

ROLE OF *ANGULI PRAMANA* IN ASSESSMENT OF *MEDOVRUDDHI* W.S.R. TO ANTHROPOMETRY: A CRITICAL REVIEW

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ABSTRACT

The nature has taught man how to be healthy before the science has discovered the laws of health. Obesity occurs as a result of lack of physical activity with increased intake of food and it can be diagnosed earlier i.e. overweight. The words '*Pramana*' and 'metry' are related to measurement. *Anguli pramana* was described in Ayurveda for examination of patient. Need of measurement was the prime necessity for human being since the history. An ample reference from the *samhitas* shows that *anguli pramana* is one of the criteria used in the examination of the person & patient. It helps in determination of the life span, strength and health of the person, prognosis and diagnosis of disease too. *Swa-Anguli* is the unit measurement seems to be more natural and scientific method. Ayurveda has given importance to individualistic approach rather than a generalized one. If obesity is diagnosed at earlier stage then hazards of obesity can be prevented. These sincere efforts will contribute in maintaining sound health.

Keywords: *Anguli pramana*, Obesity, Anthropometry.

INTRODUCTION

The nature has taught man how to be healthy before the science has discovered the laws of health. But it is an irony of the fact that, on this earth on one hand, millions do not get enough food and roams in a skeletal appearance while on the other hand there are many more who be-

sides overeating; lead a sedentary life to march towards an ultimate death. Symptoms of *medovridhi* and *sthaulya* are given in our *Samhitas*. *Charaka* has not stated *medovridhi* but explained *sthaulya* whereas *Vagbhata* has explained *medovridhi*.^[1] and not *sthaulya* in

detailed form of five stages of pathogenesis (*nidana panchaka*), however treatment of *shoulya* according to its types is mentioned in *Ashtang Hrudaya*^[2]. Many institutions and medical schools are making efforts to find a perfect remedy for the burning problem of obesity. Curiosity is one of the noblest instincts of man, the endless desire of man for his knowledge. Overweight or *medovruddhi* (aggravated adipose tissue) is the only one disease which is gaining more and more attention of scientists at global level. Overweight is the premonitory symptom of obesity.^[3]

In *Ayurveda* the 'Sharira' has prime importance. This complete knowledge about *Sharira* at all times is very much essential for a physician in order to provide a healthy life for mankind. In all major *Samhitas*, give description of human body in both Anatomical and Physiologically. *Anguli pramana* is one of the important concepts in *Ayurveda*. The *Ayurvedic* classical literature is documented along with many hypothetical concepts. An *anguli pramana* one of them *Sharira pramana* is only tool for determining the *ayu* of an individual. This complete knowledge about *Sharira* at all times is very much essential for a physician in order to provide a healthy life for mankind.^[4] The old adage, 'prevention is better than cure' holds true in case of obesity also. Though *medovruddhi* symptoms are given in detail in our *samhitas*, there is a need to develop a certain parameter which will help medico as well as non medico persons to get aware of this disease. Also this study will contribute in diagnosing & preventing hazards of obesity & its complications. These sincere efforts will contribute in maintaining global health to get a way through the burning issue of obesity.

In ancient era of human beings, *Ayurveda* is most important system of medicine in which one of fundamental of *Anguli pramana* which is one of the criteria used in the examination of the person as well as the patient. *Swa-Anguli* is the unit measurement seems to be more natural and scientific method. *Ayurveda* has given importance to individualistic approach rather than a generalized one so present study is selected.

Aim: To explore the concept of *Anguli pramana* for assessing *medovruddhi*.

Objectives:

1. To explore the fundamentals of *anguli pramana* for clinical practice.
2. To establish relationship between modern anthropometry and according to *Samhitas anguli pramana* for various scope of development and research in this field.

Materials and Methods-

1. Review of literature regarding *medovruddhi* is collected from *Brihatrayis*.
2. Reviewing of *Ayurvedic* classics including relevant commentaries regarding the concept of *anguli pramana*.
3. Reviewing of internet materials, journals, periodicals and previous research papers related to this project.

Symptoms of *meda vruddhi* : Aggravated *meda dhatu* produces unctuousness of body, enlargement of abdomen & flanks, cough, dyspnoea, foetid odour etc^[5] *Meda dhatu* when increased produces the same symptoms as *mamsa vruddhi* (aggravated muscular tissue)& in addition, it causes fatigue, breathlessness even after little work, sagging of buttocks, breasts & abdomen^[6] *Meda dhatu* when increased produces enlarge-

ment of glands in the neck & scapula, malignant tumors, benign tumors, diseases of the palate, tongue & throat; increase in size & heaviness of buttocks, neck, lips, arms, abdomen, chest & thighs; and other symptoms of increase of *kapha* (energy of cohesion) & *rakta* (blood tissue).^[7] *Hetu* (aetiology), *samprapti* (pathogenesis), *purvarupa* (prodromal features), *rupa* (clinical features), *upadrava* (complications), *sadhya asadhyata* (prognosis) is reviewed. Among these, only *purvarupa* and *rupa* is briefly discussed to focus on present manuscript.

Purvarupa of sthauilya- None of the textual authorities have described prodromal symptoms and signs of *sthauilya*. But, as manifestation of disease is preceded by premonitory signs as per *nidana panchaka* the weak manifestation of *rupa* should be considered as *purvarupa*.^{[8][9]}

Rupa of sthauilya -The symptoms of *sthauilya* are deficiency in longevity; the bodily movements are impaired due to looseness, tenderness and heaviness. This makes sexual act difficult because of small quantity of semen. Weakness prevails as the equilibrium of *dhatu* (tissue) is disturbed; foetid odour is caused by inherent defect, nature of fat tissue and also due to exces-

sive sweating as the fat is associated with *kapha* and as it is fluid multitudinous and heavy, as such it cannot withstand physical exercise and it brings about excessive sweating in the body; because of sharp digestive power and presence of *vayu* (energy of propulsion) in excessive quantity, there is excessive hunger and thirst.^[10] Owing to excessive increase of fat and muscle tissue; buttocks, abdomen and breasts become pendulous, disproportionate growth of the body, lack of enthusiasm are the symptoms of *sthauilya*.^[11] Dyspnoea on exertion, excessive thirst, excessive hunger, excessive sleep, perspiration, foetid body odour, snoring, prostration of the body, indistinctness of speech invade these persons quickly because of tenderness of fat, the person is unable to bear any physical exercise, because of obstruction of channel of *shukra* (semen) by *kapha* and fat, these persons are poor in sexual activities; because of obstruction of *srotasas*, the remaining *dhatu*s do not get sufficient nourishment thereby makes the person poor of strength in all activities of life.^[12] Excessive hunger and thirst, sweating, difficulty in breathing, excessive sleep, inability to withstand exertion, lassitude, decrease of life span, strength and vigour, bad smell of body, stammering are the symptoms of *sthauilya*.^[13]

Table No.1: showing features of medovruddhi

Medovruddhi Symptoms according to *Acharya Charaka, Sushruta, AshtangaSangraha, AshtangaHridaya and Bhavprakasha. [21]*

No	Lakshanas	Ch.	Su.	A.S.	A.H.	B.P.
1	Chal sphik	+	-	+	+	+
2	Chal udara	+	-	+	+	+
3	Chal stana	+	-	+	+	+
4	Ayatha Upachya	+	-	+	-	+
5	Anutsaha	+	-	+	-	+
6	Ayushorhasa	+	-	-	-	+
7	Javoprodha	+	-	-	-	+
8	Kruccha vyavaya	+	-	-	-	-

9	<i>Daurbalya</i>	+	-	+	-	-
10	<i>Daugandha</i>	+	+	+	-	+
11	<i>Kshudhatimatra</i>	+	+	+	-	+
12	<i>Pipasatiyoga</i>	+	+	+	-	+
13	<i>Kshudra- shwasa</i>	-	+	+	-	+
14	<i>Nidradhikya</i>	-	+	+	-	+
15	<i>Gatrasada</i>	-	+	-	-	+
16	<i>Krathana</i>	-	+	-	-	+
17	<i>Alpa-prana</i>	-	+	+	-	+
18	<i>Sarvakriyasu Asamarthata</i>	-	+	-	-	+
19	<i>Alpavyavaya</i>	-	+	-	-	+
20	<i>Kasa</i>	-	+	-	+	-
21	<i>Shwasa</i>	-	+	+	-	-
22	<i>Snighdhagatra</i>	-	+	-	+	-
23	<i>Udarparshwa vruddhi</i>	-	+	-	+	+
24	<i>Alasya</i>	-	-	+	-	-
25	<i>Ama</i>	-	-	+	-	-
26	<i>Moha</i>	-	-	-	-	+
27	<i>Saukumarya</i>	+	+	-	-	-
28	<i>Anga shaithilya</i>	+	+	-	-	+
29	<i>Alpabala</i>	-	-	+	-	-

Significance of Anguli pramana-

Acharya Charaka has included *pramana* among the *Dashavidha parikshyabhavas*. *Ayupariksha* is an important procedure before starting with the treatment. *Ayupariksha* is done particularly on the basis of measurement of different *Angapratyanga* of the body. Thus *pramana pariksha* plays an important role in assessing the *ayu* of the individual. The assessment and classification of *sharirik bala* (immunity) i.e. *uttam bala* (Good immunity) and *heen bala* (poor immunity) and *madhyam bala* (moderate immunity) can be examined with the help of *Anguli Pramaan*.^[14]

The Physician before commencing treatment of the patient, should first of all examine his *Ayu* (life span); if he has long life span then his *vyadhi* (disease) *Ritu* (season), *Agni* (digestive power), *Vayah* (age), *Deha* (body build) *Bala* (strength) *Satva* (mind), *Satmya* (habituations

accustoms), *Prakriti* (constitution), *Bhesaja* (drug) and *Desh* (habitat) should be examined.

^[15] *Sushrutacharya* has described *Anguli Pramana* for assessing life span and economic status of individual. Thus, the body has been described (in term of measurement) with his own fingers. If man and women is endowed with the measurement, he attains long life and prosperity, with medium and inferior features, the attainment is also accordingly e. g. medium and inferior respectively.^[16]

Achaya Vagbhata has described the significance of *Anguli* in the following sutra:

"The entire body is thus Eighty four Angula in length; it is equal both in length and breadth; the size mentioned so far of each part of the body is desirable (normal); whereas the less or more of these is undesirable (abnormal).^[17]

MODERN REVIEW:

Anthropometry: Today the anthropometry is well developed area of science of human measurement and broadly uses in the various field of words like forensic medicine, textile industries. Anthropology is the branch of science, which deals with the study of the human beings as the name suggests, ‘anthropose’ meaning human and ‘logos’ means knowledge. Thus anthropology deals with how the human race formed, evolved, and come to the present state when they are at the pinnacle of the phenomenon of life on this planet. Anthropometry is the branch of anthropology which specifically deals with the measurements related to human body, ‘anthropose’ meaning human and ‘metry’ meaning measurement. [18]

Anthropometry in forensic medicine-

The usage of anthropometry in forensic science started from 1882 when Alphonse Bertillon, a French police expert introduced a criminal identification system based on anthropometric measurements. The term forensic anthropometry can be introduced for the branch of applied anthropology, which makes use of techniques of anthropometry in forensic context. In other words, forensic anthropometry is a scientific specialization emerged from the discipline of forensic anthropology dealing with identification of human remains with the help of metric techniques. [19] [20]

Waist–hip ratio - Waist-to-hip ratio (WHR) is the ratio of the circumference of waist to that of the hips. According to World Health Organization’s data gathering protocol, the waist circumference should be measured at the midpoint between the lower margin of last palpable rib and the top of the iliac crest, using a stretch resistant tape that provides a constant. Hip circumference

should be measured around the widest portion of the buttocks, with the tape parallel to the floor. Waist–hip ratio or waist-to hip ratio (WHR) is the ratio of the circumference of the waist to that of the hips. WHO STEPS states that abdominal obesity is defined as a waist–hip ratio above 0.90 for males and above 0.85 for females. [22]

Skin fold thickness - Taking skin fold measurement is a common method for determining body fat composition. The skin fold caliper is a device which measures the thickness of a fold of your skin with its underlying layer of fat. Measurements are taken from 3 to 9 different standard anatomical sites around the body. The most common sites are triceps, biceps, sub scapular, thigh, iliac crest, supraspinal, abdominal, calf, chest, axilla etc. [23]

Body mass index -The body mass index (BMI) is a measure of relative weight based on an individual's mass and height. $BMI = \text{mass}(\text{kg})/[\text{height}(\text{m})]^2$. The WHO regards a BMI of less than 18.5 as underweight and may indicate malnutrition, an eating disorder, or other health problems, while a BMI greater than 25 is considered overweight and above 30 is considered obese. [24]

Body fat percentage -The body fat percentage is the total mass of fat divided by total body mass; body fat includes essential body fat and storage body fat. Essential body fat is necessary to maintain life and reproductive functions. The percentage of essential body fat for women is greater than that for men, due to the demands of childbearing and other hormonal functions. The percentage of essential fat is 3%–5% in men, and 10-16% in women. Storage body fat consists of fat accumulation in adipose tissue, part of which protects internal organs in the chest

and abdomen. A number of methods are available for determining body fat percentage, such as measurement with calipers or through the use of bioelectrical impedance analysis. [25]

Ayurveda is stream of knowledge carrying down from generation to generation. Now Ayurveda is treatise of universal importance which sets up physical and mental health. For the treatment purpose physician needs some parameters which decide normal and abnormal state of constitutional elements. One of the parameter is *pramana pariksha* which includes finger (*anguli*) measurement (*pramana*) of body. It explains anthropometrical measurement in terms of self finger measurement (*swanguli pramana*) for describing anatomical position, size and shapes of organ in the form of height (*aayam*), *armspan (vistara)* and circumference (*parinaah*) proportionate body (*Samsharira*) is described as body having height armspan 84 fingers (*angul*) each. Now a day, obesity and malnutrition creates various uncontrolled disorders. In modern science extra fat is calculated by various methods out of which body mass index (BMI) is widely used by physicians. Though it is widely used, world Health Organization (WHO) has promoted to evaluate most scientific method for assessing health and nutritional status. So, in this direction we put forth the concept of *anguli pramana*. The aim of proposed study was to establish the practical utility of *anguli pramana*. [26]

Ayurvedic literatures pertaining to furnish detailed description on measurements of the body and its elements. In our classics *pramanasharira* is the term given to this subdivision which depicts the importance of measurement or anthropometry. *Pramana*, that other way defines the concept of measurement of various biological

entities. It bears an ample importance in medical applied science.

In Ayurveda *anguli pramana* is one of the important concepts in the ancient Indian medical sciences, which is of anatomical significance. Ample references from the *samhitas* show that *pramana sharira* has a major role in determination of life span of an individual. It is told that a person having appropriate measurements will attain long life. *Swanguli* is the unit measurement of the body parts and structures. By the assessment of this we can assess the healthy status of individual. In modern science, *pramana sharira* is physical anthropology or anthropometry which is used only for physical measurement for assessing of height, age, race, nationality. In Ayurveda, various *Acharyas* explained about *pramanas* for different body structures irrespective of complexity of structures. So estimation of *pramana* of such structures remains as a challenge. Therefore complex measuring techniques and calculations has to be adopted. (Modi subramanym medical jurisprend and toxicology) *Pramana* forms one of the relevant aspects in the study of the structural and functional makeup of human body *pramana* gives an idea of the stature and their life span including the quality of life. This is important in diagnosis, prognosis and management of *vyadhi*. The concept *pramana* 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.

DISCUSSION

Ayurveda the knowledge of life is the collection of centuries of accumulated wealth of knowledge pertaining to the human body, its functioning, ways to maintain its healthy state and to correct the deviations from its normal state, which the disease is occurring in various forms. Thus the purpose of entire attempt at developing the knowledge of Ayurveda was for the maintenance of health of the healthy and to cure the diseases that occur. One of the important aspect of ‘*sharira pramana*’ was how they devised a suitable measuring unit for the measurement of the human body, in an era where neither standardized measures nor measuring instruments were in general use, which not only provided the flexibility of being personalized, i.e. being specific for each individual. The concept of using ‘*anguli*’ or the average breadth of a finger as a unit can be observed to be a modified form of expressing the measures some modern research also shows the causes of different properties of body measurement and that’s prognosis for health, this is only one example of research in current centuries for how to use the Ayurvedic fundamentals for the use of public health.

CONCLUSION

Anguli pramana is a better tool to describe measurements compared to absolute measurements. It gives 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 lengths of the part measured to the *anguli maan*. This also shows to the modern scientific world that the advanced state of Ayurvedic anatomy and thus *anguli pramana* 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. Anthropometric data is highly significant in developing concepts related to forensic medicine in Ayurveda. Thus we can see concepts of anthropometry described in *Samhitas* at places with significant elaborations which shows concept of anthropometry in Ayurveda and shows the path for further illustration for better use.

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Source of Support: Nil

Conflict Of Interest: None Declared

How to cite this URL: Mrunalini D. Gundre Et Al: Roll Of Anguli Pramana In Assessment Of Medovruddhi W.S.R. To Anthropometry: A Critical Review. International Ayurvedic Medical Journal {online} 2017 {cited November, 2017} Available from: http://www.iamj.in/posts/images/upload/4130_4138.pdf