STANDARDIZATION OF *ANGULĪ PRAMĀNA*

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ABSTRACT

Introduction: *Pramāna Shārīr* is the unique concept presented by our āchārya at times when there were no standardized tools of measurements. *Angulī pramāna* deals with the measurement of different body parts. For this they developed *swa-anguli pramāna* as a unit of measurement. There are different opinions regarding which *angulī* i.e. finger to be considered for *Angulī pramāna*. Hence the present study reveals the standardization of *Angulī pramāna*.

Methodology: The present study was conducted on 100 participants. Breadth of index finger and middle finger was measured at the proximal interphalangeal joint for both hands using Vernier caliper. Breadth of both hands measured at metacorpo-phalangeal joint with the help of Vernier caliper and breadth of the thumb measured at proximal end of nail. At the same time *Shir parināh* i.e. head circumference of each participant is measured using measuring tape in centimeter which afterward converted into *Anguli pramāna*. The values thus obtained for *Shir parināh* compared with the Samhita values.

Result: The result obtained by using middle finger breadth of right hand was found more appropriate.

Discussion: It may be concluded that the middle finger breadth of right hand taken at proximal inter-phalangeal joint should be consider as the standardized tool for *Angulī pramāna*.

Keywords: *Pramāna shārīr, angulī pramāna, swa-angulī pramāna*.

INTRODUCTION:

Pramāna shārīr is the great contribution to Ayurved by our ancient āchārya. Ayurved deals with both to sustain health as well as to treat the patient. *Pramāna* of the body gains prime importance when it comes to estimation of health. Also āchārya Charaka has stated *Dashavidha pariksha* (tenfold examination) which includes *Pramāna pariksha* of the patient who is being treated. Wise physician must take this into consideration before treating the patient so as to get the success. *Angulī pramāna* is a unique anthropometric concept described in Ayurved; where *swa-anguli* i.e. individual's own finger width is used as a unit for measurement of different body parts. Ample references from ancient classics explain that *Pramāna shārīr* plays important role in determination of life span as well as the quality of life. The persons having appropriate measurement may attain a long span of life and prosperity; with moderate and poor measurements, they attain medium and short lives respectively. [1]

CONTEXT OF THE STUDY:

It is stated by āchārya Sushruta that the physician before commencing treatment of the patient, should first examine his *Āyu* (life span); if he has long life span then his *vyādhi* (disease), *rutu* (season), *agni* (digesting power), *vaya* (age), *deha* (body build), *bala* (strength), *satva* (mind), *sātmya* (habituations accustoms), *prakruti* (constitution), *bheshaja* (drug) and *desha* (habitat) should be examined.[2] For determination of *Āyu*, āchāryas have

described *Angulī pramāna* of various body parts. It is nothing but the quantitatively expressed dimension of the human body parts. Measurements of the human body have been found in Charak Samhita, Sushrut Samhita, Ashtanga Sangraha and Ashtanga Hridaya also. Differences in opinion are noticeable between these texts. The ancient method of measuring was not uniform; exactly which *angulī* (finger) should be used for measurement is not mentioned by āchārya Charak and Sushruta. But there are some references in Kautiliya Arthashāstra and Shārangdhar Samhitā in this regard.

According to *Deshakālamāna* chapter of Kautiliya Arthashāstra, width of middle part of 8 *yava* is equal to one *angula* and *madhyaprakarna*(proximal interphalangeal joint) of *madhyamā angulī* (middle finger) of *Madhya kāya purusha* is equal to one *angula*. [3]

According to Shārangadhara Samhitā, width of *madhyama parva* (proximal interphalangeal joint) of *madhyamā angulī* (middle finger) is equal to one *angula* and *nakhatalabhāga* of *angushtha* (proximal end of nail of thumb) is one *angula*. [4]

Dalhana stated that eyeball measures 2 *angula* with the unit of one *angula* measured by the middle portion of person's thumb. [5]

Kara tal bhāga (palm of hand) has mention of 4 *angul vistāra* (width), hence measurement obtained by taking width of palm and then diving it by four gives one *angul*.[6] [7]

Said references reveal that *Angulī pramāna* can be taken as,

1. Width of middle finger at proximal interphalangeal joint [3] [4]

2. Width of proximal end of nail of thumb [4] [5]

3. Measurement obtained by taking width of the palm and then dividing it by four [6] [7]

Considering such kind of various opinions about *angulī pramāna* there was a pressing need of standardization of *swa-angulī pramāna*. Therefore this study is carried out for the reference of further research.

METHODOLOGY:

Method of selection of study subjects: Participants of age group 18 to 50 years of both gender, from same geographical area; here Ahmed Nagar and Nasik region and same socio-economic status were included in the study; whereas persons having metabolic disorder, persons with hair style or turban were excluded from the study.

Materials: Digital vernier caliper, Measuring tape, Calculator, Informed Consent Form, Case Record Form.

Methods: In present study 100 participants were selected by voluntary participation for the purpose of standardization of the *angulī* for *Angulī pramāna*. We have taken measurements of these participants as follows,

1. Breadth of Index finger (**BI**) at proximal interphalangeal joint of Rt hand,

2. Breadth of Middle finger (**BM**) at proximal interphalangeal joint of Rt hand,

3. Breadth of Hand (**BH**) at metacorpo-phalangeal joint of Rt hand,

4. Breadth of Thumb (**BT**) at proximal end of nail of thumb of Rt hand,

5. Breadth of Index finger (**BI**) at proximal interphalangeal joint of Lt hand,

6. Breadth of Middle finger (**BM**) at proximal interphalangeal joint of Lt hand,

7. Breadth of Hand (**BH**) at metacorpophalangeal joint of Lt hand

8. Breadth of Thumb (**BT**) at proximal end of nail of thumb of Lt hand.

For measuring breadth digital vernier caliper is used so as to attain accuracy. The

measurement of *swa-angulī* of each participant is noted in this way; at the same time *Shir parināh* (Head circumference) of each participant is also measured with measuring tape in 'cm' which later on converted into *Angulī pramāna* in all eight ways. The values thus obtained compared with the Samhita value. In present study we have selected *Shir parināh* as a parameter because it is observed that the average value of the *Shir parināh* is found the same for the present era as the value stated by āchārya Charaka. [8]

OBERVATIONS & RESULTS:

Table No. 1 Measurements taken with Vernier caliper

	Anguli measurement **Mean** Right hand (cm)	*Anguli* measurement **Mean** Left hand (cm)
BI	1.68045	1.67954
BM	1.70788	1.7235
BH	1.63697	1.61233
BT	1.73851	1.73278

Table no. 1 represents Means of *Angulī pramāna* measured with the help of Vernier caliper at various levels for both right and left hand e.g. Mean one *angul* is equals to 1.68045 cm when it is calculated with breadth of Index finger of Right hand.

Table No. 2 Measurement of *Shir Parināh* (Head circumference)

	Shir parināh Mean with **Right hand** (*angul*)	*Shir parināh* Mean with Left hand (*angul*)
BI	32.43	32.47
BM	**32**	32.45
BH	33.23	33.8
BT	31.36	31.45

Shir parināh (Head circumference) stated in ancient classics is 32 *angul*. [9] *Shir parināh* calculated with the breath of index finger and the middle finger at proximal interphalangeal joint is found near about 32 *angul* for both right and left hand same as stated in Samhita. Whereas *Shir parināh* calculated with the breadth of hand at metacorpo-phalangeal joint is found near about 33 *angul* for both right and left hand. Also *Shir parināh* calculated with the breadth of thumb at proximal end of nail is found near about 31 *angul* for both right and left hand. It can be noticed that *Shir parināh* obtained by using Middle finger breadth of the right hand is exactly 32 *angul*.

Table No. 3 Comparison of Measured *Shir Parināh* with Samhita value

Right hand	*Anguli pramāna* **Mean** (cm)	*Shir parināh* **Range** (*angul*)	**Mode** (Frequency of *Shir parināh* 32 *angul*)
BI	1.68045	26-39	14
BM	1.70788	24-38	**24**
BH	1.63697	28-43	13
BT	1.73851	24-38	11

Table No. 4 Comparison of Measured *Shir Parināh* with Samhita value

Left hand	*Anguli pramāna* **Mean** (cm)	*Shir parināh* **Range** (*angul*)	**Mode** (Frequency of *Shir parināh* 32 *angul*)

BI	1.67954	25-39	11
BM	1.7235	25-39	10
BH	1.61233	29-41	13
BT	1.73278	25-38	15

Table no. 3 and 4 represents Means of 'one *angul pramāna'* at various levels for both hands in 'cm' measured with Vernier caliper, Range of *Shir parināh* (Head circumference) in *angul* as well as Mode or frequency of *Shir parināh* 32 *angul*. Frequency of getting *Shir parināh* 32 *angul* is found more when measured with the breadth of proximal interphalangeal joint of middle finger of the right hand as compared to measurements taken by other ways. In fact the mean *Shir parināh* measured with the middle finger breadth of right hand is found exactly 32 *angul*. So it is clear that the middle finger breadth of right hand taken at proximal interphalangeal joint may be consider as the standardized tool for *Angulī pramāna*.

Bar diagram 1 showing Frequency of *Shir parināh* 32 *angul*
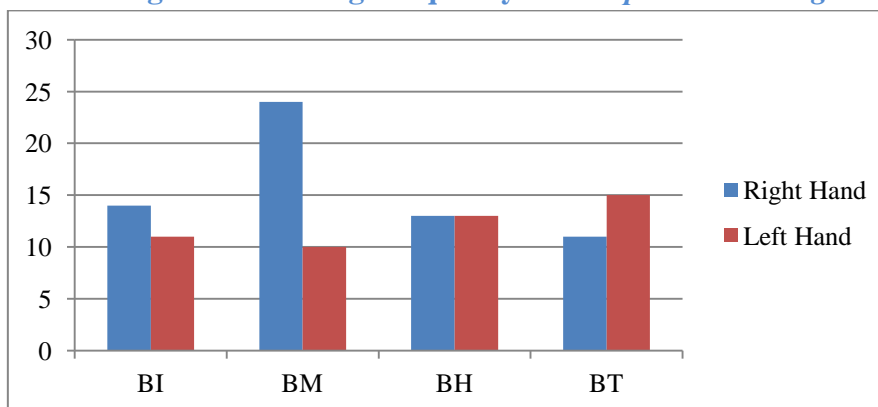
Bar diagram shows Frequency of *Shir parināh* 32 *angul* by various measures. Here X-axis denotes groups, where BI is breadth of index finger, BM is breadth of middle finger, BH indicates breadth of hand and BT indicates breadth of thumb. Y-axis denotes frequency of *Shir parināh* 32 *angul* (Mode).

DISCUSSION:

Angulī pramāna is ancient way of anthropometric measurements described in our ancient texts. There we found measurements of various human body parts. They have used *swa-angulī* i.e. individual's own finger as a tool of measurement; but which *angulī* should be used is not mentioned by ācharya Charaka and Sushruta. In some ancient texts like Kautiliya Arthashāstra and Shārangdhar Samhitā there are some references in this regard. On the basis of that present study was planned. Main objective of the study was to standardize *Anguli* (finger) for *Angulī pramāna*.

Present study was performed on 100 participants. Their *Angulī* measurements were taken with the help of Vernier caliper and that of *Shir parināh* with the help of measuring tape. *Shir parināh* first measured in 'cm' later on which is converted into 'angul'. Converted *Shir parināh* is compared with the value stated in ancient text. Statistical measures like mean, mode and range were applied to the data.

Observations and result of this study reveal that the measurements taken by using breadth of middle finger of the right hand at proximal interphalangeal joint is found more accurate. So it may be

concluded that middle finger is the standardized tool of measurement in *Angulī pramāna.*

CONCLUSION:

Individualistic approach is the specialty of ancient *Angulī pramāna*; hence *swa-angulī* is used as a tool of measurement of various human body parts. On the basis of present study it may be concluded that breadth of middle finger of the right hand at proximal interphalangeal joint is the standardized tool of measurement in *Angulī pramāna*. The measurements of *Shir parināh* obtained found same when compared with the Samhitā value. So this study will be helpful source for other researchers for reference.

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