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Trailblazers of Medical Knowledge in Ancient India, Who Have Shaped The Medical Science

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ABSTRACT

The ancient sages contributed intricate knowledge of disease's causes and even described the likelihood of hereditary transmission pathways and how to cure the diseases. Ayurveda, 'a natural medicine system' for health care practices through the application of herbs and other materials, originated more than 5,000 years ago in India. The ***study's objective*** *is to examine the contributions of Sages, Acharyas, Maharishis, and Rishis in the medical field of ancient India and their impact on modern medicine.* ***Method:*** *The study is a descriptive type based on the data collected from different secondary sources.* ***Findings:*** *Indian medical knowledge spread throughout the world, and it has remained used as it was in the past or is used in a modified way but remains original in some places of the world.* ***Conclusion:*** *Numerous Baidyas (Doctors) and Surgeons have significantly contributed to India's healthcare systems in ancient India. These outstanding ancient Indian medical researchers have made a lasting impact on a number of scientific fields. Their significant discoveries, ground-breaking theories, and profound insights continue to influence how we develop our healthcare practices.*

I. INTRODUCTION

The Atharvaveda, previously an oral tradition of medical knowledge passed down from generation to generation from antiquity, contains many of the earliest medical writings. The Atharvaveda has sections on topics including longevity, sickness treatment, germ eradication, poison removal methods, wise eating practices, and good living. The hidden lesson in this narrative is the value of proper hygiene, a sensible diet, physical and

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mental health, etc. Amazingly, the ancient sages discussed intricate knowledge of the causes of diseases and even described the possibility of hereditary transmission pathways. The Vedas, the oldest collection of classic literature that remains in existence, are the ancient source of Indian medicinal science known as Ayurveda. The four Vedas, holy texts of knowledge written most probably between 1500 and 800 B.C., are the earliest sources from which we get the idea of Indian philosophy and medicine. The Atharva Veda's Upa-Veda is concerned with Ayurveda. All four of the Vedas contain numerous references to various elements of medicine, according to an examination of the Vedic text. Gods regarded as celestial healers at that period included Rudra, Agni, Varuna, Indra, and Maruthi (Raikwar, 2023).

During his presentation at the 106th Indian Science Congress, 2019, held at Lovely Professional University, Jalandhar, Andhra University Vice-chancellor Prof. G Nageshwar Rao claimed that Western thought revolved around the evolution of man. However, in our science, we thought beyond. "Our sages and saints thought beyond. That is why they proposed Dashavatar, a better theory than the theory of evolution proposed by Charles Darwin." In his presentation, he also mentioned that India knew of guided missiles thousands of years ago and that the Kauravas were born due to stem cell and test tube technologies. "Everybody wonders and nobody believes how Gandhari gave birth to 100 children (Kauravas). People ask if it is humanly possible that a lady can give birth to 100 children in her lifetime. People believed that Kauravas were fictitious characters. But now we believe it when we have test tube babies. Moreover, again Mahabharata says the same thing that 100 eggs are put into 100 earthen pots. It is like a test tube baby, stem cell research." "Stem cell research was done in this country thousands and thousands of years ago. Even today, many people do not understand what stem cell is, but thousands of years ago, we had this technology. Because of this technology, 100 Kauravas were born to one mother a few thousand years ago," he added.[3]

The traditional medical practice known as Ayurveda was created in ancient India. The word "Ayurveda" literally means "the science of longevity and good health." This traditional Indian medical approach teaches not only how to treat illnesses but also how to identify their causes and symptoms. It serves as a manual for both healthy and ill people. It characterizes both health and sickness as an equilibrium between the three doshas. When using herbal remedies to cure a condition, the goal is to attack the ailment's fundamental causes to eradicate them. Health and longevity have been Ayurveda's primary goals. It is the world's most ancient system of medicine. The Atreya Samhita, a book on Ayurveda, is the world's oldest medical text. Sushruta is known as the father of surgery, whereas Charak is credited as the creator of Ayurvedic medicine. The well-known Ayurvedic physicians like Sushruta, Charak, Madhava, Vagbhatta, Jeevak, and many others were the most contributors to medicinal knowledge in ancient India. Do we realize how popular Ayurveda has recently become in the West? This is due to its disadvantages over the contemporary Western-based allopathic medicine method.

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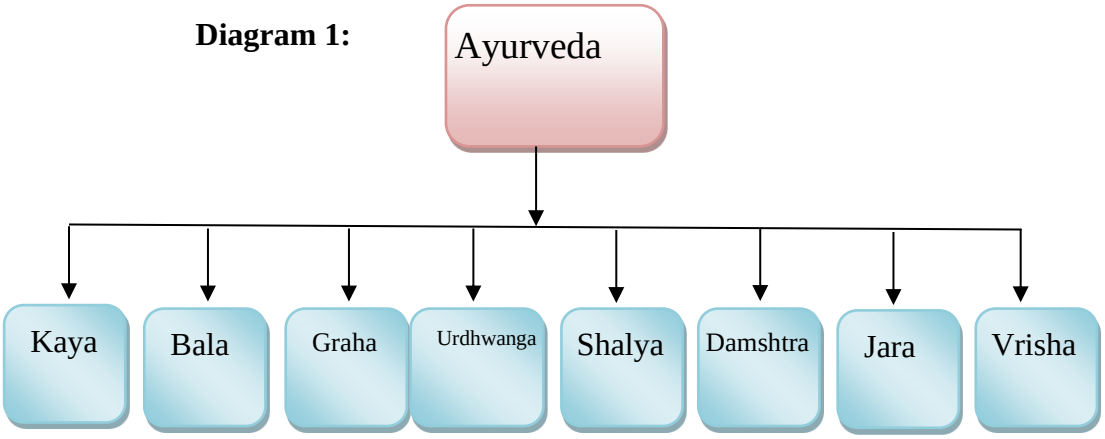
For many of us understand that Ayurveda is limited to herbal remedies and warm oil massages, but it is not true. The Ayurveda's application is everywhere. When modern medicine often fails to cure a complicated disease, Ayurveda starts the action and cures fully from the root. Ayurveda has an astoundingly detailed scope of treatment for total health, including from paediatrics to geriatrics, for rejuvenation, surgery, and even sexual health. Ayurveda is Ashtanga science. Ashta means 8, and anga means branches. Thus, Ashtanga Science means a compilation of 8 branches of Ayurveda. Therefore, Ayurveda has 8 branches, which are compiled in the following Diagram-1

(https://artoflivingretreatcenter.org/blog/the-eight-branches-of-ayurveda/).

Diagram 1:



Kaya Chikitsa - treatment through general medicine, (ii) Bala Chikitsa - treatment of child and woman care (paediatrics), (iii) Graha Chikitsa - treatment of Demonology/Psychology/idiopathic diseases (diseases whose causes cannot be precisely tracked, infectious diseases are considered under this branch, bacteria, virus etc. can be clubbed under the term graham), (iv) Urdhwanga Chikitsa - treatment of ear, nose, throat, head related diseases, (v) Shalya Chikitsa – treatment through surgery, (vi) Damshtra Chikitsa - treatment of toxicology and forensic medicine, (vii) Jara Chikitsa – treatment of Geriatrics/Rejuvenation/immunology and (viii) Vrisha Chikitsa– treatment of aphrodisiacs. Ayurveda, a health care system of India has been developed step by step by many ayurvedic vaidays (physicians). There are many famous ayurvedic physicians. We discuss here in brief about them.

Objectives: The study seeks to explore some trailblazers of medical knowledge in ancient India with their contribution.

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II. METHOD AND MATERIALS

Through a variety of resources, including online search engines, libraries, and direct conversations with many subject-matter experts, we have looked for relevant secondary research on the medical practices of ancient India. Thus, the study is descriptive type by nature based basically on data from secondary sources. The data of secondary sources are collected from books, journals, Hindu scriptures, etc., e-libraries, e-books, e-articles, and different website-based information, reference materials, Wikipedia, etc. A few recurring motifs from these readings have been revealed, and they are discussed in the following sections.

Sources of Data: We have searched the Buddhist writings, Chanakya's Arthashastra, stories of Greek travelers to India, Charaka Samhita, Sushruta Samhita, and Vagbhatta, Epics, Jatakas, other travel accounts, and different works of literature from the first century of the Christian era are also studied.

Analysis: The different reading materials are collected from different sources and it has been scrutinized, verified, and arranged systematically under appropriate heading to hold the requisite presentation and thereby conclusion.

III. RESULTS AND DISCUSSION: Chronological Development of Medical Education

Healthcare Practices in Vedic Age (5000–600 BCE): The traditional Indian medicine and healthcare system is said over 5000 years old, which makes it the oldest medicine system known to mankind. It is deeply rooted in Hindu mythology. Beginning about 1500 BCE, there is concrete evidence regarding India's medical procedures, medications, and practitioners. The four Vedas, along with their Brahmanas, Aranyakas, and Upanishads, provide us with insights into the medical practices of the Vedic era (1500–600 BCE). All items' spirits were regarded by the Vedic people as deities. Religious activities were used to treat illnesses because they were thought to be caused by divine forces. The priests' job was to please the Gods by performing rituals and other religious exercises. Through the use of hymns (mantras) and worship for therapeutic purposes, the Priests possessed magical control over the Gods. The primary component of the medical supplies used by the Vedic healers was made of plants and their products. In the modern era, these customs are still prevalent in our tribal society. The four Vedas—Rigveda, Samaveda, Yajurveda, and Atharvaveda—described various maladies, their causes, cures, and methods for making medicine from various materials, herbs, plants, and its different parts, etc. For the treatment of ailments, they used water, soil, rock salt from diverse sources, and powder made of various metals. Sages and schools of herbalists were credited with discovering, documenting, and disseminating the use of specific plants, which were frequently given their names after the herbalists. Through sacrifice and chants, the Vedic priest would spiritualise the medication. A few

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meals had been included in the medications. The medications were administered at predetermined locations and times. The Vedic priest would use a variety of methods, some of which were fairly creative, to exorcise or propitiate the demonic cause of disease (Saini, 2016).

Emergence of Ayurveda (600–200 BCE): The Atharva Veda, which relied on the medicinal properties of plants and other substances, is where Ayurveda got its start. In the Vedic era, medical observation and theorising served as the basis for the more methodical and logical medical system in Indian medicine known as Ayurveda (the Science of Life), which emerged around 600 BCE. The Ayurvedic doctor was known as a vaidya, who was deeply knowledgeable. Buddhist writings, Chanakya's Arthashastra, and stories of Greek travellers to India during the time (600–200 BCE) all provide evidence for the medicinal concepts and practices that prevailed in India during that time. Most historians cite the Charaka Samhita and Sushruta Samhita, two early Christian-era Sanskrit medical works when discussing Ayurvedic thought. Another significant Ayurvedic literature dates to the seventh century CE and was written by Vagbhatta. On the other hand, Ayurveda grew into a fully-fledged magical-religious and empirically based system of health and disease. In order for diagnosis and therapy to be founded on reliable observations and reasoning, the Charaka aimed to educate the physician on the fundamental principles of logic. Ayurveda is believed to be an example of intellectual coherence since Vaidyas consistently applied its principles to the biological world of people, animals, and plants. The composition of the individual was given special consideration by Vaidyas who saw each person as unique. The three humeral theories of vata, pitta, and kapha, which were considered the heart of Ayurveda, were used to explain all physiological and physical processes as well as the pathological causes of disease. Through talks and deliberations among the sages of the time in symposia and conferences, Ayurveda developed into a scientific subject. In order to help standardize the Ayurvedic theory, conversations, and idea exchange among the vaidyas were really highly encouraged. The vaidya took particular note of the patient's natural physiology, mental condition, age, dietary preferences, and the season of illness.

By the second century BCE, the study of healthcare practices as a separate subject had emerged. After completing the fundamentals of schooling, medical study was pursued. The teachers provided medical training at their Ashrama (ancient school). The majority of medical education in ancient India was delivered in this Ashram, which was run by Gurus/Acharyas (teachers). Some universities, like Taxilla (Takshashila), Nalanda, and Banaras were widely known for their medical education programmes. The internal qualities and physical characteristics of a candidate for admission as a medical student are thoroughly described in Sushruta Samhita. This admissions procedure was extremely rigorous. A medical student was expected to be truthful, modest, patient, kind, and hardworking. His memory and academic performance were also given importance. Both practical and theoretical skills were valued equally. They learned a lot by observing their teacher healing the sick and helping him to make pharmaceuticals, which allowed them to gain practical skills. The University of Taxila was renowned for

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the study of medicine, and those who received their education there were highly regarded. Surgery and medicine were seen as separate disciplines. There was also a procedure for training, evaluating, and registering. The Sushruta Samhita states that one medical student can be allowed to begin practicing medicine after thoroughly studying the subject, passing the necessary tests, and obtaining the permission of the governing authority. As part of their surgical training, Sushruta instructed Ayurvedic students to conduct surgical procedures on vegetables, fruits, and animal body parts as part of their surgical training. He advised cautious surgical operation on various organs of a dead person to gain anatomical knowledge. He counseled close examination of a dead body for anatomical understanding. The vein of a dead animal was used to teach the art of vena section. The technique for tying up an ear lobe, known as a karna sandhi, was demonstrated in practice using a softly severed muscle, skin, or stem. The student was expected to work on his knowledge, enunciation, and conversational skills after completing medical school.

The patient was thoroughly interrogated by the vaidya (Physician) so that he could perform a complete physical examination employing all five senses (Pancendriya Pariksa) and validate his diagnosis through experimentation. The vaidya's drug expertise was heavily emphasized in ancient writings. A vaidya was required to consider both the drug's beneficial and harmful effects when prescribing it. The vaidya prepared his own drugs by gathering the herbs and other materials at fortunate periods, spiritualizing them through hymns (mantra) recitation before using them. The treatment of illness as well as disease prevention and health promotion were equally important to vaidyas. To maintain a balanced state of health, they recommended a daily meal and a seasonal nutritious diet. For a healthy life, they promoted a balance of the body and mind as well as a harmonious relationship between man and nature. Vaidyas used spiritual therapy to treat illnesses with unknown causes. The patient's activities in his prior deliveries were used to explain them. The treatment included praying, making gifts to God, reciting mantras, and wearing amulets and gemstones to satisfy them. Similar to that, mental illness was treated with psychic therapy. At his discretion, the vaidya recommended a number of techniques to keep the mind clear of negative ideas.

According to Charaka, different castes had distinct motivations for studying medicine. The Charaka Samhita claims that students from certain backgrounds were given priority admission. This admissions procedure was extremely rigorous. A medical student was expected to be sincere, modest, patient, kind, and diligent. He was not allowed to have a thing for ladies, gamble, or go hunting. They also placed value on their academic performance and recall. An official ceremony was used to admit the medical student. He was required to adhere to a stringent code of behavior. Students studying Ayurveda came from many social levels and castes. According to the Jivaka mythology, medical training took a lengthy 7 years to complete. Ayurvedic studies included a significant amount of practical training. Charaka advised how to acquire knowledge of herbal classification (Saini, 2016, Choudhary, 2023).

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SOME PROMINENT MEDICAL PRACTITIONERS AND THEIR CONTRIBUTIONS

Acharya Atreya (6th Century BCE)

Atreya Sampradaya (Atreya's Teaching Method): Atreya was a well-known Ayurvedic teacher who had a strong background in the field of Kaya Chikitsa, or general Ayurvedic medicine. Among the Ashtanga Ayurveda (8 branches of Ayurveda), it was one of the most well-known and frequently practiced. The teachings of Atreya emphasized the value of identifying the underlying causes of illnesses rather than only treating their symptoms. Atreya's teaching methodology was somewhat different from teacher-disciple dialogues. It was closer to the Brahmanical technique of discussion and older in its original form.

Contributions

1. The ideas of Tridosha (Three circumstances: Vata, Pitta, and Kapha) and Pancha Mahabhutas [Five Fundamental Elements of Nature: earth (Prithvi), water (Jala), heat (Agni or Tej), air (Vayu) and space (Aakash)] were thoroughly described by Atreya. A therapeutic approach was suggested using the Rasa hypothesis and its effects on metabolic and physiological processes. In-depth scientific explanations were given for the concepts of Rasa (taste of medicine), Guna (quality of medication), Veerya (potency of medicine), Vipaka (post-digestive effect of the medicine), and Prabhava (gross effect of the medicine).

2. He made important advances in the identification and management of mental disease. Previously, it was thought that supernatural or heavenly forces were to blame for this ailment.

3. He was the first to link an erratic diet and routine to mental illness. It was a medical discovery that changed the course of history.

4. Atreya was credited with developing the widely used Pushyanuga Churna, which was/is used to cure a variety of illnesses. This robust mixture of herbs has been known for its remarkable therapeutic qualities.

Jivaka (5th Century BCE)

Jivaka was a renowned physician (healer) who treated Lord Gautam Buddha, and numerous kings, including the king of Magadha, all the monks, and members of every social class.

Treatment: Jivaka used to make Ashtavarga, an ayurvedic mixture of eight particular herbs, which helped to hydrate body tissues and improve overall toughness and stamina. Jivaka was a well-known herb for treating illnesses such as gastrointestinal problems and raising immunity in humans. Jivaka taught people how to prevent damaging oxidative skin damage as well as how to manage diarrhoea. Jivaka also prevented early indications of skin aging and reduced joint discomfort in addition to possessing

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antioxidant and anti-aging qualities. Jivaka's efficacy against bronchitis was similarly encouraging. Jivaka demonstrated how to fortify the body's total immune system in order to protect it against microbial illnesses. He taught how to eliminate germs frequently from the intestines that cause diarrhea and other intestinal infections. He was blessed with powerful anti-bacterial and anti-diarrheal capabilities. His formulations substantially reduced the frequency of stools in addition to removing pollutants from the body. Many patients traveled great distances to see Jivaka since he was the most well-known and reputable gynecologist and surgeon of that time.

Additionally, it was stated that Jivaka had the ability to view the body using a magic tree stick, much like an X-ray or ultrasound. Jivaka achieved great success and popularity by treating a wide range of medical conditions, including infectious diseases, bodily maladies, pediatrics, etc. He became well-known throughout the world for his activities as the greatest surgeon and doctor. He treated male sexual disorders, relieved pain and inflammation, thwarted respiratory issues, augmented skin health, and staved off infections. Jivaka also invented Thai massage therapy, which is still used today. His entire medical knowledge was preserved in the form of Jivaka sutras. His writings are still kept in the old Chinese Buddhist libraries. He is referred to be the "father of doctors" in Thailand. In Thailand, he is also referred to as Shivago Kompara.

Sushruta (6th Century BCE):

Sushruta contributed a lot in the field of medicine, which is still remarkable. His Sushruta Samhita is a general idea of surgical procedures, even Plastic Surgery, Ophthalmic Surgery, Medicine, Dentistry, Obstetrics, Gynecology, and Orthopedics. Sushruta's use of anesthesia, surgical instruments, and emphasis on surgical ethics showcased his superior understanding of medical science. He is a physician in ancient India known today as the "Father of Indian Medicine", the "Father of Surgery" and also the "Father of Plastic Surgery" for developing surgical procedures. He was taught at the University of Benares (alternatively Kasi or Varanasi) on the bank of the Ganges River.

Main Contributions:

Sushruta described various reconstructive procedures for different types in the human body. His works were compiled in Sushruta Samhita, a prominent treatise. He described 60 types of upkarana (instruments) for the treatment of wounds, 121 surgical instruments, and 300 surgical procedures, and did classification of human surgeries into eight categories. Sushruta made significant contributions to surgery. He used a dead body as a study tool for human anatomy. Over 1120 illnesses are recorded in Sushruta Samhita including 26 different types of fevers, 8 different types of jaundice, and 20 different types of urinary problems. Over 760 different plants are described. Every portion, including the roots, bark, juice, resin, and flowers, was used for medicine. Even

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today, a common household cures some diseases through homemade medicine or the use of raw herbs, which include ginger, cardamom, cinnamon, sesame, and pepper.

Surgical Teaching: For the surgical training of his students, the process of choosing and keeping a dead body for the sake of its in-depth study has also been mentioned in the Sushruta Samhita. In general, the body of an elderly man or someone who passed away from a serious illness was not taken into consideration for studies. The body had to be meticulously cleaned before being stored in tree bark. It was then carefully hidden in an area in the river and maintained in a cage. The river's movement softened it there. It was taken out of the river after seven days. A brush consisting of grass roots, hair, and bamboo was then used to clean it. Every internal or external body part was then readily visible after this was completed. The fields of Rhinoplasty (Plastic Surgery) and Ophthalmic Surgery (cataract removal) were those in which Sushruta made the most significant contributions.

Cutting one's nose and/or ears was a typical punishment in those days. The recovery of these or other limbs was a wonderful blessing done by him. These procedures were precisely described step-by-step in the Sushruta Samhita. Surprisingly, Sushruta's procedures resembled those used by contemporary physicians performing plastic surgery. The Sushruta Samhita also listed 101 surgical equipment and their descriptions. A few major procedures conducted were the removal of the fetus from the womb, the repair of the damaged rectum, the removal of a bladder stone, etc.

Maharishi Charaka (2nd Century BCE):

Charaka is thought to have flourished sometime between the 2nd century BCE and the 2nd century CE. The Charaka Samhita as it exists today is thought to have arisen in the 1st century CE. The date of Birth and death of Maharishi Charaka was not known exactly. Indian medicine has a story in the extensive past. The ancient texts known as the Vedas, particularly the metrical sections of the Atharvaveda, which may have been written in the second millennium BCE, contain its earliest concepts. The Charaka Samhita and Sushruta Samhita, two medical treatises attributed to Maharishi Charaka and Sushruta respectively, marked the start of the golden age of Indian medicine, which lasted from 600 BCE to roughly 1000 CE. The foundation of all later works on Indian medicine was laid by these classics. A book on herbal medicine called "Charaka Samhita" was written by Maharishi Charaka. Charaka served as King Kanishka's personal physician. Hence, the period of Charaka may be considered as the second century BCE. He served as the Raj Vaidya (Royal Physician) at the court of Kanishka. His outstanding actions in medicine were the Charaka Samhita, where he provided numerous descriptions of illnesses and ways for determining both their causes and procedures for treatment. He was considered the first to discuss the immune system, metabolism, and digestion. He was also familiar with genetics' foundations. Ayurveda, the conventional form of Indian medicine, was practiced by Maharishi Charaka. It is supposed that Charaka flourished between the second century BCE and the second century CE. The ancient medicinal science of India known as Ayurveda is described in

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the Charaka Samhita, which is the oldest and most reliable treatise on medicine. In his book 'Charaka Samhita' he mentioned about 340 plant types and about 200 animal types.

It provides useful information on the geographical, sociological, and economic situations of India in addition to information on medical disorders and their treatments. Famous Indian doctor Maharishi Charaka is revered as the "Father of Medicine." His work, the Charaka Samhita, is a thorough compilation of medical knowledge that covers subjects including Anatomy, Physiology, and the treatment of diseases. Charaka had a profound understanding of the value of holistic treatment methods and preventive medicine, which he shared with the world. He is regarded as the founder of the prehistoric Indian medical sciences.

The early Indian medical field is credited to Charak. His Charak Samhita is a noteworthy medical text. It includes descriptions of numerous disorders as well as instructions on how to determine their causes and cure them. He was considered as the first to discuss immunity, metabolism, and digestion as being crucial to health and medical science. Instead of just treating the symptoms of illness, he placed more emphasis on eradicating the root of the problem. Charak was also familiar with the basics of genetics. It is amazing that India had such sophisticated medical knowledge many years ago. Charaka Samhita was originally composed by Agnivesa in 1000 BCE and revised by Acharya Charaka in the 3rd or 2nd century CE. Some portions of Charaka Samhita were lost or left unfinished. Dridhabala in the 4th century CE redacted 41 chapters of Charaka Samhita, which were lost or left unfinished by Charaka. He redacted seventeen chapters in Chikitsa Sthana, and the entire Kalpa Sthana (12 chapters) and Siddhi Sthana (12 chapters) of the treatise of Charaka Samhita. Dridhabala, son of Kapilabala was a native of Panchanadapura. Panchanadapura means the place where the five streams are conjoined. Now it is known as 'Panjnor', situated about seven miles north of Srinagar in Kashmir[18 & 19].

Sushruta Samhita Vs. Charaka Samhita

In contrast to Sushruta Samhita's 300 bones in 23 categories, Charaka Samhita counted 360 human body bones in 30 categories. He said that, despite there being substantial variances between the categories and the bones that were counted, Atreya's conception of the skeleton as found in the Bheda Samhita concurred with Charaka and numbered 360 bones of the human body in 30 categories. According to Hoernle, the Satapatha Brahmana's mention of 360 bricks in a Vedic altar in the 10th section of the 5th chapter relates to the bones of the human body. Hoernle remarked that Sushruta's description of bones, marrow, and fat, which were omitted in Atreya's and Charaka's descriptions of human skeletons, had a significant influence on Yajnavalkya, who was aware of both the descriptions of human skeletons proposed by Sushruta as well as those by Atreya and Charaka. Sushruta, according to Hoernle, was aware of Atreya's classification of bones, but he introduced the variations from Atreya's technique of exposition.

1. Seeing the topics covered by the ancient Sushruta Samhita text is educational. With 120 chapters divided into 5 divisions, Sushruta's Sushruta Samhita

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covers a wide range of topics including anatomy, physiology, pathology, pharmacology, diagnostic medicine, pediatrics, obstetrics, gynecology, and geriatrics. Sushruta covered 1120 ailments and provided a detailed description of human anatomy. Along with 121 surgical implements, Sushruta also described surgical techniques such as rhinoplasty, cataract surgery, suturing, scraping, puncturing, bloodletting, probing, extraction, and incision and excision. Copper surgical implements from this early era have been found in Taxila.

2. Maharishi Patanjali (2nd BCE)

Maharishi Patanjali, also called Gonardiya, or Gonikaputra, flourished between the 2nd century BCE and the 4th century CE. Little is known about Maharishi Patanjali's life narrative. It is rife with myths and inconsistencies. When it comes to Maharishi Patanjali's birth, there is no solid evidence. The estimated dates for Patanjali's birth and death are differentiated by a hundred years. Most academics place his existence between the second and third centuries BCE, however, some maintain that he existed between the fourth and seventh centuries BCE. Maharishi Patanjali is thought to have resided in Nepal, Kashmir, and Sri Lanka, as well as in many locations throughout India. Maharishi Patanjali, a respected sage, created the practice of yoga as a type of physical exercise to combat illness in ancient India. Indian guru Patanjali is thought to have written several Sanskrit texts, including the most prominent of which is the *Yoga Sutras*, a classical yoga text dating to 200 BCE – 200 CE.

3. Yoga and Patanjali

The Yoga Sutras were the product of Patanjali, a famous spiritual teacher of antiquity, who purified the essence of the spiritual path. He outlined the stages that each soul must take to return to the infinite spirit. Many rishis used to live for thousands of years and were extremely skilled with yoga power. They had the capability of living or dying according to their wish. Patanjali is one of these strong Rishis, and according to the Puranas, their lives are believed to be for many ages. The Yoga Sutras, a fundamental treatise on the theory and practice of yoga, were written by the ancient sage Patanjali. The methodical explanations of the eight limbs of yoga by Patanjali, coupled with his recommendations for mental and spiritual growth, have had a significant influence on the understanding and practice of yoga around the world. The Sanskrit word Yoktra is where the word yoga is derived from. It is an associated branch of Ayurveda. As the author of 195 Yoga Sutras, he is referred to as the "Father of Yoga." He was the pioneer in methodically presenting yoga as a great science. Aum is used as a representation of God in Patanjali's Yoga Sutras. A cosmic sound, according to him, is Aum. Pranaayaama makes use of A-U-M. Naval breathing is denoted by "A," thoracic breathing by "U," and upper body breathing by "M." It is pronounced as OM in its capacity as a *Beejaakshara* (the origin of all sounds). He was a writer who wrote about the traditional Indian medical system known as Ayurveda. He also studied medicine. As shown by Patanjali's Yoga Sutras (fountainhead), which place an emphasis on moral behavior, good deed, asana (yoga posture), pranayama (breath control), and meditation

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in order to achieve physical and mental well-being as well as Samadhi (intense concentration used to reach higher states of consciousness). Medical knowledge coexisted peacefully with philosophical ideas. The Atharvaveda, which considers illness to be either the outcome of an unwholesome lifestyle or the fruit of deeds committed (Karmaphala), is where Ayurveda's roots may be found. (Raikwar, 2023). Yoga is a branch of Ayurveda that was created in ancient India to treat physical and mental ailments without the use of drugs. The Sanskrit literary word, Yoktra is where the word "yoga" originates. "Joining the mind to the inner self after detaching it from the outer subject of senses" is its literal meaning. Its roots are in the Vedas, just like all other sciences.

It also defines Chitta, or the process of a person's consciousness dissolving their ideas, emotions, wants, and coming to a state of harmony. Yoga combines mental and physical practice. It unleashes the power that elevates and cleanses awareness so that it might experience heavenly realization. Yoga combines mental and physical practice. Hatha yoga is the name for physical yoga. In general, it tries to cure an illness and get the body back to normal. Mental yoga is raja yoga. Its objective is to achieve physical, mental, emotional, and spiritual equilibrium in order to realize oneself and be freed from captivity. Yoga was transmitted orally from one sage to another. Patanjali deserves praise for organizing this important science. In addition to the Yoga Sutras, Patanjali also contributed to Panini's grammar, known as the Mahabharata, and produced a book on medicine.

4. Acharya Vagbhata (4th or 6th century CE)

We know of Charaka and Sushruta largely because of their seminal contributions towards general medicine (Kaya Chikitsa) as well as surgical medicine (Shalya Tantra). But, there is a third scholar who perhaps holds even greater significance as he performed the enviable task of synthesizing different Ayurvedic theories and explaining them with remarkable poetic proficiency. He was Acharya Vagbhata. He was one of the greatest medical scientists and one of the most influential writers of Ayurveda in ancient India. It is known from the different literatures, he lived somewhere around the 6th century CE. In his Ashtanga Sangraha, he mentioned his birthplace somewhere in Sind, near today's Karachi of Pakistan. Vagbhata was the son of Simhagupta. His grandfather too was known by the same name i.e., Vagbhata. His father and grandfather, both were great Ayurvedic scholars. He derived most of his Ayurvedic knowledge from his father and his grandfather. He is said to be the disciple of Avalokita - the chief monk of Mahayana Buddhism. He was famous for having presented Ayurveda and its essence in an easy simple, comprehensive, and understandable way.

Though it is known not much about him, he was most likely to have been a Vedic, as he made a reference to Lord Shiva in his writings, and his sons, grandsons, and disciples were all Vedic. It is also believed that he was taught Ayurvedic medicine by his father and a Veda monk, named Avalokita. Again, in Ashtanga Sangraha we see a lot of references relating to Hinduism and Buddhism. This suggests that Vagbhata was born

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in a Hindu Brahmin family and in the later part of his life he adopted Buddhism. Based on various evidences, Vagbhata's date can be estimated to have been between the 4th and 5th century CE. But his work was based on and is influenced by Charaka Samhita, Sushruta Samhita, etc. This gives a clear idea that Vagbhata lived much later than Charaka and Sushruta. Charaka was a medical genius while Vagbhaṭa was considered to be "The Trinity" of Ayurvedic knowledge.

Contributions: He was the author of two great treatises on Ayurveda namely 'Ashtanga Sangraha' and 'Ashtanga Hridaya'. It is mentioned that Charaka Samhita, Sushruta Samhita, and Ashtanga Sangraha are known as 'Brihat Trayees', meaning three great treatises or 'greatest trio' of Ayurveda. Maharishi Vagbhata the greatest physician in India as in his time he tried to advance India in the medical field through his book. Both books were originally written in Sanskrit with 7000 sutras. According to Vagbhaṭa, 85% of diseases could be cured without a physician; only 15% of diseases required a physician. Ashtanga Sangraha and Ashtanga Hridaya have glimpses of the influence of Charaka Samhita and Sushruta Samhita. Vagbhata was famous for having presented Ayurveda in an easy, simple, comprehensive, and understandable way. The language used by Vagbhata was worth appreciating. It is reachable to almost everyone who reads it of course with a good knowledge of Sanskrit. The translated versions can be understood by common people also. He mentioned frequent references to the earlier classical works of the Charaka Samhita and the Sushruta Samhita in both of his books. He placed his two books chronologically after the publication of the Charaka Samhita and the Sushruta Samhita. He was praised equally for the refined style in which he presented his works.

Ashtanga Hridaya is a landmark in the history of Ayurvedic Medicine. When there was a real need to record the previous work of Ayurveda in a comprehensive manner, Acharya Vagbhata compiled this great treatise, which occupied a place in the greater triad along with the sages Charaka and Sushruta. His work was a bridge between the traditions of the ancient seers and mere Ayurvedic physicians of the Middle Ages. He was the cream of the vast ocean-like literature of Ayurveda. It contains the gist of the teachings of ancient sages belonging to all schools of Ayurveda in minimum words comprehensively. Just by studying Ashtanga Hrdaya alone, one may be acquainted with the concepts and practices of all the schools without hunting through the dense growth of literature. This is an informative and fundamental work useful for teachers, students, and researchers. He was also famous for his contribution to the field of Physiology which forms the base of Ayurvedic Diagnostics. He other than compiling the earlier ancient material added also his practical research and shared his thoughts. He was the first to mention the names of all the five types of Vata, Pitta, and Kapha.

5. **Ashtanga Sangraha:** The author of Ashtanga Sangraha was Acharya Vagbhata. Charaka Samhita and Sushruta Samhita are self-authentic works that were independently created. They are called Akara Grantha. Ashtanga Sangraha on the other hand was not self-authentic, it was written by quoting the references from the other

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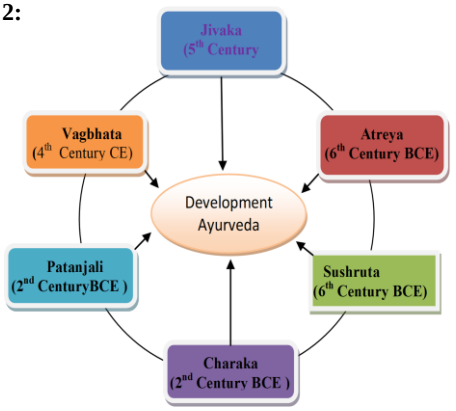
texts, and moreover, it has references from Charaka Samhita and Sushruta Samhita. Therefore, it is called Prakarana Grantha. Ashtanga Sangraha means compilation of 8 branches of Ayurveda. But Acharya Vagbhata gave importance to all the 8 branches of Ayurveda and composed Ashtanga Sangraha. In this treatise, we can know about all the 8 branches. He has covered everything in brief and in a sweet and understandable manner, thus making Ayurveda learning an easy process. Vagbhata will always be praised in the world of medicine (Ayurveda) for having presented Ayurveda in a simple, yet precise way.

6. **Ashtanga Hridaya:** Ashtanga Hridaya was also written by Acharya Vagbhata.

Sections and specialities of Ashtanga Hridaya: Ashtanga Hridaya is a more simplified version of Ashtanga Sangraha. It comprises 6 sections and 120 chapters. Ashtanga Hridaya was translated into almost all Indian languages. It was also translated into Arabic during the reign of Harun-al-Rashid (773-808 AD), into the Tibetan language during the reign of King Krhrison-dehu (755-797 AD), and into German by Luise Hilgenberg and Willibald Kirfel in 1941 (https://www.easyayurveda.com/2016/08/21/acharya-vagbhata/).

Diagram 2:



IV. FINDINGS

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Development of Ayurveda: The Ayurvedic Science, what is now at present, is the fruit of chronological development from the Vedic period by the contributions of so many ancient great vaidyas (Physicians), sages, and Acharyas (Professors). The development of Ayurveda is depicted in Diagram 2 indicating that how the Ayurvedic system of health care practices has developed gradually through the contributions of so many Ayurvedic practitioners and maharishis step by step from the long past i.e., immemorial time. Among the renowned physicians of ancient India, Charaka was a great royal vaidya at the court of Kaniska, who wrote Charaka Samhita. Dridhbala was a Kashmiri physician, who later revised and redacted the Charaka Samhita. Another great physician, Sushruta composed Sushruta Samhita. Nagarjuna who revised and enlarged it again got a new shape. Vagbhata who wrote the Ashtanga Sangraha and Ashtanga Hridaya threw a new light on the system. Atreya, a great vaidya at his time, wrote Atreya Samhita which inspired the later vaidyas. Several Buddhist monks were Ayurvedic pioneers. Perhaps, the most renowned physician of ancient India was Jivaka, to whom numerous stories and legends are attributed. Buddhist references placed him in the retinue of Gautama Buddha. Therefore, Buddhist writings, Chanakya's Arthashastra, stories of Greek travelers to India at the time (600–200 BCE), Charaka Samhita, Sushruta Samhita, Atreya Samhita, Ashtanga Sangraha, Ashtanga Hridaya, and many other literatures have developed the Ayurveda gradually from time to time and made it enriched.

In ancient India, it is in the Atharvaveda, where the first description of scrofula (The bacteria that cause tuberculosis) was given. The Sushruta Samhita, written around 600 BCE, recommends this disease that Tuberculosis (TB) be treated with breast milk, various meats, alcohol, and rest. The Yajurveda advises the affected individuals to move to higher altitudes. The first written documents describing TB, dating back to 3300 and 2300 years ago were found in India (Brown, 1941). In India, tuberculosis is a long-standing illness. There are references to consumption in Indian literature dating back to approximately 1500 BCE. The illness is linked to extreme exhaustion, anxiety, hunger, pregnancy, and chest wounds (https://tbfacts.org/tb-india-history/). When the people in the world did not hear the names of diseases, India already started the treatment of these diseases. Again even today, we come to know about many unknown health ailments written in Hindu scriptures that the world is still unknown. The many books written by the sages, Acharya and Rishis are still valuable assets of India. Ancient India was a home of medical knowledge, which needed immediate attention. Patanjali's Yoga Sutras evolved in the 2nd century BCE and are being practiced throughout the world today to maintain health, lead disease and tension-free life, and life longevity. When the diseases are not cured by modern medicines in the world but cured under the Indian Ayurvedic medicines.

V. REASONS FOR DOWNFALL OF MEDICAL KNOWLEDGE

India definitely was the center of knowledge in all respects in ancient times. India could reach the highest position of development in the world, but she could not because of the following reasons:

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(1) Our country was captured, and centers of knowledge such as universities were destroyed by fire, looted, and ruled without the motive of knowledge development by the many Muslim invaders for 1045 years from 712 CE to 1757 CE.

(2) After that what remained in India a little more, was again looted, captured, and ruled by the British for 190 years from 1757 CE to 1947 CE. Both the Muslims and the British carried wealth and knowledge from India. They tried to destroy our culture. The British tried to convert us in such a way that we remained Indian physically but British mentally. They destroyed our *Gurukul* system of education.

(3) After independence the subsequent Governments of independent India except the NDA Governments did not try to recover the ancient knowledge of India.

(4) During the Muslim reign, many Muslim rulers either destroyed the Hindu temples or converted the temples into mosques. Thus they continued to suppress Hinduism. The educationalinstitutions suffered as most of them were connected to the temples. In 1669, Mughal Emperor Aurangzeb destroyed the Kashi temple and built the Gyanvapi Mosque in its place.

VI. SUGGESTIONS TO RECOVER THE ANCIENT KNOWLEDGE

What should we do now immediately? We should do the following:

1. A separate institution should be set up to search for ancient knowledge in every state of India under the control of the principal institution at Centre. The main function of this institution is to search, utilise, and preserve ancient knowledge with the help of Sanskrit language specialists as most of the scripts were written in the Sanskrit language in our ancient scriptures like Purana, Vedas, Upanishad, Ramayana, Mahabharata, and other epics. The subject specialist would try to explain the Sutra (Law) and its application. Our glory is hidden in our past, which might be brought into light with some innovative ideas to restore our lost position.

2. Ancient texts on Ayurveda have made significant contributions to the fields of surgery and medicine. Many Acharyas, physicians, and sages of ancient India discussed all branches of medical science including even neonatology (infant care, breastfeeding, child protection, neonatal nurseries, etc). A lot of hidden facts need to be investigated further in addition to the research that has already been done. We are astonished to know that a lot of scientific medical knowledge got its origin in ancient India thousands of years ago as seen in Ayurveda, Yoga, etc. How much more developed our ancient India was! Ancient knowledge should be included as a part of education in an authentic way not like the history of India from school to university so that the student can know the real picture of ancient India. There are so many clues of new inventions mentioned in our Hindu scriptures. Many of these are proved true and some inventions have been possible on the basis of directions cited there such as Albert Einstein's Time Dilation Theory. It is mentioned in Bhagavad Gita. Many weapons

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applied in the battle of Mahabharata still remained to be invented like the Agni weapon (Atom bomb) with its counteracting water weapon, etc. Stopping time, forwarding and backwarding of time, etc. still remain untouched. Students should be encouraged to research in ancient knowledge. Scientists are encouraged to invent on the basis of ancient knowledge already mentioned in Bhagavad Gita.

VII. TRANSMISSION OF MEDICAL KNOWLEDGE FROM INDIA

We may find some evidences of ancient Greek travelers like Pythagoras and Democritus who came to India in search of knowledge, stayed in India traveling different places until they became enriched with knowledge and returned with full of Indian knowledge. Afterwards, Indian knowledge including medicine had an impact on their communities. The Indian Ayurvedic dosha model is comparable in other places. It is not surprising that knowledge from India spread to these places given the active presence of Buddhist missionaries in the area and the vast Seleucid Kingdom that stretched from India to Turkey.

As depicted in the Periplus of the Erythraean Sea by William H Schoff, the Roman trade revealed that Indian medicines, herbs, and spices were als o part of the trade network. In fact, Pedanius Dioscorides, "the father of pharmacognosy", was a Greek physician, pharmacologist, botanist, and author of De Materia Medica —a 5-volume Greek encyclopedia about herbal medicine and related medicinal substances, that extensively featured Indian herbs (Raikwar, 2023).

Since the beginning of the Islamic era in 712 CE in India, several Indian medical writings have been translated into Persian and Arabic and introduced into several places from Sindh to Southern Spain. Through translation schools in Sicily of Italy, and Toledo of Spain, where Arabic books were translated into Latin between the 10th and 13th centuries, this medical knowledge eventually made its way to Western Europe via Arabian countries with India had a sound trade relation from the very beginning. After that time, European colonialists received direct information from India, which permitted medieval Europe to increase its reliance on Indian medical knowledge [Contributions of ancient Indian knowledge to modern medicine and cardiology]. Indian Medical Knowledge had been transmitted from India through Greek and other travelers, Buddhist missionaries, traders, and European colonialists and translated into many languages directly or indirectly from one language to other languages. Thus, Indian medical knowledge spread throughout the world, and Indian medical idea has remained and been used as it was in the past or used in a modified way but remained their original in some places of the world.

VIII. CONCLUSION

Medical education was intensive and produced physicians who were as skilled in medicine and surgery as in public speaking and communication. The history of healthcare systems in ancient India confirms rich contributions over the ages by several physicians and surgeons (Vaidyas). These outstanding ancient Indian medical scientists

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have had a lasting impact on a number of scientific fields. Their groundbreaking findings, ground-breaking theories, and profound insights have shaped our understanding of medicine to this day. We owe these visionaries a debt of appreciation for pushing the envelope of knowledge and laying the groundwork for future scientific discoveries pertaining to medical procedures. Their intellectual strength must serve as an inspiration to us as we work to build on their outstanding accomplishments. It is a fact that historical lessons have not been valued globally, and new models are being examined without knowing the wisdom and scientific advancements of our forefathers. Each individual's prior learning should be taken into consideration while creating future competency framework models. Therefore, from the history of Indian health care systems, we have to know how much richness of medical knowledge ancient India had and how the contributions of several physicians and surgeons were followed throughout the world till today. The gravity and significance of the text of Vagbhata is the cause behind its inclusion in Brihat-trayi of Ayurveda. It shows that Vagbhata was endowed with a great vision. He has contributed a lot in the area of fundamental doctrines, description of medicines, surgical practices, and description of systematic required knowledge of Ashtanga-Ayurveda through his text. Thus, he was really a great legendary visionary of Ayurveda. We should admit their contributions and respect their heart and soul.

N.B.: The time period of the above vaidyas is not known exactly, but it is mentioned on the basis of different kinds of controversial literature.

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