



ORIGINAL ARTICLE

Evolution of Medical Science Across Ancient and Traditional System: A Review

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ABSTRACT

The history of medicine reflects the progressive development of human understanding of health, disease, and healing across civilizations. From prehistoric times, humans relied on empirical observations of medicinal plants, with evidence of herbal use dating back nearly 60,000 years. As early civilizations emerged in Mesopotamia, Egypt, the Indus Valley, China, Greece, and Rome, medical knowledge became more structured through written records and systematic practices combining observation, experience, and spiritual beliefs. In India, the Vedic tradition laid the foundation of medicine through contributions of sages such as Bhardwaj, Atreya, Dhanvantari, and Sushruta, who advanced Ayurveda, surgery, and pharmacology. Similarly, Siddha medicine in South India integrated herbal, mineral, and spiritual approaches. During the medieval period, medical knowledge expanded through interaction among Indian, Arab, Persian, Chinese, and European systems, leading to advances in surgery, pharmacology, hospital care, and medical education. Systems such as Unani medicine emphasized humoral balance, Egyptian medicine combined empirical treatment with ritual practices, and Traditional Chinese medicine focused on holistic balance through concepts such as Yin-Yang, Qi, and the Five Elements. Across civilizations, medicine evolved through a blend of empirical observation and traditional belief systems, with medicinal plants forming the backbone of therapy in most cultures. Ancient texts such as the Ebers Papyrus, Sushruta Samhita, Charaka Samhita, and Canon of Medicine preserved and transmitted essential medical knowledge. Practices such as Panchakarma in Ayurveda, acupuncture in Chinese medicine, and regimental therapies in Unani medicine highlight the diversity of therapeutic approaches aimed at restoring bodily balance and promoting health. In contrast, homeopathy emerged in the 18th century as a distinct alternative system based on the principle of "like cures like" and highly diluted remedies introduced by Samuel Hahnemann. Collectively, these medical traditions demonstrate a gradual transition from spiritual and empirical healing to more organized and systematized medical sciences, forming the historical foundation of modern medicine while continuing to influence contemporary healthcare practices worldwide.

Keywords: Ayurveda, Vedas, Siddha medicine, Indian, Arab, Persian, Chinese, European systems

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INTRODUCTION

During the course of biological evolution, modern humans (*Homo sapiens sapiens*) appeared on Earth about 40,000–30,000 years ago, although their ancestors originated nearly 6–4 million years earlier. Thus, in the scale of anthropogenic evolution, humans occupy a prominent position. For survival and sustenance, three essential prerequisites are required: food, shelter, and protection (Agharkar, 1954). However, medicinal plants have played a central role in human health care for thousands of years. Their history reflects the development of medicine, culture, trade, and science across civilizations (Jain, 1996). Prehistoric humans learned through observation and experience that certain plants could relieve pain, heal wounds, or treat illness (Chopra *et al.*, 1956).

Archaeological evidence suggests that medicinal herbs were used as early as 60,000 years ago by Neanderthals.

DEVELOPMENT OF MEDICINAL SCIENCE AT THE DAWN OF CIVILIZATIONS

Nearly 15,000–12,000 years ago, humans began the domestication of animals and cultivation of plants, including medicinal plants for food and healthcare. Organized civilizations developed around 10,000 years ago, mainly near river basins. Major ancient civilizations included Babylonian (Sumerian), Egyptian, Indus Valley, Maya, Greek, Roman, and Chinese. and Greece contributed valuable medical knowledge through observation, herbal medicine, and written records. Their discoveries formed the basis of modern medical science and continue to influence health care systems today.

Initially, diseases were treated through superstition and religious beliefs. During the Vedic period, priests and religious leaders treated diseases using primitive methods. Gradually, humans began exploring plants, animals, and natural forces for healing purposes and laid the foundation for traditional medicinal systems (Anonymous, 2000).

GREAT ANCIENT RISHIS OF VEDIC PERIOD AND THEIR CONTRIBUTION

The Vedic period of ancient India produced some of the most influential sages (Rishis) in world intellectual and spiritual history. These Rishis were composers of Vedic hymns, philosophers, teachers, scientists of consciousness, and founders of spiritual traditions that shaped Indian civilization for thousands of years.

Maharshi Bhardwaj (1000–500 BC): One of the Saptarishis and contributor to the Rigveda, known for his knowledge of medicinal plants (Agarwal, 2010).

Maharishi Atreya (1000–500 BC): Also known as Punarvasu, physician of King Nagjit and teacher of Agnivesha, Bhela, and others.

Lord Dhanvantari (1000–500 BC): Considered the incarnation of Lord Vishnu and regarded as the father of Ayurveda. Associated with the discovery of antiseptic properties of turmeric (Dash, 2002).

Ashwini Kumar Twins: Divine physicians mentioned in the Rigveda and Mahabharata, known for healing practices (Sharma & Kumar, 2000).

Maharishi Bhela (600–500 BC): Author of *Bhela Samhita*, contributed to early medical science (Balodhi, 1987).

Chakradatta (Chakrapani): Author of *Chakradatta Samgrah*, comprising about 4,800 verses.

PANCHKARMA THERAPY

Panchakarma is a classical detoxification and rejuvenation from the body to maintain the immune system in Ayurveda, and the word comes from Sanskrit pancha meaning five and karma meaning actions or treatments. Thus, panchakarma means five therapeutic procedures. It includes five processes: Vamana, Virechana, Basti, Nasya and Niruhana, (Govindarajan, 2005).

1. Vamana (Therapeutic Emesis):

It controlled vomiting therapy to eliminate excess Kapha dosha and used for Asthma, Chronic cough, Obesity, Skin diseases, Allergies, Procedure etc. After oil massage and steam therapy, herbal medicines are given to induce vomiting and expel toxins from the upper digestive tract.

2. Virechana (Purgation Therapy):

It cleans the excess Pitta dosha through the intestines. Used for acidity, liver disorders, skin diseases, jaundice, chronic headaches etc. In this herbal laxative are administered after preparatory treatments.

3. Basti (Medicated Enema Therapy):

It balances Vata dosha, considered the most important dosha in Ayurveda, and is of two types Oil enema (Anuvasana Basti) and Decoction enema (Niruha Basti). Used for

arthritis, constipation, paralysis, joint pain, neurological disorders etc. it is often called the “half of all Ayurvedic treatment” because of its broad therapeutic effects.

4. Nasya (Nasal Therapy):

It purifies the head and neck region and medicinal oils or herbal extracts are administered through the nose. Used for sinusitis, migraine, hair problems, cervical stiffness, respiratory issues.

5. Raktamokshana (Bloodletting Therapy):

The bloodletting therapy is the removal of impure blood to treat certain diseases. It includes leech therapy, controlled bloodletting techniques. Used for skin disorders, gout, local inflammation etc. However, this therapy is less commonly practiced today and should only be done under qualified medical supervision.

CLASSIFICATION OF PLANTS IN VEDIC LITERATURE

In Rigveda and Atharvaveda, detailed descriptions of plant morphology are found. Plants were grouped according to their structure, life cycle, utility, habitat, and medicinal properties. This knowledge formed the foundation of later Indian traditions such as Ayurveda and agricultural science. Plants were classified into categories such as Vishaka, Manjari, Sthambini, Prastanavati, Ekasringa, Pratanavati, Amsumati, and Kandini (Kirtikar and Basu, 1918).

In *Charak Samhita* and *Sushruta Samhita*, plants were classified as Vanaspati, Vriksha, Virudh, and Oshadhi.

CONTRIBUTIONS OF ANCIENT SCHOLARS

Ancient scholars made remarkable contributions in fields such as philosophy, mathematics, medicine, astronomy, literature, politics, and science. Their discoveries laid the foundation for many branches of modern knowledge and greatly influenced world civilization.

Acharya Chanakya (6th century BC): Author of *Arthashastra*, described medicinal properties of plants such as *Acorus calamus*.

Physician Jeevak: Court physician of King Bimbisara; emphasized that every natural substance has medicinal value.

Maharishi Sushruta: Known as the father of surgery; authored *Sushruta Samhita*, describing 1,120 diseases and 700 medicinal plants (Bhishagrata, 1907).

Maharishi Charak: Father of Indian medicine; revised *Charak Samhita*, describing 341 plants and 8400 medical verses (Sharma, 1981).

Maharishi Nagarjuna (4th century AD): Known as the father of chemotherapy.

Vagbhatta: Author of *Ashtanga Hridayam*.

Maharishi Patanjali: Known for yoga-based treatment.

Madhava (7th century AD): Famous diagnostician; wrote *Madhava Nidana*.

Sharangadhar (14th century AD): Author of *Sharangadhar Samhita*.

Bhav Mishra (1600 AD): Author of *Bhav Prakash*, describing 649 medicinal plants.

SIDDHA SYSTEM OF MEDICINE

The Siddha system is an ancient medical system of South India, especially Tamil Nadu. Its practitioners are known as Siddhars. The word “Siddha” comes from the Tamil word Siddhi, meaning perfection, spiritual accomplishment and attainment of knowledge. The system combines medicine, spiritual discipline, yoga, alchemy and diet and lifestyle regulation. The Siddha tradition is believed to enlightened sages who studied nature, herbs, minerals, human anatomy and spiritual practices. The principal founders of Siddha medicine is agastya.

Agastya: Considered the father of traditional medicine.

Ananda Siddha: Known for work on turmeric and aromatic plants.

MEDIEVAL PERIOD MEDICINE (1000–1500 AD)

Medicine during the medieval period developed through the combined contributions of Indian, Arab, Persian, Chinese, and European scholars. This period witnessed important advances in surgery, pharmacology, hospitals, medical education, anatomy and public health. In India, systems such as Ayurveda, Siddha medicine, and Unani medicine flourished during medieval times. The famous Scholars of medieval period are

1. Avicenna (Ibn Sina): One of the greatest physicians of the medieval world and contribute to write the Canon of Medicine, discussed diagnosis, pharmacology, and contagious diseases. He influenced both Asian and European medicine for centuries.

2. Al-Razi: Pioneer of evidence-based clinical medicine and written important medical encyclopedias, distinguished between smallpox and measles and promote clinical observation and experimentation.

3. Vagbhata: Strong influence of the Church, have monasteries preserved medical knowledge and initially studies anatomy, simplified Ayurvedic knowledge for physicians. Author of the Ashtanga Hridaya, and use combined teachings of Charaka and Sushruta.

Medicine during the medieval period was a bridge between ancient and modern medical science. Scholars from India, Persia, Arabia, and Europe contributed greatly to diagnosis and treatment, surgery, pharmacology, hospital systems and medical education and developed institutions such as University of Bologna and University of Paris. Their efforts preserved ancient knowledge and laid the foundation for the later development of modern medicine.

Some Rulers like Alauddin Khilji and Muhammad bin Tughlaq supported medical discussions. Mughal emperors like Babur and Jahangir documented plants and their uses. However, Hakim Abdul Majid established the Hamdard Foundation (1906), promoting Unani and Ayurvedic medicine.

Unani System of Medicine

Unani medicine is a traditional system of medicine that originated from ancient Greek healing practices and was later developed by Arab and Persian scholars. The term “Unani” is derived from the Arabic word Yunan, meaning Greece.

The foundations of Unani medicine were laid by Hippocrates known as the “Father of Medicine”. It is based on the idea that health depends on the balance of natural forces within the body and emphasizes: natural healing, balance of body humours, diet and lifestyle management, herbal and mineral medicines.

Unani medicine came to India during the Delhi Sultanate Mughal Empire. It received royal patronage and became an important part of Indian traditional healthcare. The fundamental principles of unani medicine are “four elements theory”.

The human body and universe are composed of four elements include Earth with the properties of Cold and dry, water with cold and moist, air with hot and moist and fire with properties such as hot and dry.

The health depends on the balance of four body “humours theory” which includes Blood (Dam) with a nature of hot and moist, Phlegm (Balgham) with cold and moist, yellow bile (Safra) with hot and dry, and black bile (Sauda) with cold and dry nature. The treatment is selected according to the individual’s temperament.

Methods of Treatments were

1. Ilaj-bit-Tadbeer (Regimental Therapy): treatment through physical methods which includes exercise, massage, steam bath, cupping therapy, leech therapy etc.

2. Ilaj-bit-Ghiza (Diet Therapy): Food is considered essential for healing and focus on proper nutrition, dietary balance, and also avoidance of unhealthy foods.

3. Ilaj-bit-Dawa (Drug Therapy): Uses medicines prepared from herbs, minerals, and animal products.

4. Ilaj-bit-Yad (Surgery): Minor surgical procedures when required.

Unani emphasizes prevention through healthy diet, physical activity, good sleep, mental balance, and personal hygiene.

Scholar of Unani systems are:

1. Hippocrates (460–377 BC): Known as the father of medicine; introduced clinical observation (Adam, 1929).

Unani medicine is based on the theory of four humours: blood, phlegm, yellow bile, and black bile.

2. Theophrastus: Father of botany; wrote *Historia Plantarum*.

3. Dioscorides: Author of *De Materia Medica*, describing 600 plants.

4. Avicenna: Author of *Canon of Medicine*.

5. Galen: Developed surgical techniques and instruments.

Unani physicians diagnose diseases through pulse examination, urine examination, stool examination, observation of physical appearance, lifestyle assessment, among them pulse diagnosis is particularly important.

EGYPTIAN SYSTEM OF MEDICINE

The Ancient Egyptian medicine was one of the earliest organized systems of medicine in human civilization. Ancient Egyptians combined practical medical treatment with surgery, herbal medicine, religious beliefs and magical healing practices. Their medical knowledge influenced later Greek, Roman, and Arab medicine.

Ancient Egyptian medicine developed along the Nile River civilization, especially during periods such as old, middle and new kingdom. The medical practice flourished in cities like Memphis, Thebes and Alexandria.

Knowledge about Egyptian medicine comes mainly from ancient medical papyri such as Ebers Papyrus: One of the oldest medical documents includes contains treatments, herbal remedies, and disease descriptions; Edwin Smith Papyrus: focuses on surgery and trauma care and describes injuries, fractures, and surgical methods; Kahun Gynecological Papyrus: deals with gynecology and reproductive health.

Egyptians believed disease could result from natural causes, spirits or evil forces and is anger of gods. Therefore, treatment often included medicines, surgery, prayers and magical spells.

Ancient Egyptians valued bathing, clean clothing, hygiene and sanitation.

Physicians in Egypt were highly respected and often specialized such as Eye doctors, Dentists, Surgeons, Stomach specialists etc.

Egyptians gained anatomical knowledge through mummification and treatment of injuries. They understood some bones, muscles and certain organs. However, they had limited understanding of internal physiology. They were use knives, hooks, forceps and needles as surgical tools.

Plants were widely used in treatments were garlic, honey, aloe vera, juniper and castor oil. In-addition, magic was an important part of healing, which include Amulets, Religious chants and Protective spells.

Imhotep: Founder of Egyptian medicine (Nunn, 2002).

Ebers Papyrus (1550 BC): Contains 800 prescriptions and 700 medicinal plants.

CHINESE SYSTEM OF MEDICINE

Traditional Chinese medicine (TCM) is one of the world's oldest healing systems, developed in ancient China over thousands of years. It is a holistic medical tradition that aims to maintain harmony and balance within the body and between humans and nature. Chinese medicine developed gradually through observation of nature, human health, and disease.

Chinese medicine recognizes five elements and its associated organs such as wood with liver, fire with heart, earth with spleen, metal with lungs, and water with kidneys.

Traditional Chinese medicine includes Herbal medicine, Acupuncture, Massage, Diet therapy, Breathing exercises, Meditation.

1. Acupuncture: involves inserting thin needles into specific points on the body for the purpose of

restore Qi flow, relieve pain and improve body function.

2. Herbal Medicine: Chinese herbal medicine uses were plants, minerals, animal products, common herbs, ginseng, ginger, licorice and cinnamon.

3. Moxibustion: uses heat from burning herbs near acupuncture points to improve circulation, warm the body and stimulate healing.

4. Cupping Therapy: the therapy uses suction cups on the skin to improve blood flow, reduce muscle tension and relieve pain.

5. Tai Chi and Qigong: Tai Chi combines slow movements and breathing and Qigong focuses on controlling Qi through movement and meditation.

Traditional Chinese medicine is widely practiced today in China, East Asia and Many countries worldwide.

Shen Nung: Father of Chinese medicine.

Huang Ti: Compiled *Canon of Medicine*.

Lao Tzu: Introduced Yin-Yang concept of health balance (Chopra, 1982).

HOMEOPATHY

Homeopathy is a 18th-century alternative medical system based on law of similar, highly diluted medicines and individualized treatment approach.

Medicines are prepared through a process called potentization includes repeated dilution and succussion (vigorous shaking) and common sources are plants, minerals and animal substances.

Forms of homeopathic medicines are pellets of small sugar globules, drops of liquid solutions, tablets of compressed forms and ointments for external applications.

Advantages homeopathy that it has minimal side effects, is gentle and safe, treats patient holistically, and focuses on long-term balance.

Some widely known remedies include Arnica (injuries, bruises), Belladonna (fever, inflammation), Nux vomica (digestive issues), and Sulphur (skin problems).

It remains widely used in many countries, though its effectiveness beyond placebo is debated in modern scientific medicine.

Samuel Hahnemann (1755–1843): Founder of homeopathy; author of *Organon of Medicine*.

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