



Review Article

## A pragmatic comprehension of scientific and classical aspects of *Rachana Sharir*—A systematic review

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### ABSTRACT

*Ayurveda*, a flourishing traditional medical system renowned for its extensive knowledge, includes *Rachana Sharir* as a fundamental subject. *Rachana Sharir Vigyan* explores the anatomical aspects (*Rachna*) of the human body. The immense knowledge of the ancient wisdom of *Ayurveda* is not comprehensively described yet. The *Samhitas* and *Vedas* of Indian literature by different *acharyas* elaborate on how the human body evolved from a combination of *Panchamahabhutas* and *Atma (Chetana)*. This review aims to elucidate the classical aspects of *Rachana Sharir* from *Ayurvedic* texts and establish correlations with contemporary scientific knowledge. Classical texts such as the *Samhitas* authored by various *acharyas* were systematically reviewed to gather insights into the origin, anatomical positions, numerical compositions, and classifications of human body parts, organs, tissues, and systems. The review reveals detailed principles and concepts from *Ayurvedic* literature, emphasizing contributions from Acharya Sushruta in the *Sharir Sthana*, particularly his meticulous descriptions of cadaveric studies and preservation techniques. Classical books explained the origins of human bodily parts, their anatomical placements, organs, tissues, systems, and more. These fall under human anatomy (*Rachana Sharir*), and this article explains its classical aspect with scientific and modern science linkages. In *Sharir Sthana*, one of *Ayurveda*'s main principles, cadaveric research and preservation, is beautifully illustrated by Acharya Sushruta. *Ayurveda* has scientific principles, logic, and subtle knowledge that we must explore to apply its gifts to humanity. This essay shows that *Samhitas* contains pragmatic and scientific knowledge. *Ayurveda* combines science and philosophy. *Ayurvedic* knowledge's pragmatic and scientific usefulness beyond textual content must be explored and validated to maximize its benefits for humanity.

**Keywords:** Ayurveda, Human anatomy, Panchamahabhutas, Rachana Sharir, Sharir Vigyan

### INTRODUCTION

*Ayurveda*, the whole classical science and Indian medical system, is totally based on ancient texts that depend on a holistic approach to maintaining physical as well as mental health by nature. It is one of the oldest healing sciences, which is also often called “MOTHER OF HEALING.” The latest global academic interest is in *Ayurveda*'s unique explanation of human body structures and functions. Artificial intelligence and machine learning are used to understand the complicated human body described in modern and ancient books.<sup>1</sup> There are many concepts already mentioned in classical texts, like the science of epigenetics, that have revealed the interaction of environment and their impact on the human genes and also affects the progeny.<sup>2,3,4</sup>

*Ayurveda*, the Indian medicinal system, is an effective research strategy today. Research on *Ayurveda*'s principles and unexplained parts is needed so modern science can understand this wonderful wisdom and help solve the world's numerous human body mysteries. *Ayurveda* offers

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many subjects and concepts to expand on (e.g., *Garbha Sharir*,<sup>5</sup> *Avyava Utpatti Siddhanta*,<sup>6</sup> *Sookshma Sharir*, *Marma*, *Srotas*, *Pramana*, *Shadgarbhakar Bhava*, *Mruta Shodhan*, etc.) which is the uniqueness of the fundamental subjects (*Rachana Sharir*) of *Ayurveda*.<sup>7</sup>

*Rachana Sharir* explains the features of the human body. The primary scientific community wants to know the current potential of this subject, for instance, studying the subtle body and its therapeutic potential in health and disease. It integrates scientific and spiritual viewpoints and suggests that knowing the subtle body may aid healing.

Another example is the quest to understand the human body from ancient perspectives. Astonishingly, various concepts, which is the latest quest of contemporary scientists, are well described in the *Rachana Sharir*, for example, a study on the consequences of maternal nutrition on their progeny's health and mental status as well as genetic involvements for certain diseases.<sup>8</sup>

### Aims and Objectives

This review aims to elucidate the classical aspects of *Rachana Sharir* from *Ayurvedic* texts and establish correlations with contemporary scientific knowledge.

### METHODOLOGY

This study is conceptual. *Ayurveda* is rising; hence, it is important to study and research *Rachana Sharir*'s classical and scientific features using diverse methods to understand and relate them to modern science. A pragmatic perception can be made with these resources and procedures.

### MATERIAL AND METHODS

- The source of materials is the *Ayurveda Samhitas* texts along with the commentaries available in the library of our college.
- Various research articles published in peer-reviewed journals of esteemed value, like PubMed, Scopus, and Web of Science, have also been studied. Articles not following the publication standards of PRISMA were rejected.
- All the available matter was further wound up and inquired for discussion in attempts to conclude the scientific potential of fundamental concepts of *Rachana Sharir*.

### RESULTS AND DISCUSSION

The study of *Rachana Sharir* (body composition) starts with the formation of the universe. Acharya Sushruta has mentioned that a human being is Panchvimshati Purush consisting of Ashta-Prakruti and Shodas-Vikruti, which combines with

Chetna.<sup>9</sup> The causative source of all beings having eight forms (Ashta-Prakruti), such as Avyakta, Mahat, Ahankara, and five Mahabhutas, is also stated in Sankhya Darshan.

### Shava-Chhedan

Being the first to preserve cadavers, Acharya Sushruta explained how to do it scientifically. The preservation of cadavers is called *Shava-Chhedan*. He also listed *Shava-Chhedan*'s comprehensive criteria: no long-term ailment, less than 100 years old, all bodily parts intact, no poisoning, and so on. Acharya Sushruta's major contribution to contemporary science was dissecting corpses to explain every organ, skin, bone, muscle, and other parts of the human body.<sup>10</sup> When comparing ancient *Ayurveda* to modern science, the text's terminology is very similar. However, there are a lot of *Ayurvedic* terms that have been elaborated in the *Ayurveda* text but not in modern science, which encourages more research in both fields because modern science is still developing and does not fully explain certain *Ayurvedic* principles.

### Anga-Pratyanga Vibhajana

Charaka and Sushruta listed the *Angas* and *Pratyangas* in *Sharira-Sthan*, along with their numbers, anatomical placements, and types. According to Acharya Sushruta,<sup>11</sup> *Kala*, *Twacha*, *Ashaya*, *Dhatu* are seven, *Siraas* are 700, *Snayus* are 900, *Asthi* are 300 (360 by Acharya Charaka<sup>12</sup>), *Sandhiya* are 210, *Marmas* are 107, *Dhamnis* are 24, and so on. *Anga-Pratyanga* numbers fluctuate depending on the acharyas' perspectives, dissections, and explanations. *Haranchandra* defined *Anga-Pratyanga* as six *Kurchas* formed from *Dhamnis* and *Snayus* junctions. Sushruta said *Mamsa-Rajju* begins from both sides of the spinal column (*Prishthavanshamubhayatah*) and goes one-on-one pairs inside and outwards to connect four vertical columns with muscles.

As seen in Table 1, some of the anatomical positions of structures cited by Acharya Sushrut and their modern considerations are:<sup>13</sup>

So, many structures explained by Acharyas have yet to correlate with modern science. Thus, the knowledge of these aspects has made understanding *Rachana Sharir* an easy process.<sup>14</sup>

### Genetics and Epigenetics

Genetics is the study of genes and their differences in humans and other species. Epigenetics is the study of how environmental factors affect a person's phenotype without altering the DNA harmony.<sup>15</sup> Modern research has found many factors affecting genes and phenotypes. *Prakruti*, *Vikruti*, *Shadgarbhakara Bhava* (character inheritance), four

**Table 1:** Anatomical positions of structures cited by Acharya Sushruta and their modern considerations.

Structure	Total no.	Anatomical positions	Modern consideration
<i>Kurcha</i>	6	Hasta and Pada—two each <i>Griva</i> (neck) and <i>Medhra</i> (penis)—one each	Aponeurosis of palmar and planter Nuchal and suspensory ligaments of the penis
<i>Kandra</i>	16	<i>Pada, Hasta, Griva, Prishtha</i> —four each	Tibialis anterior muscle tendon, flexor, and extensor tendons of the forearm, tendons of sternocleidomastoid muscle and erector spinae, longissimus, and iliocostalis tendons
<i>Jala</i>	4	<i>Mamsa, Sira, Snayu, Asthi-Jala</i> —one each	Plexuses of muscles, vascular, ligamentous, and bony
<i>Sanghata</i> and <i>Seemanta</i>	14-14	<i>Gulfa, Janu, Vankshan, Manibandh, Kurpar, Ansa</i> —two each <i>Trika, Shira</i> —one each	Major joints like ankle, knee, hip, wrist, elbow, shoulder Joints of sacral region and skull
<i>Sevani</i> <sup>14</sup>	7	<i>Shira</i> (skull)—five <i>Jihva</i> and <i>Shefa</i> —one each	Suture like

basic elements for *Garbha* fertilization and production, that is, *Beeja, Ritu, Kshetra*, and *Ambu*, are pieces of information concerning genetics in embryology.<sup>16</sup>

### Garbhavkranti (Embryology)

Despite being a blessing for the mother and family, pregnancy can have negative effects due to nature and the mother's lifestyle. *Acharyas* in *Ayurveda* emphasizes that a fetus needs the mother for physical and psychological growth and nourishment during intrauterine existence. *Ayurveda* explains the six procreative factors—*Matrija, Pitrija, Atmaja, Rasaja, Satmyaja*, and *Satvaja* (maternal, paternal, soul, nutritive, wholesomeness, and psychology).<sup>17,18</sup> *Garbhinicharya* (mode of conduct of gravida) has been explained by *acharyas*: if *Garbhini* follows the proper diet regimen according to months and gestational age of fetus along with the normal state of *Shadgarbhakar Bhava* (six procreative factors) affected by the time factors, then the offspring grows appropriately in the *kshetra* of the mother, that is, *Garbhashaya* (uterus).

*Tridosha, Saptdhatu, Panch-tanmatra, Oja, Aama, Agni*, and *Srotas* underpin *Ayurveda*. In their *Samhitas* and comments, several *Acharyas* argue that maternal and paternal influences largely cause anatomical growth, whereas *Atma* and *Satva* cause psychological development. The six procreative elements (*Shadgarbhakar Bhava*) are crucial to embryo formation and organ development and must be balanced for healthy children. *Shadgarbhakar Bhava* and FOAD (fetal origin of adult illnesses) are important to *Ayurveda* researchers. Due to formation variance and little genetic trait alterations, poor uterine conditions might impair descendent health and predispose them to adult disorders. Managing the *Masanumasik* diet, measuring health physically and mentally, and balancing *Garbhavridhikar Bhava* help us have healthy children and puerperium. Here, a thorough study is needed.<sup>19</sup>

### Marmas

*Marma Vigyanam* is the oldest treasure of *Ayurveda*, having not been fully explored till now. The details of *Marma* are explained in *Samhitas*, their commentaries, *Vedas, Upanishad, Purana*, and several more.<sup>20,21,22</sup> *Marma* has been defined as the junction of *Mamsa, Sira, Snayu, Asthi*, and *Sandhi*, where *Prana* or life lodges.<sup>23,24</sup> One of the most serious sufferings in the human body is pain, so understanding the importance of *Marma* can help in non-pharmacological intervention in the prevention and promotion of public health. *Marma* therapy, that is, external stimulation of *Marma*, provides delayed to instant cure to diseases. However, this concept needs to be explored in a multidimensional approach.

### Anguli and Anjali Praman

Modern anthropometry uses numerous methods to measure length, weight, and other properties of living and inanimate objects. *Ayurvedic* literature also mentions equipment and methods for measuring the same parameters, and the texts mention *Anguli* and *Anjali Praman*.<sup>25</sup> *Ayurveda* relies on *Anguli Praman* for clinical practice, organ assessment, lifespan information, and so on. Sushruta also links *Anguli Praman* to a long, happy, and successful life.<sup>26</sup> *Praman* means measuring. *Acharyas* utilize *Swa-anguli* (own finger) to measure body structures. The main reason *Acharyas* utilized *Swa-anguli* to measure people was because their bodily structure ratios are similar, yet their dimensions vary. *Anguli Praman* was their only measure; today, with many modern anthropometric tools, it is easy, convenient, accurate, tailored, and economical.

Another *Ayurvedic* assessment technique is *Anjali Praman*, which determines the body's *Dosha, Dhatu*, and *Mala*. *Anjali* is produced by joining right- and left-hand cups. This is a personalized technique for measuring our tissues and their

subsidiaries. Any rise or reduction in the *Samhita's* quantity for each *Dosha*, *Dhatu*, and *Mala* indicates sickness. To analyze the various quantities of these *Dosha*, a competent assessment technique is needed. This allows for convenient and individualized patient therapy. Charaka argues that the dimensions of the body are defined by the measures of individual *Angula*, especially in terms of height, breadth, and length. Thus, the discussion centers on body component measurements.

The overall dimensions of the body are equal, measuring 84 *Angula* in both height and breadth. Individuals with average physical measurements possess longevity, strength, immunity, happiness, supremacy, riches, and other desired attributes. Individuals with body measures that deviate from the norm possess characteristics that are opposite to those with average measurements.<sup>27</sup>

### Srotas

The anatomical placements and scientific and therapeutic roles of the *Srotas* have been detailed in *Ayurvedic* writings. *Srotas* nourish and replenish the body through their routes. These channels are named after organ systems and are physically and functionally related. For instance, *Pranavaha Srotas* are respiratory channels. Normal function and the *Dushti* of *Pranavaha Srotas* affect respiratory health and sickness. This shows that healthy *Srotas* may stay healthy. Any structural or functional disturbance in *Srotas* causes *Dosha-Dushya Samoorchna*, which causes sickness. *Srotodushti* (pathological involvement of *Srotas*) includes *Sanga*, *Vimarga-gaman*, *Ati-pravruti*, and *Siragranthi*. Elaborations of *Srotas* and *Srotodushti* help diagnose, prognosis, and cure underlying causes of diseases.<sup>28</sup>

### Saptadhatu-panchmahabhuta relation

According to Acharya Sushruta, the pioneer of *Ayurveda*, the organs of the body are destroyed after death except the *Asthi*. *Asthi* is the last to be destroyed; even after death, when the body is buried or burnt, the remnants left are bones. Though every substance is made of all five *Mahabhutas* (*Akasha*, *Vayu*, *Agni*, *Jala*, and *Prithvi*),<sup>29</sup> *Asthi* has a predominance of *Prithvi* and *Vayu Mahabhuta*. *Prithvi Mahabhuta* denotes the high mineral content of the bones, and *Vayu Mahabhuta* denotes the hollowness of the bones. According to the theory of the *Shadgarbhakar Bhava* explained in the *Sushruta Samhita*, the *Asthi* is derived from the *Pitraj Bhava* which denotes the lineage of bone and related aspects to the paternal genes.<sup>30</sup>

### CONCLUSION

*Ayurveda* explained many key human anatomy features. Sushruta elaborated on *Shava-chhedan* and long-term body

maintenance. We had such good bodily measurements because of his dissecting expertise. The *Samhita* (*Bruhatrayis*, *Laghutarayis*, and commentaries) of *Ayurveda* defines the structural employer of the human frame and correlates the universe charter with human body compositions, which quantum physics explains. *Rachana Sharir* attracts attention and expands holistic healthcare research. *Rachana Sharir* (human anatomy) knowledge is crucial for disease etiology evaluation. Anatomy aids doctors in diagnosing and treating diseases. Research on fundamental principles should not compromise them.

In the last 50 years, neither has *Ayurveda* upskilled nor has the literature been enriched with new research. In the field of *Rachana Sharir*, research has been done, and many are pending. The most pivotal topics of *Rachana Sharir* are the concepts of ancient neuroanatomicals as *Marma*, *Sukshma*, *Sthula Sharir*, applied aspects of *Shad Chakras*, *Avedhya Siras*, *Strotas*, *Kala Sharir*, and more. Researchers of *Rachana Sharir* should now give attention to the unexplored area of *Samhitas*. The concepts need to be validated and established based on modern parameters.

### Ethical approval

Institutional Review Board approval is not required.

### Declaration of patient consent

Patient's consent was not required as there are no patients in this study.

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### Conflicts of interest

There are no conflicts of interest.

### Use of artificial intelligence (AI)-assisted technology for manuscript preparation

The authors confirm that there was no use of AI-assisted technology for assisting in the writing or editing of the manuscript and no images were manipulated using AI.

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