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EVALUATION OF THE RELATIONSHIP BETWEEN *JANU SANDHI PARINAHA* AND *DEHA PRAKRUTI* – AN OBSERVATIONAL STUDY

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ABSTRACT

Ayurveda has dynamic and creative view on health and gives importance to the individual while managing health and during treating the diseases. *Aacharya Charaka* includes *Maana Pramana* and *Prakruti* under the heading *Dashvidhparikshya Bhava*, both determine the health of the individual and *Bala* of *Rogi*. *Swa-Angula Pramana* is ideal parameter irrespective of gender, race and place. The width of middle crease (proximal inter-phalangeal joint) of middle finger of an individual is considered as one *Angula*. The features related to *Sandhi* in different *Prakruti* individual are specifically mentioned in our *Samhita* and *Angula Pramana* of different parts of the body, including *Sandhi* is also categorically mentioned but the *Pramana* of *Sandhi* in different *Prakruti* is not been found in any *Samhitas*. This study was aimed to evaluate the relationship between *Janu Sandhi Pramana* and *Deha Prakruti*. In this study the observational survey study was carried out on total 201 healthy individuals. *Prakruti*, *Swa-anguli Pramana*, *Parinaha*(circumference) of *Janu Sandhi* (knee joint) was measured. Observational data of 201 healthy individuals were put forth by the tabular presentation. ANOVA test was applied to derive the relationship between *Janu Sandhi Pramana* and *Deha Prakruti*. The *Parinaha* of *Janu sandhi* among the different *Prakruti* individual have a significant difference in their measurements with higher F-calculated value than the F- Crit value at 5% level of significance for both side of *Janu Sandhi Parinaha*. This signifies that the *Parinaha* (circumference) of *Janu Sandhi* (knee joint) and *Deha Prakruti* is strongly correlated with each other.

Keywords: *Pramana, Janu Sandhi, Parinaha, Prakruti*

INTRODUCTION

Ayurveda has dynamic and creative view on health and gives importance to the individual while managing health and during treating the diseases. In the holistic science of *Ayurveda*, different tools to examine the patient are described. *Dashvidhparikshya Bhava* described by *Aacharya Charaka* includes *Pramana Sharira* (Anthropometry) and *Prakruti* as one of the tools for examine the healthy individual and the patient also [1]. Our Seers explained the concept of *Swa-Angula Pramana* which can be ideal parameter irrespective of gender, race and place. The width of middle crease (proximal inter-phalangeal joint) of middle finger of an individual is considered as one *Angula* [2]. *Acharya Charaka* mentioned *Pramana of Janu* is 16 *Angula* in *Parinaha* (circumference) and 4 *Angula* in *Ayama*(length) [3], while 14 *Angula* in *Parinaha* (circumference) cited by *Aacharya Sushruta* [4]. The features related to *Sandhi* in different *Prakruti* individual are specifically mentioned in our *Samhita*. While explaining the *Lakshanas* of *Sandhi* in different *Prakruti* individuals, *Acharya Charaka* mentioned “*Satat Sandhi Shabda Gaminsch*” for *Vata Prakruti*, “*Sithil Mrudu Sandhi Mamsa*” for *Pitta Prakruti*, “*Sushlista Sara Sandhi Bandhanat*” For *Kapha Prakruti* individuals [5]. *Angula Pramana* of different parts of the body,

including *Sandhi* is categorically mentioned in treatise, but the *Pramana* of *Janu Sandhi* in different *Prakruti* individual is not been found in any *Samhitas*. So, there is a need to evaluate the *Janu Sandhi Pramana* and its variations based on *Prakruti*.

AIM AND OBJECTIVE:

Aim: To evaluate the relationship between *Janu Sandhi Pramana* and *Deha Prakruti*.

Objective: To evaluate the relationship between *Janu Sandhi Pramana* and its variations based on *Deha Prakruti*.

MATERIALS AND METHOD:

Materials:

- Consent form
- Vernier Caliper
- Un-stretchable Standard Measuring Tape
- Stadiometer
- Weight machine
- Record form
- *Prakruti Parikshana Patra*

Method:

An Observational Study was carried out on total 201 individuals who fall under inclusion criteria. *Prakruti* of individuals were assessed using *Prakruti Pariksha Patra*, they are segregated under 3 groups based on dominance of their *Prakruti*. *Swa-anguli Pramana* of the Individual was measured using Vernier Caliper to confirm the *Angula* unit. *Parinaha* (Circumference) of both *Janu sandhi* (knee) of individuals was measured

using Un-stretchable Standard Measuring tape and converted into *Angula* unit. To measure *Parinaha* (Circumference) of *Janu Sandhi*, un-stretchable standard measuring tape was wrap around the mid Patellar region in standing posture of the Individual. Height and weight of the individual was measured to evaluate the BMI.

Inclusion criteria:

- Individual between 20 to 35 years of age irrespective of gender, religion.
- 200 healthy Individual without any knee deformity.
- Individual having BMI between 18.5 to 24.9.

Exclusion criteria:

- Individual with visible congenital and acquired deformities related to lower limb.

- Individual with any congenital bone deformity at knee region.
- Individual having acquired anatomical deformity of knee joint.
- Individual suffering from diseases like *Sandhigata vata* (Osteoarthritis), *Amavata* (Rheumatoid arthritis), Psoriatic arthritis, Obesity, Malnutrition.
- Individual having past history of Fracture or Dislocation of knee joint.
- Individual under go any surgical procedure related to knee joint.

OBSERVATION AND RESULT:

Among 201 samples frequency of individuals having *Vata Pradhana Prakruti* is 68, *Pitta Pradhana Prakruti* is 66 and *Kapha Pradhana Prakruti* is 67.

A) AVERAGE FOR RIGHT SIDE

JANU SANDHI:

Table 1: *Prakruti* and average of Right *Janu Sandhi Parinaha* in *Angula*

<i>Prakruti</i>	Average of Right <i>Janu Sandhi Parinaha</i> in <i>Angula</i>
<i>Vata Pradhana Prakruti</i>	16.46
<i>Pitta Pradhana Prakruti</i>	17.91
<i>Kapha Pradhana Prakruti</i>	19.74

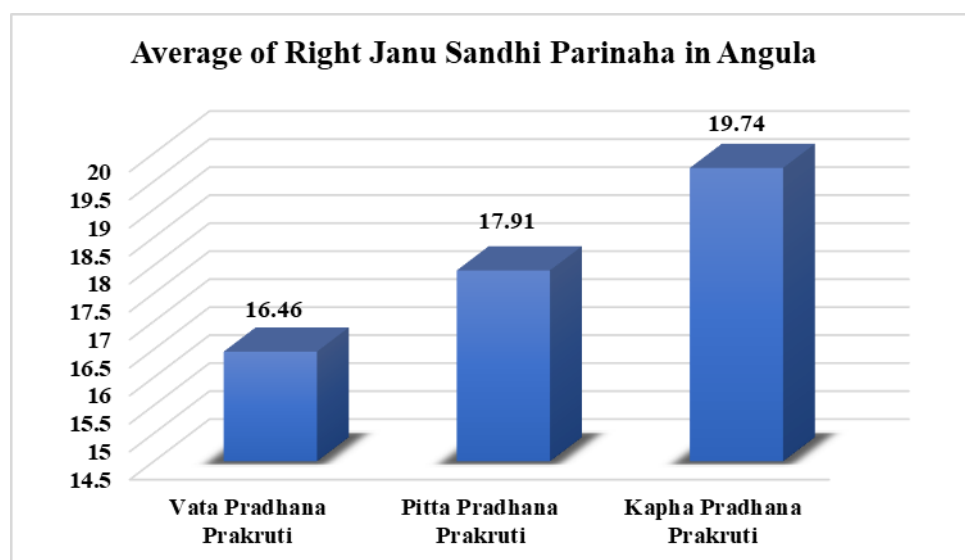
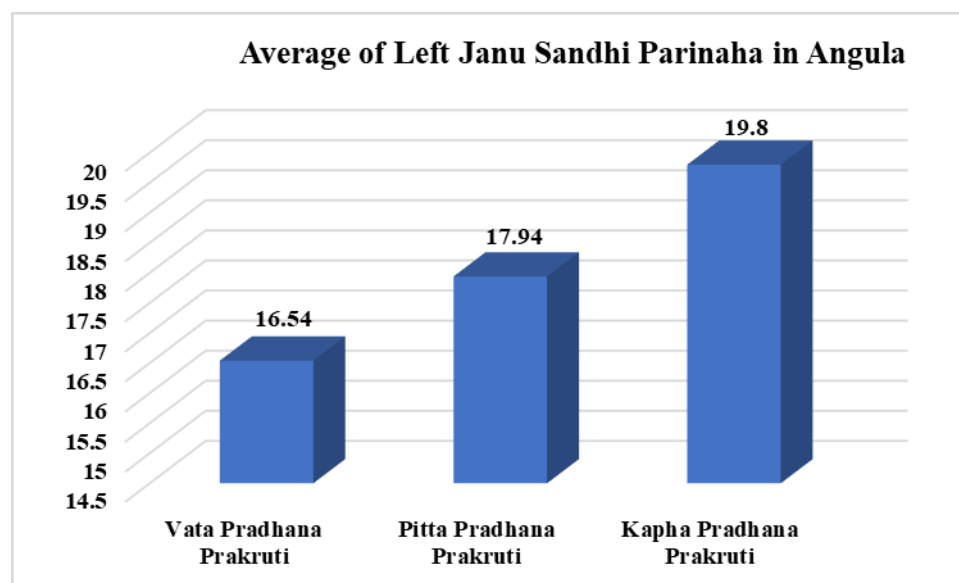


Figure 1: *Prakruti* and average of Right *Janu Sandhi Parinaha* in *Angula*

B) AVERAGE FOR LEFT SIDE JANU SANDHI:Table 2: *Prakruti* and average of Left Janu Sandhi Parinaha in Angula

<i>Prakruti</i>	Average of Left Janu Sandhi Parinaha in Angula
<i>Vata Pradhana Prakruti</i>	16.54
<i>Pitta Pradhana Prakruti</i>	17.94
<i>Kapha Pradhana Prakruti</i>	19.80

Figure 2: *Prakruti* and average of Left Janu Sandhi Parinaha in Angula

In this observational study, to find out the relationship between *Janu Sandhi Pramana* and *Deha Prakruti* ANOVA (Analysis of Variance) test was applied.

RESULT of ANOVA test for Right and Left Janu Sandhi Pramana and Deha Prakruti:

Table 3: ANOVA test for Right Janu Sandhi Pramana and Deha Prakruti

ANOVA					
<i>Source of Variation</i>	<i>SS</i>	<i>df</i>	<i>MS</i>	<i>F</i>	<i>F crit</i>
Between Groups	362.86	2	181.43	283.95	3.04
Within Groups	126.51	198	0.63		
Total	489.38	200			

ANOVA test for Left Janu Sandhi Pramana and Deha Prakruti:

Table 4: ANOVA test for Left Janu Sandhi Pramana and Deha Prakruti

ANOVA					
<i>Source of Variation</i>	<i>SS</i>	<i>df</i>	<i>MS</i>	<i>F</i>	<i>F crit</i>
Between Groups	360.56	2	180.28	280.93	3.04
Within Groups	127.06	198	0.64		
Total	487.63	200			

DISCUSSION:

Discussion on relationship between *Janu Sandhi Pramana* and *Deha Prakruti*

To find out the relationship between *Janu Sandhi Pramana* and *Deha Prakruti* ANOVA test was applied for the sample size of 201 individuals. The calculated F-value for analysis of variance of *Janu Sandhi Pramana* and *Deha Prakruti* of right side is 283.95 which is greater than F-*Crit* (critical value of F Distribution) which is 3.04, this indicated the difference in value is due to *Prakruti* and not by chance. Similarly, the calculated F-value for analysis of variance of *Janu Sandhi Pramana* and *Deha Prakruti* of left side is 280.93 which is greater than F-*Crit* (critical value of F Distribution) which is 3.04, this indicated the difference in value is due to *Prakruti* and not by chance. For both right and left *Janu Sandhi Pramana* and *Deha Prakruti* ANOVA test was performed. Result shows higher value of F-calculated than F-significance(*crit*) which indicates positive relationship between *Janu Sandhi Pramana* and *Deha Prakruti*. The average value of *Janu Sandhi Parinaha* for *Vata Pradhana Prakruti* individual is 16.46 *Angula* for right side and 16.54 *Angula* for left side, *Pitta Pradhana Prakruti* individual is 17.91 *Angula* for right side and 17.94 *Angula* for left side, *Kapha Pradhana Prakruti* individual is 19.74 *Angula* for right side

and 19.80 *Angula* for left side of Knee joint indicates that *Janu Sandhi* of individuals having *Kapha Pradhana Prakruti* is comparatively bigger than that of *Pitta Pradhana* and *Vata Pradhana Prakruti* respectively.

CONCLUSION

Pramana and *Prakruti* - a crucial parameter among the *Dashavidha Pareekshyabhava* outlined in *Charaka Samhita*. As described in the *Rogabhishagjitiya Vimanam adhyaya*, denotes that the individual having “*Pramanavat Sharira*” (normal *Pramana*) is directly correlated with longevity, health, good strength, happiness, prosperity and wealth.

The average value of *Janu Sandhi Parinaha* in different *Prakruti* individuals indicates that *Janu Sandhi* of individuals having *Kapha Pradhana Prakruti* is comparatively bigger than that of *Pitta Pradhana* and *Vata Pradhana Prakruti* respectively.

In present study measurement of *Parinaha* of *Janu Sandhi* for different *Prakruti* individuals arranged into following sequences:

$$\begin{aligned} &Kapha\ Pradhana\ Prakruti > Pitta \\ &Pradhana\ Prakruti > Vata \\ &Pradhana\ Prakruti \end{aligned}$$

The *Parinaha* of *Janu sandhi* among the different *Prakruti* individual have a significant difference in their measurements with higher F-calculated value than the F-

Crit value at 5% level of significance and having p-value <0.0001 for both side of *Janu Sandhi Parinaha* which signifies that the *Parinaha* (circumference) of *Janu Sandhi* (knee joint) and *Deha Prakruti* is strongly correlated with each other.

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