

Importance of *Pramanasharir* – An Ancient Anthropometric Tool and its Utility

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ABSTRACT

Anthropometry is the science of obtaining systematic measurements of the human body. Anthropometry first developed in the 19th century as a method employed by physical anthropologists for the study of human variation and evolution in both living and extinct populations. Specifically, anthropomorphic measurements involve the size (e.g., height, weight, surface area, and volume), structure (e.g., sitting vs. standing height, shoulder and hip width, arm/leg length, and neck circumference), and composition (e.g., percentage of body fat, water content, and lean body mass) of humans. Anthropometric measurements have been used historically as a means to associate racial, cultural, and psychological attributes with physical properties. The historical use of anthropometry has been applied to a wide range of applications, including: Palaeoanthropology and human evolution, Biological anthropology, Craniometry and craniofacial attributes, Phylogeography, Criminology and Forensics, Phrenology, Physiognomy, Personality and mental typology. In ancient Anthropometry ie in *PramanaSharir*, the overall measurements were done in *Swa-AngulaPramana*. Our Seers explained the concept of *Swa-AngulaPramana*. It can be ideal parameter irrespective of sex, race and place. The concept of *PramanaSharir* in Ayurveda is unique. Irrespective of only using *PramanaSharir* in prognosis and diagnosis of patients, it is worth useful in knowing longevity of an individual. So, it is necessary to explore the concept of *PramanaSharir* – an ancient tool of Anthropometric measurement and its utility in current era.

KEYWORDS: Anthropometry, *Pramanasharir*, Ayurveda, *Swaangulapramana*

INTRODUCTION

Anthropometry, or anthropometrics, is the study of human body measurements. It is made of two words Anthropos + metry. Anthropos stands for human and metry stands for measurement. It defines physical measures of a person's size, form and functional capacities. The typical body measurements used in anthropometrics include height, weight, body mass index (or BMI), waist-to-hip ratio and body fat percentage. By studying the differences in these measurements among humans, researchers can assess risk factors for a host of diseases¹. The ancient civilizations of Rome, Greece, and Egypt primarily used anthropometric measurements for cultural purposes (e.g., artwork) to represent beauty, power, and other desirable attributes of the human form. Symmetry was particularly desirable, and units of measurement often consisted of the "width of a human hand" or "length of a human foot"². It deals with various measurements related to the human body such as pelvimetry, craniometry, osteometry, skin fold thickness, height and weight measurements etc. Instruments used for measurements - Stadiometer, Anthropometer Rod, Head Height Needle, Spreading Calliper, Skinfold calliper, Palatometer, Goniometer, Tape, Croniophore, Mandibulometer.

Ayurveda literature that pertains to *SharirRachana* furnishes detailed description on measurements of body and its elements. In Ayurveda, *PramanaSharir* is the term given to

this branch which implies importance of measurements. The *SharirPramana* is only tool for determining the *Ayu* of an individual. In Ayurveda, different types of *Pramanas* like *AnjaliPramana* & *AnguliPramana* are mentioned. *Swa-Anguli* (one's own finger breadth) is the unit measurement of body parts and structure. This *PramanaSharir* bears an ample of importance in field of Anatomy and Applied Medical Science. Before starting any type of treatment, the wise physician should perform the *pareeksha* of *AaturSharir* particularly on the basis of measurement of part and sub part of body and essential predominance of *dhatu*s etc. by *DashvidhPareeksha* as stated by *AcharyaCharak* and *PramanaPareeksha* is one amongst them³. *Ayu Pariksha* is done particularly on the basis of measurement of different *Anga-pratyanga* of the body. The patient or individual having appropriate *pramana* of different *anga-pratyangas* mentioned is considered to attain *deerghayu* and those with moderate and poor measurements attain *madhyama* and *alpaayu* respectively. *AcharyaSushruta* considered it as the main tool to get the information regarding *Ayu* along with that of *Bala*⁴.

Aim and Objectives-

To explore the concepts of Anthropometric measurements in our *Samhita* and their utility in today's modern era.

Material and Method-

- Reviewing of classics of Ayurveda including relevant commentaries regarding the concept of *pramanasharir*.

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- Review of all available literature related to modern anthropometry.
- Reviewing of internet materials, journals, periodicals and previous research papers related to this subject.

Ayurveda Review-

Pramana-The sources of accurate knowledge about any object are called *Pramana*. The true knowledge about characteristics of an object is known as *Prama* and the tool or most essential cause by which this true knowledge can be achieved is known as *Pramana*.

Synonyms of Pramana: *Upalabdhi, Sandhana, Pariksha* are the synonyms for *Pramana*.

AngulaPramana- The term *Angula* is derived from *Anguli* which is composed of two words *Ang* with *Uli* suffix. It represents digit subdivision of *Hasta* And *Pada*. These are total 20 in number and named as *Angustha, Pradeshini, Madhyma, Anamika* and *Kanisthika* respectively. This *Pramana* is used to measure height, arm span, circumference of body organs, for measuring distance between two points and also measuring depth, length of different *Yantra, Shastra* etc. by individuals own *Anguli*. *AcharyaVangasena* in *VangasenaSamhita* has mentioned knowledge of *Pramana* as one of the keys to achieve success in the field of medicine⁵. *AcharyaSushruta* has categorically mentioned *AngulaPramana* of *AngaPratyanga* of human body which is determined by measuring *Utshedha* (height), *Ayama* (length), *Vistaar* (breadth) of the *Angapratyanga* of an individual by taking his own finger (*SwaAngula*) breadth as the unit measurement. According to *AcharyaCharaka* height is 84 *Angula*. He has put forth *SamaSharira* concept according which an individual having *SamaAyama* (height) and *Vistar* is conceded to have *SamSharira* the portion will have *UttamAyu* (longevity), *Bala* (good strength), *Oja* (energy), *Sukha* (happiness), *Aishvarya* (power). Moderate and poor measurements attain *Madhyama* and *Alpaayu* respectively⁶. *AcharyaCharak* and *Vagbhat* described height of individuals should be 84 *Angula*. *AcharyaSushruta* has expressed a different opinion regarding the height of the individual. He has mentioned the height of man as 120 *Angulas*. *Dalhana* states that height given by *Sushruta* is to be measured in standing position with arms raised above the head. *Chakrapani* stated that the *Pramana* given by *AcharyaSushruta* is similar as compared with *AcharyaCharaka*. *VruddhaVagbhatta* has explained the *Angulipramana* based on *Swa-Angula* *pramana*. He has explained various measurements of different *Anga* and *Pratyanga* of human body and has also explained *SamaSharira* concept. Detailed description regarding the *PramanaSharira* is not available in *AstangaHrudaya*. However, *Acharya* has explained that the appropriate height of a person is equivalent to 3½ times the length of his *Hasta*. *AcharyaBhela* specifies that the individual with *Lalata, Karna* and *Nasika* of length 6 *Angula* each will attain *Shatayu*⁷. The concept *Pramana* is also one among them which should be evaluated scientifically. The modern Anthropometry also has a similar kind of intentions in the field of medical science. Anthropometry provides the single most portable universally applicable inexpensive non-invasive technique for assessing the size proportions.

Anjali Pramana- It is the unit of measurement attained by joining both palms at little finger. The standard maintained for *AnjaliPramana* is one's own *Anjali*. *AcharyaCharak* has given the detailed measurement of *SharirgataDhatu, Mala*

and *Mutra*. There are ten *Anjali* of fluid which if discharge would accompany faeces, blood, lymph, sweat etc., nine *Anjali* of *RasaDhatu*, Eight *Anjali* of *RaktaDhatu*, seven *Anjali* of *Mala* (faeces), six *Anjali* of *Kapha*, five *Anjali* of *Pitta*, four *Anjali* of *Mutra* (Urine), three *Anjali* of *vasa* (muscle fat), two *Anjali* of *meda* (fat), one *Anjali* of *Majja*, half *Anjali* each of Brain Substance, Semen and *Oja*.

Review of Modern Anthropometry-

Historical Background⁸- An exact value of the unit of length measurement, used in Ancient Indus Valley Civilization, has been determined from the precise scale discovered by Ernest Mackay in 1930-31 season excavation at Mohan jodaro. In *Arthashastra*, Chanakya mentions two types of *Dhanushas* as units for measuring length and distances. One is Ordinary *Dhanusha* of 96 *Angulas* and other *GarhpattyDhanusha* of 108 *Angulas*. The Indus civilisation unit of length also known as Indus Inch was 1.32 inches which was equal to 2 *Angulas*.

Anthropometry- The study of human measurements deals with the structural framework of human form. To fully assess the status of the human body, we need to utilize various anthropometric measurements, which are systematic measurements of the size, shape and composition of the human body. The broader approach allows researchers to evaluate health trends and concerns in various populations. For example, anthropometry, which is the scientific study of human body measurements, has been used to assess the nutritional status of children in underdeveloped countries. These measurements can be used to determine the prevalence of undernutrition and evaluate the need for nutritional support⁹. Anthropometric studies today are conducted to investigate the evolutionary significance of differences in body proportion between populations whose ancestors lived in different environments. Human populations exhibit climatic variation patterns similar to those of other large-bodied mammals, following *Bergmann's rule*, which states that individuals in cold climates will tend to be larger than ones in warm climates, and *Allen's rule*, which states that individuals in cold climates will tend to have shorter, stubbier limbs than those in warm climates¹⁰.

Discussion-

A definite sate of standard unit having consistent interrelation, used to determine magnitude of an entity can be called as measurement system. In modern era metric system first came about in the 1790 when French academy of science was asked to construct a new system of unit for use throughout the world the current international standard metric system (SI) unites accepted by the 11th conference of weights and measures in 1960. Finger is an ancient and absolute non-SI unit of measurement of length. *PramanaSharir* is described as the knowledge related to the body in context of life- span, measurement of parts and sub-parts of the body. The body has been described (in terms of measurement) with own fingers. The entire body is 84 *Angula* in vertical length and if vertical height of the body is equal to the horizontal length in position when arms are abducted up to 90 degrees, then it is in *Sama Pramaṇa*. The persons having normal measurement of the body are endowed with longevity, strength, immunity, happiness, supremacy, wealth and other qualities. Those having body with less or more measurement have qualities contrary to these. All this description of *Pramana* shows that the concept of *Pramana* was basically developed very early in the era of Ayurveda. In Ayurveda, the concept of *Pramana* is used

widely in different branches like *Pañchakarma*, *dravyaguṇa*, *bhaiṣajyakalpanā*, *SharirRachana* etc in different ways. The modern anthropometry uses various indices for inter measure comparison. Likewise, similar methodology must be adopted for the measurements described in our *Samhitas* for derivation of new Ayurveda indices like *Vistara-ayaam* index, *bhuja-purushayama* index, *urah-purushayama* index, nutrition status index and many more. The modern science developed the concept of *Pramana* in the form of new branch which is called anthropometry. The difference is that in Ayurveda the measurements were taken with help of *Swa-Angula*. There was no development of instruments to take measurement but the modern science has developed so many instruments like vernier calliper, anthropometer rod etc.

Conclusion –

Anguli and *AnjaliPramana* is a more appropriate tool to describe measurements compared to absolute measurements. It gave in the first place, a unit of measurement. It was personalized as it differs from individual to individual. It was standardized because the result measured was not an absolute value but a ratio between the length of the part measured to the *Anguli* and *AnjaliMaan*. The vast descriptions and elaborate commentaries and their description in context of clinical examination (*AturaPariksha*) show that the concept of Anthropometry was well developed during Samhita period. Even though modern anthropometry is of recent origin, the concept was present long ago. This can become a proof of what we can contribute to the modern community from what we can learn and comprehend from the study of our ancient literatures. New Ayurveda indices may be discovered, analysed and incorporated by modification of *PramanaPariksha* into the Ayurvedacase proforma for objective analysis to replace the current subjective assessment. Anthropometric data can be used to evaluate unknown body measurements from known measurements. Thus, we can see concepts of anthropometry are described in *Samhitas* at places with significant elaboration which shows

concept of anthropometry in Ayurveda and shows the path for further illustration for better use.

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