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Avicenna's Contribution to Medical Terminology

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Abstract

This article is investigating works of the medieval scholar Abu Ali Hussein ibn Sina, who was an ancient doctor and well known for his contributions to medical science. Avicenna made many greatest discoveries in the art of healing people. Avicenna's book Canon of Medicine and his contribution to the medical terminology development are described.

Subject Areas

Medicine, Social-Humanitarian Sciences

Keywords

Avicenna, Ontology, Medical Terminology, Philosophy, Treatment

1. Introduction

Medieval scholar Abu Ali Hussein ibn Sina is an ancient doctor, who introduced the main contribution to the treasury of the universal culture by his work in medicine [1]. Name of Ibn-e Sina (AD 980-1037), was Latinized as Avicenna, and best remembered for his contributions to various aspects of medicine [2]. Ibn Sina's earliest education was in Bukhara under the direction of his father, the governor of a village in one of Nuh ibn Mansur's estates [3]. Following a UNESCO resolution, jubilee celebrations of Avicenna (**Figure 1**) are held all over the world.

He had used the following methods to treat spinal traumas and impairments:

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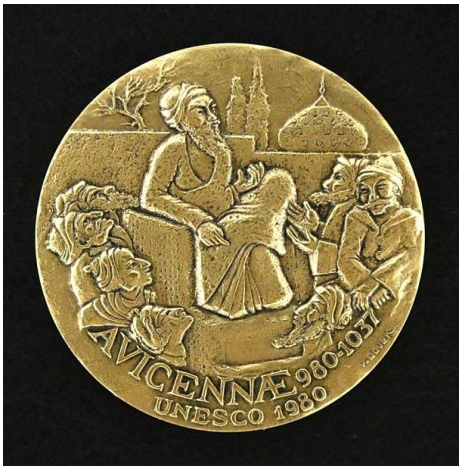

Figure 1. UNESCO minted commemorative medal of the most influential Islam's philosopher-scientist Abu Ali al-Hussain Ibn Abdallah Ibn Sina (reproduced under CC-BY-SA 3.0 license.

food and drug therapy, regimental therapies such as massage, phlebotomy [4], cupping, dry sauna, and surgery [5]. Gerard of Cremona from the Toledo School of Translators known in the 12th-13th centuries had translated Avicenna's work Canon of Medicine, where medical terms such as a *diaphragm*, *orbit*, *pupil* or *sagittal* remain proper in the current official anatomical terminology [6]. Medical terms relating to the particular disorder symptoms were described by Avicenna, for example, symptoms of epilepsy as being a weakness, forgetfulness, depression, nightmare, yellow tongue, tongue paresthesia, anger, and distress [7]. Avicenna's medicine and the general Islamic medicine were based on Hippocrates and Galenus, but according to the views of the researchers of the history of medicine, Avicenna could over-ride both in theoretical medicine and practical medicine, and his book of Canon could overshadow all previous scientific works [8]. In Avicenna's contributions to philosophy about description of the category concept "interruptions in continuity" by Galen, he criticized Galen's dogma about "interruption of continuity" as the sole cause of pain [9].

2. Research Methods

We have used a descriptive method characterized by collecting information, primary analysis, and presentation of data in this review article for explaining major works and contributions made by Avicenna into world medicine. A visual explanation method is applied (**Figure 2**). Literature review and citation methods are used for the explanation of terms found by Avicenna in the healing of a particular disorder.

3. Results and Discussions

Canon is the main medical textbook and reference book in Asia and Europe hundreds of years before the 17th century. Avicenna divided his book Canon of Medicine, into five books as shown in **Figure 2**, where 1) first book describes the

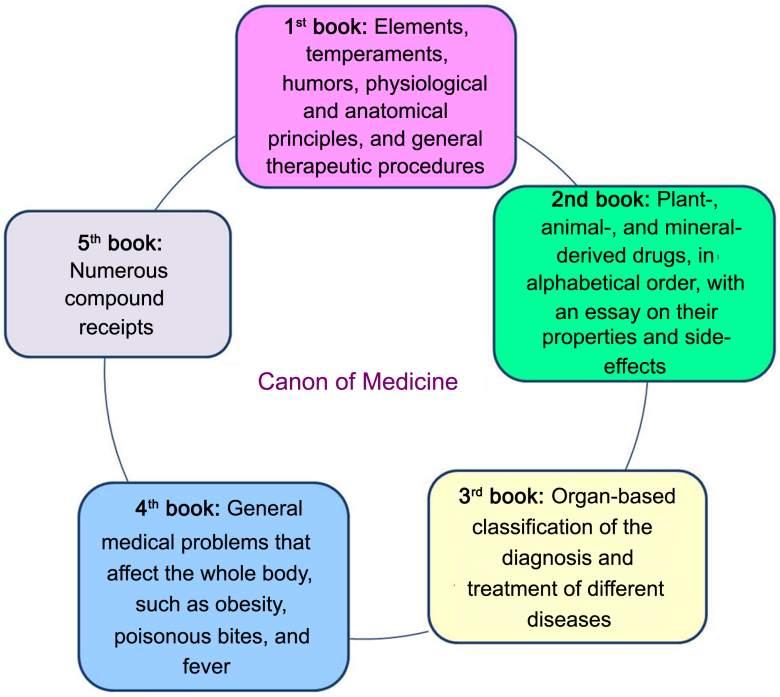

Figure 2. Scheme showing subdivisions of Avicenna's book canon of medicine.

different scope of medicine, elements, temperaments, senses of humor, physiological and anatomical principles, and general therapeutic procedures; 2) the second book explains several plant-, animal-, and mineral-derived drugs, in alphabetical order, with an essay on their properties and side-effects; 3) the third book describes an organ-based classification of the diagnosis and treatment of different diseases; 4) the fourth book defines general medical problems that affect the whole body, such as obesity, poisonous bites, and fever; and 5) the fifth book contains numerous compound receipts [10]. In his fundamental work "The Canon of Medicine" each in its turn is subdivided into chapters and sections systematically, where Avicenna described 700 medicinal substances and these are almost all scientific terms that have survived to this day in Latin spelling and sound.

The pulse section of his book Canon of Medicine includes the following medical terms: definition of the pulse; technique in feeling the pulse; reasons for feeling the pulse at the wrist; the emotional state of the patient and the observer; characteristics of the pulse with detailed explanation; discusses normal from the abnormal pulse; the varieties of irregularity; effect of age and gender on the pulse; effect of emotion and personality; effect of the seasons; effects of food and drink; effect of sleep; the pulse during exercise; the pulse in pregnancy; the pulse in pain; and the pulse in inflammation [11].

It does not matter that they were invented and introduced by Avicenna himself, because he used the scientific terms introduced before him by the successors of the case of Hippocrates and Galen, Abu Sahl Masih, Abu Bakar ar-Razi, Abu Abdallah al-Natili, etc. Most of them were simply given systematically and re-

garding recipes for ridding people of various diseases. About 150 terms described by Avicenna—names of plants used in modern pharmacology, as a science and medical drugs. The most common diseases today are those that kill millions of earthlings—diseases of the circulatory system, including hypertension and stroke cancer, infections, among which there are descriptions and differences of cholera, plague, leprosy—all this firstly made by Ibn Sina. An interesting fact, but it is notable for the fact that in modern Western medicine the "Avicenna method" refers to methods of treating dislocations, burns, minor wounds, bone marrow, and other knowledge that are often forgotten.

According to Avicenna's teaching, exercise could prevent from the "Materialistic diseases" where terms such as "Imtela means Filling", "O'ram means Inflammation", "Sui' a Mizaj means dystemperament", "fever" and "Soul impairment" [12]. Disease prevention is very important, one of the most important elements of which is the observance of personal hygiene rules. His work is called "On Hygiene", thereby representing a term of a rather broad profile, but related to the field of maintaining health, *i.e.* directly related to medicine. His requirement to perform regular ablutions of open parts of the body and to beware of touching objects with a dirty surface is a confirmation of the rule of maintaining a clean human body. By the way, in the common people, one of the most common diseases—hepatitis or Botkin's disease called "dirty hands disease". Also, the rules for the prevention of various diseases include physical education, which helps maintain the physical shape and health of the human body. The scientist spent a lot of energy for a detailed description of the physical exercises that people of all ages and sex can do. Moreover, it was also necessary to comply with proper nutrition and the rules of healthy sleep, which also help prevent disease. A variety of circumstances and people helped to bring to light such a phenomenon, an encyclopedic scientist such as Abu Ali Hussein ibn-Abdallah ibn Ali ibn-Sina (Latinized—Avicenna) (c. 980-1037). Since he wrote in the northeastern dialect of the Persian language, Dari, born near Bukhara and spent most of his life in the wanderings of a philosopher, doctor, poet, musician, mathematician, he known as a brilliant man. After his death, his work in different eras was ambiguous, a hundred years later the religious fanatics in Baghdad put his books on fire, hundreds of years later in Europe, the Canon of Medical translation in Arabic first appeared in 1543.

Considering the main medical works of Ibn Sina, among which the "Canon of Medicine" or "Kitab al-Kanun fi-t-tibb" is a synthesis of the achievements of ancient physicians and Arab doctors. The most interesting observation in the field of studying the causes of diseases is the smallest particles that are, microbes, viruses, etc. The Canon of Medical Science was translated into Latin, contains 5 books, and 2 of them contain a description of 2600 medicines and raw materials, methods for their manufacture and receptions, 1400 of which are of plant origin.

It is interesting to note that Avicenna paid particular attention to the upbringing, feeding, and caring of the child. Even though he officially did not have a family and children, many of his remarks were reasonable, and he always dif-

fered from his predecessors and contemporaries in the subtlety of his pulse, skin, urine and bowel movements, and other manifestations of illness. In the work "Medicines" ("Al-Adviyat al-kalbiya"), he gives a terminology that describes work of heart during blood circulation, describes methods and techniques for diagnosing of heart disorders. Table 1 is showing the selection of medical works names by Avicenna.

These and other works confirm that Avicenna could diagnose and cure 2000 of the currently known 5000 diseases. One of Avicenna's achievements is his description of mental disorders and their causes. As a follower of Aristotle, he approached materialistically the question of mental disorders causes in people.

In the cardiology, he has a special book entitled "Kitab al-Adviyt-al-Qalbiye" which means "The book on drugs for cardiac diseases", also, Avicenna was the first to described medical terms of carotid sinus hypersensitivity, which presents with vasovagal syncope [13]. Several chapters of the 3rd book of the Canon were devoted to a detailed description of gastrointestinal diseases including bowel obstruction, hemorrhoids anal fissures, perianal fistulas, and perianal itching [14]. Recent works showed that some medicinal plants mentioned by Avicenna for treatment of migraine disorders have potentially significant effects like remedies which can stop central and peripheral sensitization [anti-neuroinflammatory agents, decreasing nitric oxide level, cyclooxygenase (COX)-2 inhibitors], as well as serotonergic, neuroprotective agents and analgesics [15].

There are different opinions about the origin of the term "medicine", which came from two words: "madad" and "Sina" which means the medicine is the Sina method. According to the Ibn Sina's text from the historic collection of the Sibbald Library of the Royal College of Physicians of Edinburgh term medicine was defined as following: "Medicine is a science from which one learns the conditions of the human body concerning health and the absence of health, the aim being to protect health when it exists and restore it when absent" [16].

After studying at a Muslim elementary school, by the age of 10, a future scholar Avicenna memorized the entire text of the Holy Quran, as the empirical

Table 1. Selection of medical works names meanings and in Arabic by Avicenna.

Meaning of work by Avicenna	Name of work in the Arabic language
"Removing harm from various manipulations employing corrections and warnings of errors"	"Daf al-mazorr al kullya al al-abdon al insonyabi-tadorikanvohato an-tadbir"
"On the benefits and dangers of wine"	"Siyosat al-badan vafazoyalash-sharobvamanofiikhvazorikh"
"Poem on medicine"	"Urjusafit-tib"
"Treatise on the pulse"	"Risolayinabziya"
"Events for travelers"	"Fi tadbir al-musofirin"
"Treatise on sexual power"	"Risola fil-l-boch"
"Treatise on vinegar-honey"	"Risola fi-s-sikanjubin"
"A treatise on chicory"	"Risola fil-hindabo"

guidelines and principles given in Qur'an and Sunnah are contributing to understanding and evaluation of the heart and vessels [17] [18]. His subsequent activities at the age of seventeen became the healer of the Bukhara emir Nukh ibn Mansur (**Figure 3**). At the same time, there are other points of view about the term "medicine" that it comes from the words arsmedicina [19] (literally "the art of healing") from the verb medeor ("I heal"), from the word "copper" (because all diseases were treated with alloys). There is also the assumption that Avicenna was fascinated by medicine by the famous doctor Abu Sahl Masihi [20], a follower of the Hippocrates and Galen ideas of and the author of the medical book Emiya, or the Book of a Hundred Chapters. With his presentation, the future star of medical science was passionately carried away by reading medical treatises and surpassed many contemporaries for many centuries to come. Among his fifty thousand treatises on philosophy, literature, mathematics, psychology, linguistics, there are professional works on the art of healing people.

To various sources, the number of medical works by Ibn Sina is equal to fifty but reached about thirty, the most famous among them was the "Canon of Medicine". This is a real medical encyclopedia, where the knowledge about the prevention and treatment of various diseases was logically stated. Avicenna defined most common infectious diseases, for example, leprosy, which is a chronic disease, caused by *Mycobacterium leprae,* and followed by skin lesions and peripheral neuropathy [21]; cholera is an acute, secretory diarrhea caused by infection with *Vibrio cholerae* [22]; Plague is a widespread zoonotic disease that caused by *Yersinia pestis*, repressing the iron transport and causing calcium deficiency [23].

Figure 3. Avicenna during his activity (http://de.wikipedia.org/wiki/Bild:Avicenna-Miniatur.jpg).

Avicenna suggested remedies and drugs for upbringing, feeding, and caring of child, for example, "where sneezing is not due to inflammation, powdered seeds of wild basil (*Ocimum basilicum*) are blown into the nose; If the baby keeps on crying for the breast milk, nipple may be coated with a paste made of one gram each of powdered myrrh (*Commiphora myrrha*) and Purslane seeds (*Portulaca oleracea*)" [24].

This work translated into many languages, having a huge impact on the development of medical science in the world [25]. For example, Avicenna wrote that some drugs could have side effects when used together [26]. This is rather a simple postulate sometimes forgotten by narrowly specialized doctors, prescribing medications to the detriment of other organs of a sick person. He wrote a description of many modern medicines of animal, mineral, and vegetable origin. For example, it was suggested in The Canon of Medicine that mercury could be used to treat skin diseases [27], the teachings and paradigms of psychodiagnostics, pulsometry, color therapy, etc. are associated with his name [28].

4. Conclusions

Avicenna indicated environmental conditions and specific disorders of brain regions, showed the relationship between psyche and somatic state of body with examples. Avicenna noted about importance, necessity, and benefits of dieting for the prevention and cure of various diseases. An interesting description of the prevention of eye diseases: the person cannot strain his eyes for a long time, sleep on a full stomach for a long time; prolonged insomnia, gluttony, and drunkenness are harmful. Avicenna mentioned the importance of eyes protection from dust, smoke, cold, physical exercises for healing, to temper with hot and cold water, to massage and strengthen muscles, ligaments, and nerves in his works.

Thus, all of the above contributions of Avicenna to modern medical science, and in particular his terminology can be useful in finding the remedies and medicines for treatment and healing of disorders, taking care of children and patients.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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