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MEDICAL HUMANITIES

# Ancient Egypt and its sophisticated medicine. Critical review

*El Antiguo Egipto y su medicina sofisticada. Revisión crítica*

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## ABSTRACT

**Introduction:** Ancient Egypt is known as the scalpel of the Nile and arouses great interest not only among anthropologists but also within the medical sciences community, as they were able to understand the health-disease process in a highly sophisticated way for their time. They possessed two

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medical treatises in which they explored the mysteries of the human body, and this science was taught by physicians and priests. They were the first to establish organization by medical specializations, performed cataract surgeries, used prostheses, and even orthopedic screws. In the Spanish language, there are no updated critical reviews on Egyptian medicine. Additionally, the knowledge of ancient civilizations is rarely incorporated into medical training programs, depriving students of a historical and critical view of the development of medicine.

**Objective:** To critically analyze the existing literature on medical practices in Ancient Egypt, as well as knowledge gaps and future research lines that would allow the creation of a solid academic foundation that could be employed in History of Medicine courses or extracurricular programs.

**Methods:** For the development of this research, the materialist dialectical method and the historical-logical method were taken into account for an objective analysis in accordance with the standards of historical research.

**Conclusions:** In Ancient Egypt, advanced knowledge existed in surgery, anatomy, treatment, and disease diagnosis. Their legacy influenced Greco-Roman medicine, guiding Hippocrates and Galen, while their papyrus treatises laid the foundations of many modern techniques.

**Keywords:** Ancient Egypt; Ancient medicine; Egyptian physicians; Medical papyri; Egyptian medical practices

## RESUMEN

**Introducción:** el Antiguo Egipto es conocido como el escalpelo del Nilo y despierta gran interés no solo para los antropólogos sino también para comunidad de ciencias médicas debido a que fueron capaces de comprender el proceso salud enfermedad de una manera muy sofisticada para su época, poseen dos tratados de Medicina donde exploraban los misterios del cuerpo humano y esta ciencia era enseñada por médicos y sacerdotes, fueron los primeros en establecer la organización por especializaciones médicas, hacían cirugías de cataratas, utilizaban prótesis, tornillos ortopédicos. En idioma español no existen revisiones críticas actualizadas sobre la medicina en egipcia. Adicionalmente, el conocimiento de civilizaciones antiguas rara vez se incorpora en programas formativos médicos, privando a los estudiantes de una visión histórica y crítica del desarrollo de la medicina.

**Objetivo:** analizar desde una perspectiva crítica la literatura existente sobre las prácticas médicas en el Antiguo Egipto, así como vacíos de conocimiento y futuras líneas de investigación que permitan crear una base académica sólida que podría emplearse en asignaturas de Historia de la Medicina o cursos extracurriculares.

**Métodos:** para el desarrollo de la presente investigación se tuvo en cuenta el método dialéctico materialista y el método histórico lógico para un análisis objetivo correspondiente con las normas de investigación histórica.

**Conclusiones:** en el Antiguo Egipto tenían conocimientos avanzados en cirugía, anatomía, tratamiento y diagnóstico de enfermedades, su legado influyó en la medicina grecorromana guiando a Hipócrates y Galeno, y sus tratados en papiro sentaron las bases de muchas técnicas modernas.

**Palabras clave:** Antiguo Egipto; Medicina antigua; Médicos egipcios; Papiros médicos; Prácticas médicas egipcias

## INTRODUCTION

Ancient Egypt is known as the Scalpel of the Nile and arouses great interest not only among anthropologists but also among the medical science community because they were able to understand the health-disease process in a very sophisticated way for their time. (1)

This civilization developed along the Nile, the best place for farming because everything around it was devoid of water. Surrounded by deserts, mountains, the Mediterranean Sea, and the Red Sea, it was protected by natural walls, which, along with its philosophy of Maat balance, helped it to remain standing for 3,000 years. This was where a highly advanced society flourished compared to its neighbors, with the largest commercial site of antiquity, Alexandria, and also the Library of Alexandria, which was part of the Musaeum, the first scientific center in the world. (2, 3)

The Egyptians had public health services, men and women were equal before the law and could even divorce, and the state distributed wheat in times of famine. (3) But the most interesting thing is that they were pioneers in science, which has become an immortal legacy to this day and was the basis and source of inspiration for great philosophers of Greece and Rome. In mathematics, they already knew and applied the famous Pythagorean Theorem; in architecture, they stand out with their enormous pyramids. (2 3,4)

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In medicine, they were the first to be organized by medical specialization; they performed cataract surgeries, used prosthetics, orthopedic screws, and possessed the first medical treatise, where they explored the mysteries of the human body. It was taught by doctors and priests called sunu in the (houses of life) attached to temples, where special care was provided to the sick, and doctors were specifically trained through practices that they later practiced publicly. [5, 6]

After a preliminary analysis of scientific production, Table 1 shows that existing critical reviews are scarce and are limited to describing papyri or medical practices without establishing deep connections between their clinical foundations and their legacy. There are no updated critical reviews of Egyptian medicine in Spanish. Additionally, knowledge of ancient civilizations is rarely incorporated into medical training programs, depriving students of a historical and critical view of the development of medicine.

**Table 1.** Summary of the bibliometric analysis performed to justify the scientific problem.

| Search category | % |
|---|---|
| Studies on Egyptian medicine | 100 % |
| Studies on Egyptian Medicine (2020-2025) | 7,54 % |
| Reviews on Egyptian Medicine (2020-2025) | 0,42 % |
| Reviews on Egyptian Medicine (2020-2025) (Spanish language) | 0,08 % |
| Critical Reviews of Egyptian Medicine (2020-2025) (Spanish language) | 0,00 % |

**Source:** own elaboration

Therefore, this review was carried out with the objective of analyzing from a critical perspective the existing literature on medical practices in Ancient Egypt, as well as knowledge gaps and future lines of research that would allow the creation of a solid academic base that could be used in subjects of History of Medicine or extracurricular courses.

## MATERIALS AND METHODS

A narrative and critical review of the literature was conducted based on the SANRA (Scale for the Assessment of Narrative Review Articles) guidelines. The

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dialectical-materialist method and the historical-logical method were used for an objective analysis consistent with the standards of historical research. A structured approach was followed based on the collection, analysis, and synthesis of the most relevant and up-to-date scientific literature, following the steps described below.

## Search Strategy

The bibliographic search was conducted between January and April 2025 in the following databases: PubMed, ScienceDirect, Scopus, Web of Science, SciELO, and the Google Scholar search engine. Search terms were used in Spanish and then the same terms were used in English, combining keywords and Boolean operators to optimize results. Some terms used were: ancient medicine; Ancient Egypt; history of medicine; Egyptian medical practices; medical papyri; history of public health.

Articles published in the last five years (2020-2025) were prioritized to ensure the information was up-to-date. However, key previous studies were included.

## Eligibility Criteria

Original articles and systematic reviews in Spanish and English with relevant evidence and publications in indexed scientific journals with a recognized impact factor were included.

Studies with limited evidence or insufficiently rigorous methodologies were excluded, as were opinion pieces without bibliographic support; and duplicate publications or publications with significant methodological biases.

## Data Analysis and Synthesis

The selected articles were critically analyzed to extract relevant data. Tools such as Mendeley were used to manage references and ensure correct citation under the Vancouver standards, and EndNote was used to eliminate duplicate studies.

## Data Organization

The collected information was translated into Spanish with the support of tools such as Deep Translator, a translator specialized in analyzing complete ideas. The information was structured into thematic sections to facilitate reader understanding.

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### Ethical Considerations

Since this research is a literature review, no experiments were performed or human or animal subjects involved, so ethics committee approval was not required. The copyright of the sources consulted was respected, with each reference properly cited according to Vancouver standards.

## DEVELOPMENT

### Medical texts in Egypt

Medical knowledge in Ancient Egypt is one of the earliest documented expressions of medicine. The primary sources for studying Egyptian medicine are medical papyri and temple inscriptions. These texts show that the Egyptians developed a medical system based on the observation of symptoms, diagnosis, and treatment of wounds and diseases. They are written in hieratic characters on papyrus scrolls. Those by Edwin Smith and Ebers are notable; they are compilations of texts dating back to the 17th century BCE. [6, 7]

The oldest, dating back two millennia BCE, are the Kahum A and B papyri from the Fayum, which are incomplete. The first has 34 sections and deals with gynecological diseases, fertility control methods, and prognoses for children at birth; the second covers veterinary science. The Ebers Papyrus, over 20 meters long, is a kind of medical encyclopedia for students of the time. Egyptian medical papyri are key documents for understanding their medical practices, so the most relevant ones are presented below, along with their descriptions and content. [8, 9]

### Edwin Smith Papyrus

The Edwin Smith Papyrus (1600 BCE) is a surgical treatise that presents clinical problems, trauma cases, fractures, and war wounds in a head-to-toe order, which unfortunately is interrupted when it reaches the spine due to deterioration. In 22 pages, with considerable clarity, a rational and clinical approach with very few magical elements, 48 diagnostic and treatment cases are presented. Archaeological studies indicate that it originates from Thebes, and it is now housed in the New York Academy of Medicine. This treatise's systematic and scientific approach to neuroanatomy is striking, as it includes a description of the brain and establishes the relationship between head trauma and paralysis in different parts of the body. [3; 5; 8]

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Figure 2 shows a fragment of the Edwin Smith Papyrus, written in hieratic script, depicting cases of facial trauma and cranial injuries with glosses in red ink. It reflects the rational Egyptian approach to surgical diagnosis and treatment.

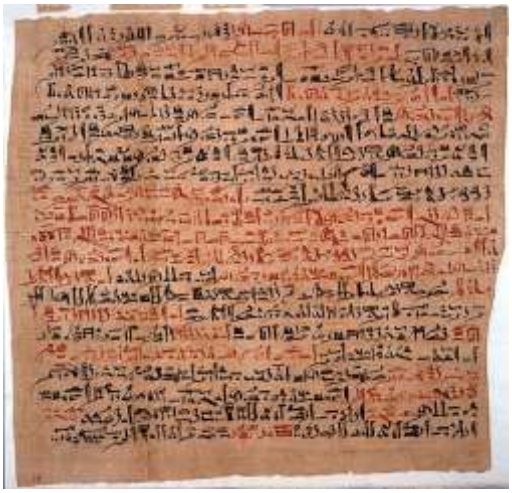

**Figure 2.** Papiro *Edwin Smith* (New *York Academy of Medicine*

**Source:** Dahl J. Edwin Smith Papyrus [Internet]. World History Encyclopedia; 2016 Feb 9 [cited 2025 Jun 8]. Available from: https://www.worldhistory.org/image/4542/edwin-smith-papyrus/

## Ebers Papyrus

In the Ebers papyrus 1550 years BCE. It is the most comprehensive treatise of antiquity. Its contents range from Gynecology and Hygiene, covering approximately 110 pages, with about 700 formulas and treatments for various diseases. It presents diagrams of the anatomy and physiology of the heart and blood vessels, demonstrating knowledge of the movements of the heart, the center of life, describing the 48 blood vessels that supply the entire body, and making reference to almost seven thousand medicinal substances. The Ebers Papyrus constitutes a compilation of the most diverse medical disciplines: internal medicine, ophthalmology, dermatology, orthopedics, and conditions of the head, tongue, teeth, nose, and ears. There is anatomical, pathological, and physiological data with explanations of each disease and its therapy, and descriptions of surgical diseases such as anthrax, tuberculous lymph nodes, fistulas, hemorrhoids, tumors, hernias, hydroceles, and varicose veins. (10, 11, 12)

Figure 3 shows a section of the Papyrus. Ebers, with hieratic script in black and red ink; shows formulas for "opening the sight" applied to eyelids, demonstrating empirical ophthalmic treatment.

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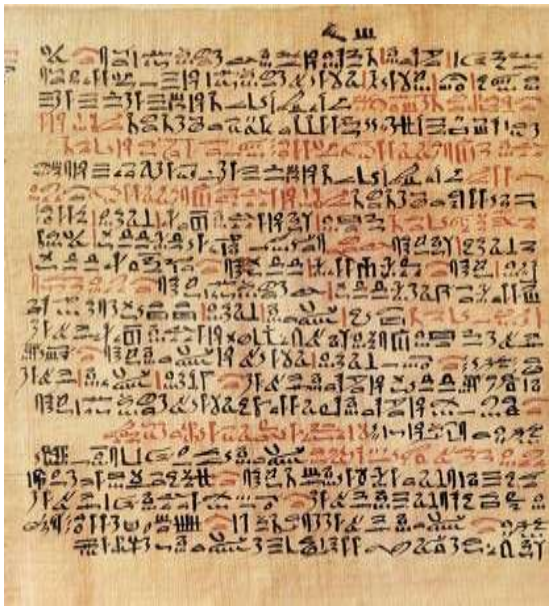

**Figure 3.** Papiro Ebers (Column 61, eye treatment)

**Source:** Science Source. Ancient Egyptian Ebers Medical Papyrus, Column 61 [Internet]. 2013 Mar 7 [cited 2025 Jun 8]. Available from: https://fineartamerica.com/featured/ancient-egyptian-ebers-medical-papyrus-science-source.html

## Diagnosis and Treatments

Egyptian physicians used close observation and questioning to diagnose illnesses. They assessed symptoms, inspected the skin, eyes, and pulse rate (analgesic) associated with the heart. They also used palpation to detect inflammation or fractures. They employed a variety of therapies to carry out their medical treatments. They used a wide variety of medicinal plants, such as garlic (antiseptic), opium (analgesic), aloe (for burns), and myrrh (antiseptic and anti-inflammatory). They used mineral pharmacology, consisting mostly of copper and lead, to treat infections. They were also noted for their magical and religious therapies: incantations were recited and offerings were made to gods such as Sekhmet, patron saint of medicine. Common illnesses, such as digestive disorders, were treated with honey and resin. For constipation, they used castor oil enemas. Respiratory illnesses were treated with herbal fumigations and eucalyptus extracts. [13, 14, 15]

## Surgical Practices

The Edwin Smith Papyrus shows that Egyptian physicians performed advanced procedures to treat wounds and fractures. [11; 12] They possessed surgical instruments and performed procedures. Unlike other peoples of that time,

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they performed delicate and successful operations, as has been demonstrated on many mummies. When they had to operate on someone powerful, endangering their health or life, they first practiced on poor people until they were sufficiently skilled. [5] Higher-ranking patients were anesthetized. To staunch the bleeding, knives were preheated, and the doctor had to be careful when cutting veins. The most common practice against hemorrhage was the use of cautery, a painful and primitive but quite effective procedure. [16, 17, 18]

Metal instruments were disinfected over fire and carefully cleaned in a cloth boiled in soda water. The Edwin Smith Papyrus shows that Egyptian physicians performed advanced procedures to treat wounds and fractures. To reduce fractures, they used reed splints and rubber-impregnated bandages to immobilize the bones. To suture wounds, they applied stitches with linen thread and covered the wound with honey and resins to prevent infection. They also performed more complex procedures such as:

Amputations: Mummies with amputated limbs and prosthetics have been found, suggesting that the Egyptians performed amputations with rudimentary antiseptic measures.

Cranial Surgery or Trepanation: Skulls have been found with evidence of trepanation. Although not performed frequently, some studies suggest that it was done to relieve cerebral hematomas or treat seizures. (See Figure 4)

**Figure 4.** Skull with visible trepanation

**Source:** ColladoVázquez S, Carrillo JM. Cranial trepanation in the Egyptian. Neurol (Engl Ed). [Internet]. 2014 Sep;29(7):433.440. [citado 2025 Feb 6] Disponible en: https://www.elsevier.es/en-revista-neurologia-english-edition-495-articulo-cranial-trepanation-in-the-egyptian-S2173580814000959

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Dentistry and oral surgery: Extraction of decayed teeth to relieve dental pain and jaws have been found with artificial teeth fixed with gold wires, suggesting the existence of a rudimentary practice of orthodontics or dental prosthetics at that time (see figure 5).

**Figure 5.** Dental prostheses with gold bridges

**Source:** The Ancient Egypt and The Need for Dental Care: A HistoricalAppraisal. CRG Journals [Internet]. 2023. [citado 2025 Feb 6] Disponible en: https://crgjournals.com/dentistry/articles/the ancient-egypt-and-the-need-for-dental-care-a-historical-appraisal

Eye Surgery: Egyptian physicians treated cataracts surgically and other eye diseases using rudimentary techniques, such as controlled incisions and drainage of abscesses. (19, 20, 21)

Figure 6 shows an artistic representation that may allude to the couching technique: manually moving the cloudy lens to the back of the eye (vitreous) to improve vision.

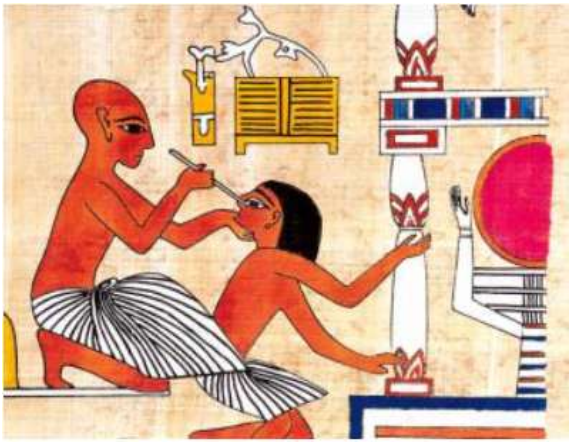

**Figure 6.** Cataract surgery (coaching technique)


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**Source:** The evolution of Cataract surgery; a brief introduction: Academia.edu; [Internet]. 2022. [citado 2025 Feb 6] Disponible en: https://www.academia.edu/11088855/The_evolution_of_Cataract_surgery_a_brief_introduction

### Influence on later medicine

The Greeks, especially Hippocrates, considered the "father of medicine," adopted many Egyptian ideas, such as clinical observation and the importance of hygiene. The Romans, influenced by the Greeks, also incorporated Egyptian medical practices into their public health systems and hospitals. During the Hellenistic period, the city of Alexandria became a major center of medical study, where physicians such as Herophilus and Erasistratus conducted anatomical and physiological studies based on Egyptian knowledge. Their knowledge of medicinal herbs spread, and many of their formulas continued to be used in Islamic and medieval medicine. Hygiene and disease prevention, fundamental to Egyptian medicine, influenced Roman public health, including the creation of baths, sewage systems, and military hospitals. In short, overall, Egyptian medicine laid the foundation for the development of Western medicine, influencing medical theory and practice for centuries. [22, 23, 24].

## CONCLUSIONS

In Ancient Egypt, they had advanced knowledge in surgery, anatomy, and the treatment and diagnosis of diseases. In their hands, the human body was not just flesh and blood but part of a balance that had to be restored with the skillful touch of physicians who blended medicine with religion. Their legacy influenced Greco-Roman medicine, guiding Hippocrates and Galen. Their papyrus treatises laid the foundation for many modern techniques.

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## STATEMENT OF AUTHORSHIP

**AAFA:** project administration, conceptualization, methodology design, writing/original draft, research, formal analysis, review and editing.

**NFR:** project administration, writing/original draft, conceptualization, research, review and editing.

**LCM:** conceptualization, project administration, writing/original draft, research.

**JABC:** conceptualization, project administration, writing/original draft, research.

## CONFLICT OF INTEREST

The authors declare no conflicts of interest.

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