura Mazda created five types of fire. One of them

(Vohu-Fryan) is the fire inside humans and animals.

- Rabban al-Tabari, Rhazes, al-Ahwazi, and Avicenna discussed nine temperaments and ways to recognize them through external signs such as skin color, body shape, and touch.
- Galen also explained temperament as resulting from the interaction of opposing qualities.

4. Importance of the Heart

- In pre-Islamic Iranian thought, the heart has a central and vital position. The *Bundahishn* compares the heart to clear water — any corruption in it leads to death.
- Rabban al-Tabari, Rhazes, al-Ahwazi, and Avicenna all emphasized the heart as the source of vital heat and the origin of life force.
- Galen also described the heart as the hottest organ and the source of life.

5. Concept of the Vital Spirit (Ruh Hayawani)

- The vital spirit is a fine, vapor-like substance produced in the heart from vapors of the humors. It is the source of other spirits and carries the vital force to the organs.
- Pre-Islamic texts such as *Zadspram* and *Vendidad* describe digestion, inner fire, the heart, and distribution of vital force in ways functionally similar to the later concept of vital spirit.
- Rabban al-Tabari, Rhazes, al-Ahwazi, and Avicenna explained the vital spirit's production from food, air, and balanced humors, with the lungs playing a key role in refining air.
- Galen also discussed the vital spirit nourished by breathed air.

Discussion

The continuity of Iranian medical concepts in the Islamic period cannot be explained only by textual transfer. Evidence points to a complex process involving clinical practice, institutional continuity, and later theoretical systematization. Gondishapur acted as a central node in this process.

Iranian physicians associated with Gondishapur, especially the Bukhtishu family and Ibn Masawayh, are frequently cited in Islamic medical sources, mostly for clinical rather than purely theoretical contributions. This shows that Gondishapur medicine was largely practical and experience-based.

Regional Iranian identities also played a constructive role. Physicians like Rabban al-Tabari and al-Ahwazi preserved and transmitted inherited Iranian concepts within the Islamic scientific framework.

Conclusion

This study shows that the formation of ancient Iranian medical theories that reached their peak in the Islamic era was not merely the result of transferring Greek texts. It was the outcome of a long continuity of Iranian medical concepts rooted in pre-Islamic thought, preserved through practice, regional traditions, and institutional memory.

While Galenic medicine provided an effective theoretical framework through the translation movement, its selective adaptation highlights the strength of native Iranian epistemologies. Recognizing this layered continuity gives a more accurate understanding of Islamic medicine as a pluralistic intellectual tradition in which Iranian medical thought played a constructive and lasting role.

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