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REVIEW ARTICLE

PRAMANA SHARIRA AND ANTHROPOMETRY: A COMPARATIVE INSIGHT INTO HUMAN BODY MEASUREMENT SYSTEMS

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ABSTRACT

Pramana Sharira, a specialized concept in Ayurveda, focuses on measurement and serves as a scientific tool for examining both the structural and psychological constitution of the human body. This discipline emphasizes the importance of *Pramana*—the precise quantification of an individual's internal and external characteristics. A central concept within *Pramana Sharira* is *Angula Pramana*, particularly *Swa-Angula Pramana*, which uses one's own finger measurements to determine body proportions. Ayurvedic parameters, such as *Ayama* (length), *Vistara* (breadth), and *Parinaha* (circumference), form the basis for this evaluative framework. In parallel, modern medical science employs anthropometry and the study of human body measurements to assess growth patterns, perform clinical evaluations, and analyze physiological traits. Both systems, although rooted in different traditions, share a common objective understanding of the human body through systematic measurement. Anthropometry also involves the identification of anatomical landmarks as foundational points for precise measurements, similar to Ayurvedic methods. This article aims to highlight the conceptual similarities between *Pramana Sharira* and anthropometry, underlining their relevance in holistic and scientific human body analyses.

Keywords: *Pramana Sharira, Angula Pramana, Swa-Angula Pramana,* Anthropometry, *Ayurveda*

INTRODUCTION

Ayurveda is a system of health science that not only includes knowledge of the body and disease but also describes the way of living healthy. *Swastha*. In *Ayurveda*, the utility of *Pramana Sharir*, also known as *Pariskha* (scientific investigation), is a scientific tool of classical knowledge. This *Pramana* is not only useful in *Roga* (Disease) and *Rogi* (patient) *Pariskha* (examination), but also evidence of Ayurveda's critical scientific approach. Valid or correct knowledge is known as *prama*, and the means to acquire this knowledge are called *pramana*.

1) As per *Shabdakalpadruma,* the word *Pramana* is derived from *Pradhatu + Maa + LyutPratyaya*.

2) As per *Amarkosha,* some synonyms are *Hetu, Karana, Bija, Pramana, Nimitta, and Pratyaya.*

3) According to *Vachaspatyam, Pramana* is derived from *Pra + Maa Bhave Kairane + VaLyut Pratyaya*. "*Pramarupa Jyane*" It meaning explained as *Mithya Jyana*.

AIMS AND OBJECTIVES

- To analyze the concept of *Sharira Pramana* described in the classical text.
- To analyze the concept of Anthropometry according to modern science
- Comparison of both concept

MATERIAL AND METHODS

For conceptual study *Charaka Samhita, Sushruta Samhita, Ashtanga Hridya, Ashtanga Sangraha* etc. and their commentaries were explored and analyzed. The related matter was studied from verse to verse. The available PG and PhD dissertations, related books, reputed journals, and information on the subject from available online sources were also studied systematically to determine rational outcomes.

Historical review of *Pramana Sharira*:

- ***Vedic Kala***

- In *Yajurveda*: While describing the construction of *Homakunda*, the length of *Darbha* used in the auspicious procedure should be six *Angula*.
- In *Rigveda*, the *Ashraya* for Paramatma is the *Dasha Angula Pradesh*.

- ***Puranaupnishada kala***

- *Brihat Samhita* of *Varahamihira*: It is described that there are five kinds of *Purusha* having a different characteristic feature, which includes *Angula Pramana* as one of the differentiating criteria.
- *Agni Purana*: *Pramana* of organs such as *Hridya*, *Prisha*, *Kati* etc[1] are decipted in *Agni Purana*. The reference for *Sama Ayama Vistara* is also described.[2]
- *Shrimat Tantrasara Sangraha* by *Shrimadanandana Thirtha*: While describing *Pratima Yoga Lakshana*, various *Pramana* of different body parts has been mentioned for making statues which is based upon *SwaAngula Pramana*[3].

- ***Samhita* Period**

The Samhita period is considered to be the golden period for *Ayurveda*. *Ayurveda* developed immensely during *the Samhita* period and classical textbooks of *Samhita Kala*, given the importance of *Pramana Pareeksha*.

1. *Charaka Samhita*: *Acharya Charaka* described *Pramana* as one of the *Dashvidha Pareeksha* to diagnose a disease[4]. While explaining *Pramana* it is mentioned that the *Angula Pramana* of the *Anga Pratyanga* of the human body, in which *Jangha* is said to be of 18 *Angula* in length The concept of *Sama Sharira* is also mentioned to access the *Ayu* of the person[5].
2. *Sushruta Samhita*: In this classical text, a detailed description of *Angula Pramana* in different parts of the body is mentioned[6]. The *Angula Pramana* of *Jangha* is described as 18 *Angula* in length and 14 *Angula* in circumference[7]. While explaining this *Acharya* described that individuals having appropriate *Pramana* of *Anga Pratyanga* have good health and long life.[8] It is mentioned that before treatment it is necessary to access the *Ayu* of the patient and *Angula Pramana* is a tool for assessing *Ayu*.[9]

3. *Kashyapa Samhita*: It deals with the measurement of masses in terms of *Anjali Pramana*[7].
4. *Bhela Samhita*: In chapter "*Ayurlakshanendriya*", it is mentioned that if *Lalata, Nasika* and *Karna* of a person are of 6 *Angulas* each then person will attain the life span of 100 years[8]. *Ashtanga Samgraha*: In this classical text *Pramana* of different parts of the body and "*Sama Sharira* concept" is also mentioned.[9]
5. *Ashtanga Hrudya*: In this text detailed description of each body part is not mentioned but *Acharya* explained that the approximate height of a person is 3 and half times the length of his hasta.[10]

- ***Madhya* Period:**

1. *Sharangdhara Samhita*: In this *Samhita* context related to *Manaparibhasha* is given. *Angula Pramana* is also described while referring to the *Kudava Praman*[11]. In this literature, *Angula Pramana* of *Anga Pratyangas* is not explained, and the different types of *Pramanas* are explained in detail though[12].
2. *Vangsena Samhita*: In this literature, one of the chapters named *Nidanapanchaka, Acharya*, described *Pramana* as one of the keys to achieving success in the field of medicin[13]. In the same chapter, while describing the *Kudava Mana, Acharya* mentioned about *Anguli Pramana*.[14]
3. *Rasatarangini*: In this classical text, the description of *Angula Pramana*is is provided in relation to the preparation of different *Putas*. While describing *Mahaputa*, the author explained that it should have 1 a 2 *Vyama* depth and 2 *Hasta* width[15]. The word *Vyama* and synonym for *Ayama* which is of 84 *Angulas*.[16]
4. *Kautilya Arthashastra*: *Angula Pramana* has been used as the 'unit measurement' for measuring the length of different objects, depth, measuring land distances. In *Deshakalamanam*, the definition of *angula* has been explaine[17-18]. In *Tulmanaputavam* chapter, the concept of *Anguli Pramana* has been applied for preparing different types of weighing tools to measure the weight of gold, silver etc.[19]

Angula Pramana

- ***Nirukti:*** The means and sources that are helpful in requiring true knowledge are called *Pramana*[20].
- ***Lakshana*:**

- The true knowledge about the characteristics of an object is known as *prama*, and the tool or most essential cause by which this true knowledge can be gained is known as *pramana*.
- True knowledge is known as *prama*, and the tool to gain true knowledge is known as *Pramana*[21].
- The means by which *Pramata* acquires true knowledge is known as *the pramana*.
- Tools or measures by which gained or acquired knowledge is confirmed or recognized are known as *Pramana*.

- **Specification of *Swa Anguli Pramana***

During the Ancient period, the length and breadth of different *Anga Pratyanga* were measured using one finger, and the measurements of each individual's finger were different from each other. That's why to measure different *Anga Pratyanga*, own *Anguli Ayama* and *Vistara* is considered. This concept is known as *Swa Anguli Pramana*.

As per *Sushruta*, the length of the proximal interphalangeal joint is considered to be *Swanguli*. The Proximal interphalangeal joint is an articulation of the proximal and intermediate phalanges. However, the lengths of the proximal interphalangeal joints are different from each other.

- **Definition of *Anguli***

- ✓ *Anguli* is derived from the root word '*anga'* with '*uli'* suffix, which means the digit.
- ✓ The Hasta and Pada subdivisions are *Anguli*.
- ✓ *Acharya Gayadasa* while commenting at *Sushruta Samhita Nidana Sthana* 2nd chapter considers one *Angula* equal to three *Yava*.
- ✓ In chapter 20th *Deskalamana* 38th *Prakrana* of *Kautilya Arthashastra* describes how the width of the middle part of 8 *Yava* is equal to *Angula*.
- ✓ Width from middle part of 8 *Yava* is *Angula*. (lilavatiparibhasha 4)

- **Importance of *Angula Pramana* in relation to *Ayu Pareeksha***

Ayu Pareeksha is an important procedure for accessing an individual or a patient before starting treatment. In Ayurvedic classics, *Pramana Pareeksha* is one of the criteria used to access the *Ayu* of patient[22]. The individual with appropriate Pramana of his *Anga-pratyanga* will attain *Deerghayu*, and the individual with moderate and poor measurements will attain *Madya* and *Alpayu* respectively[23].

Angula Pramana which is based on *SwaAngula Pramana*. *Pramana* is used to measure dimensions such as *Ayama*, *Vistara*, *Parinaha*, *and Utsedha* of different *Anga-pratyanga* of the body[24]. *Acharya Charaka* considered *Pramana Pareeksha* as one of the *Dashvidha Pareekshya Bhava* for determining the *Ayu* and *Bala* of the patient[25] by measuring different *Anga- pratyanga*[26] by using *SwaAngula Pramana* as unit measurement[27]. Patients or individuals with appropriate *Pramana* of different *Anga-pratyanga* are considered to attain *Deerghayu*[28].

Acharya Charka gave a glorious concept of '*SamaSharira'*. Later, it was supported by *the Acharya Vagabhatta*. This concept suggests that individuals with appropriate measurement of body parts are considered to have *Sama Sharira* and will attain *Deerghayu*, *Bala*, *Sukha*, *Aishvarya*, *Ojas*, etc[29].

According to *the Acharya Bhela* individual with *Lalata*, *Nasika*, and *Karna* of length 6, each Angula will attain *Shatayu*.

According to *Acharya Dalhana*, an expert physician should understand that the male at the age of 25 years and a female of 16 years attains *Samatva* and *Gataveeryata*, as at this stage, the individual will have the *Shareera Pramana*, as mentioned in the *Ayurvedic* texts.

As per *Ashtanga Sangraha*, full growth of individuals occurs at the end of 2nd decade of life.

In the classics of *Ashtanga Hrudaya*, it is mentioned that a person having equal to three and half of his own *Hasta* will live a happy life, except for the *Ashtanindta Purusha*.

- Application of *Angula Pramana* to different branches of *Ayurveda*

1. In field of *Shalya Tantra*

- The measurements of various instruments for *Shashtra Karma* are described in terms of *the Angula Pramana*. The *Pramana* of the Arsha treatment instrument is 4 *Angula* in

length and 5 *Angula* in *Parinaha*. The measurements for needles are described as circular and two *angles* in length to be used in less fleshy parts and joints, and three *angles* in fleshy parts of the body. The length of *the Pushpanetra* in *Uttarbasti* should be ten *Angula*.

- *Marma* are vital points in human body at specific locations with their dimension in *Angula* and locations are described in relation to various anatomical landmarks.
- To locate surgical incisions, *Siraveda* sites and the dimensions of the surgical instruments.

2. **In field of *Dravya Guna***
    - The morphology of plants described in terms of *Angula pramana*, for example, *Mahasravani* is one cubit long having leaves two *Angula* broad and flower resembling blue waterlily and fruits like *Anjana*.
3. **In field of *Panchakarma***
    - While describing Uttarabasti, the specifications of insertions of *Bastinetra* are described in terms of *AngulaPramana*. The *length of the Dhumapananetra was* measured in terms of *the angula*.

ANTHROPOMETRY

Anthropometry is the science of obtaining systematic measurements of various body parts in an individual. It was first developed in the 19th century by physical anthropologists for the study of human variation as an evolution in both living and extinct populations[30]. This method has historically been used to associate racial, cultural, and psychological attributes with physical properties. This involves the size (e.g. height, weight, surface area and volume), structure (e.g. sitting vs. standing height, shoulder hip width, arm\leg length and neck circumference) and composition (e.g. percentage of body fat, water content and lean body mass) of humans.[31] This science is raised by Alphonse Bertillon who laid a foundation of society of Anthropology of Paris. The utility of this anthropometric system was subsequently termed “Bertillonage” and spread worldwide during the late 1800s and the early 1900s.

- **History of Anthropometry[32]**

Ancient Anthropometric measurements: The ancient civilizations of Rome, Greece, and Egypt have mainly used anthropometric measurements for many cultural purposes to represent beauty, power, and other desirable attributes of the human form. In that era, symmetry was particularly desirable and the unit of measurement consisted of "width of human hand" or "length of human foot."

Anthropometric measurements during the Renaissance Artists during the Renaissance applied anthropometric measurements to artistic works by applying human proportions. One of the most famous artists, Leonardo da Vinci (by creating a painting of the famous Vitruvian Man[33]) and obtained measurements of the human body by analyzing cadavers. Scientific anthropometry began with Johann Friedrich Blumenbach (1752-1840), who laid the foundation of craniology. They used measurements based on various anatomical landmarks of the human body.

Twentieth century Anthropometrics: In this era a sub discipline of anthropometrics called "Morphometrics" was establish to describe variation in size and shape of human within distinct populations. This procedure, along with the application of multivariate statistics, analyzes various biological landmarks to obtain characteristic shapes, ratios, or angles. Currently, one of the most common applications of geometric morphometrics is the evaluation of bone density.

- **Use of Anthropometry[34]**

The historical use of Anthropometry has been applied to a wide range of applications as

- Paleoanthropology and human evolution: The application of anthropometric techniques is a proven scientific method for studying human evolution through fossil remains.
- Biological anthropology: Physical Anthropometry is associated with biological variations and evolution.
- Craniometry and craniofacial attributes: These are used to measure various skull and facial characteristics to evaluate prehistoric fossils. It allows physical anthropologists to qualify the gradual changes in pre-human skull size and shape as an adaptation to increased brain volume. Both craniometric and anthropomorphic measurements are

essential for studying current theories regarding the evolution of bipedalism and the large brain size in humans.

- Phylogeography: This study examined the historical process that may be responsible for the contemporary geographic distribution of individuals.
- Criminology and Forensics: This is the study of physical anthropology and human skeletons in a legal setting, usually in criminal cases.
- Phrenology: This is a study of the shape and size of the cranium as a supposed indication of character and mental abilities.
- Physiognomy: This is a study of the systematic correspondence between psychological characteristics and facial features or body structures.
- Personality and mental typology: This is a system in which individuals and behavioral patterns are categorized in an attempt to differentiate between people.

Anthropometric measurements are used as the main tool for assessing health status, physique, obesity, malnutrition, disease, and work capacity. It also provides a scientific method for assessing various measurements in different geographical regions and races. This science is used in the fields of surgery, cosmology, and forensics. It is used for the diagnosis of many diseases, in growth and development, to assess nutritional status, and to design many medical and other instruments for human use[35].

DISCUSSION

The concept of *Pramana Sharira* in Ayurveda offers a detailed and structured methodology for assessing an individual's physical and mental constitution. Rooted in ancient texts, this approach relies on precise measurements, such as *Swa-Angula Pramana*, where the unit of measurement is based on an individual's own body dimensions. Such personalized metrics reflect Ayurveda's focus on individualized healthcare, which contrasts with the generalized averages often observed in modern biomedical practices.

Ayama (length), *Vistara* (breadth), and *Parinaha* (circumference) were the core measurement dimensions used in *Pramana Sharira*. These are used to evaluate bodily symmetry, health status, and suitability for therapeutic interventions, including surgical procedures.

Interestingly, similar objectives are found in anthropometry, where measurements are used for clinical diagnosis, nutritional assessment, ergonomic design, and forensic analysis.

Anthropometry, such as *Pramana Sharira*, also begins with the identification of anatomical landmarks to ensure consistent and replicable results. Although the tools and terminologies differ, both systems emphasize objectivity, precision, and practicality. Furthermore, anthropometry has historically been used to understand human diversity—something Ayurveda inherently does through the classification of *prakriti* (body constitution).

The convergence of these systems reveals that ancient Ayurvedic principles, often seen as philosophical, have a scientific foundation that aligns with contemporary biomedical approaches. This opens new avenues for integrative research where traditional knowledge can enhance modern diagnostics and personalized medicine.

CONCLUSION

Pramana Sharira and modern anthropometry, though developed in different historical and cultural contexts, share a common goal: the accurate and meaningful measurement of the human body. While Ayurveda emphasizes individualized assessment through *Swa-Angula Pramana*, modern anthropometry uses standardized tools and landmarks to serve clinical and scientific purposes. Recognizing the parallels between these systems not only bridges traditional wisdom with contemporary science, but also promotes a more holistic understanding of human anatomy and health.

The integration of Ayurvedic measurement principles into modern practice could offer innovative perspectives for personalized healthcare, ergonomics, and wellness assessment. Further interdisciplinary studies and validation of Ayurvedic measurement systems could significantly contribute to the global discourse on body constitution analysis and integrative medicine.

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