

## Validation of obesity as a phenotypic trait based on Prakriti assessment supported by anthropometric profile among NE young adults

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### KEYWORDS

Prakriti, Obesity, Skinfold, anthropometric, Sthoulya

**Background:** The WHO uses the term "globesity" to reflect an escalating global epidemic of overweight and obesity. The northeastern parts of India, due to their tough terrain, were not affected much, but recent infrastructural development and ease of life have paved the way for concerns about obesity. According to the latest NFHS-3, the prevalence of overweight and obesity in the area is nearly 15–20%. In texts, the idea of Prakriti (a person's genotypic constitution) clearly shows how these Prakriti show up in their phenotypic traits through simple meanings and comparisons. BMI and skinfold measurement are well-studied techniques for the identification of obesity.

**Objectives:** To validate the Ayurveda principle about obesity as a phenotypic trait of Prakriti and to find the relation of BMI and Prakriti about overweight and obesity

**Methods:** We conducted this study on 100 students from Northeastern states studying at NEIAH, selecting them based on inclusion criteria. A questionnaire assessed Prakriti based on the phenotypic traits of Vata, Pitta, and Kapha. After an assessment, subjects were further categorized into three groups, and anthropometric (via measuring tape) and skinfold thickness (via Harpenden's caliper) parameters were taken and analyzed.

**Results:** The survey revealed that Pittaja Prakriti constituted the majority of participants. This study found that the participants' weight, body mass index (BMI), neck, mid-arm, forearm, waist, hip, and mid-thigh circumferences, as well as the thickness of their biceps and supriliac skin, were all statistically significant.

**Conclusion:** Ayurvedic literature considers Sthoulya as a Kapha disorder. The current study also reveals a higher prevalence of Sthoulya in Prakriti, a Kapha-dominated body type. We link this to the storage of lipid and fat molecules. Timely identification of obesity-prone genotypes among the population can be instrumental in curbing its ill effects.

### Introduction

Lifestyle disorders are the most concerning health-related afflictions in contemporary society. The World Health Organization characterizes obesity as "one of today's most conspicuously evident yet most overlooked public health issues" and employs the word "globesity" to denote an "intensifying global epidemic of overweight and obesity."<sup>[1]</sup> Obesity, formerly perceived as a condition of the affluent, now permeates all societal strata regardless of age, gender, and other factors. Moreover, obesity was a primary contributor to various other lifestyle diseases, such as hypertension and renal illnesses.

The theory of Prakriti, representing the genotypic makeup of the individual, is a basic concept in Ayurveda. Simple interpretations and parallels in the literature vividly depict the phenotypic characteristics of these Prakriti. These include the phenotypic characteristics of obesity in several terms for Kaphaja Prakriti people. BMI and skinfold measurement are established techniques for the diagnosis and classification of

obesity, utilizing many parameters such as age, gender, and nutritional status. This standard method has been tested and is reliable. It can be used with Ayurvedic principles to help find signs of obesity early on.<sup>[2]</sup>

The latest National Family Health Survey (NFHS-3) indicates the prevalence of overweight and obesity among males and females in Arunachal Pradesh, Assam, Manipur, Meghalaya, Mizoram, Nagaland, Sikkim, and Tripura as follows: 10.6% & 12.5%, 6.7% & 7.8%, 13.4% & 17.1%, 8.2% & 8.9%, 16.9% & 20.3%, 8.4% & 10.2%, 17.3% & 21%, and 5.2% & 5.3%, respectively.<sup>[3]</sup>

Numerous researches throughout various regions of India indicate that the prevalence of overweight and obesity among schoolchildren ranges from 1.0% to 30%. A study indicates that the incidence of overweight among Indian individuals aged 20–69 years will more than double from 2010 to 2040, while the prevalence of obesity will treble.<sup>[4][5]</sup> By 2040, the prevalence of overweight and obesity is projected to reach 30.5% (27.4%-34.4%) and 9.5% (5.4%-13.3%) among males, and 27.4% (24.5%-30.6%) and 13.9% (10.1%-16.9%) among women, respectively.<sup>[6]</sup>

We cannot gather specific information about young adults or college-bound individuals who are more likely to engage in dietary misbehavior. The project is to gather anthropometric data pertaining to fat measurement in college students aged 18-25 and to provide a screening method through Ayurveda Prakriti assessment.

**Aims:** To validate obesity as a phenotypic trait based on Prakriti (constitution) assessment supported by anthropometric profile among NE young adults.

#### **Objectives:**

1. To validate the Ayurveda principle about obesity as a phenotypic trait of Prakriti
2. To find the relation between BMI and Prakriti about overweight and obesity

#### **Material & Methods:**

**a) Subject Selection:** A cross-sectional study was performed using 100 subjects, specifically students from the northeastern states of Arunachal Pradesh, Manipur, Mizoram, Meghalaya, Sikkim, and Tripura, enrolled in the College of Ayurveda and the College of Homoeopathy at NEIAH. We chose the individuals using simple random selection and obtained signed informed consent after providing a comprehensive explanation of the procedure and its objectives.

**b) Inclusion criteria:** Participants from the northeastern states with no documented illnesses were selected, aged between 18 and 25 years, without restrictions based on gender, caste, or religion.

**c) Exclusion criteria:** Participants aged under 18 or over 25 years, as well as those with a prior diagnosis of any metabolic abnormality or infectious disease, were excluded from the study.

**d) Assessment of Prakriti:** A questionnaire for Prakriti determination was developed based on the phenotypic characteristics of Vata, Pitta, and Kapha, in relation to anatomical, physiological, and sociological attributes as delineated in the Brihatrayi (the comprehensive triad of Charaka, Susruta, and Astanga Hridaya). All anatomical features were evaluated through visual and tactile inspection. The predominant Dosha Prakriti of an individual is shown by the maximum qualities of any Dosha.

**e) Procedure:** After conducting a Prakriti assessment, we classified the patients into three categories: Vata dominant, Pitta dominant, and Kapha dominant. Subsequently, anthropometric measurements (using a measuring tape) and skinfold thickness (utilizing a Harpenden caliper) were recorded and analyzed. The parameters selected were:

SNO	Anthropometric parameters	Skinfold thickness (mm)
1.	Height(m)	Biceps
2.	Weight(kg)	Triceps
3.	BMI(kg/m <sup>2</sup> )	Abdomen
4.	Neck circumference (cm)	Supra iliac
5.	Mid-arm circumference (cm)	
6.	Forearm circumference (cm)	
7.	Chest circumference (cm)	
8.	Abdomen circumference (cm)	
9.	Mid-thigh circumference (cm)	
10.	Mid-calf circumference (cm)	

## Measurement Procedure:

### General Rules:

- We generally positioned participants upright for circumference measures.
- Clothing introduces inaccuracies in circumference measurements; thus, it was minimised as much as feasible, considering participant comfort.
- A mirror was employed to guarantee precise tape positioning.
- Using a D-loop tape measure, the observer confirmed that they obtained the measurement from beyond the buckle's edge.
- Measurements were documented to the nearest 0.1 cm (1 mm).
- Generally, we documented three measures. The mean was calculated by summing the data and dividing by the total number of measurements.
- The circumferential tape was applied snugly, neither squeezing the skin nor excessively loose; it rested flat on the skin and was positioned horizontally (parallel to the floor).

**Weight & Height:** We used the kilograms mode on the electronic digital scale. A stadiometer was employed to ascertain height; the measurement was recorded in centimeters and subsequently.

**Procedure for Mid-arm & Forearm circumference:** The circumference was measured at the midpoint between the acromion and the olecranon process. The observer noted that the participant's elbow was flexed at a 90-degree angle with the palm orientated upward. The participant stood upright, with arms relaxed at the sides and palms orientated towards the thighs. We took the forearm measurement from the right side of the body. The participant was instructed to extend the arm with the palm facing upward, and the measurement was recorded along the forearm at the site of maximum circumference. The tape was adjusted vertically along the forearm to identify the point of greatest circumference.

**Procedure for Neck circumference:** The circumference was measured at the midpoint between the clavicle and the chin (at the laryngeal prominence) with the gaze directed straight ahead. The tape was appropriately fitted lying flat on the skin.

**Procedure for Waist circumference & Hip circumference:** We instructed the participants to stand erect with their feet slightly apart and their arms relaxed at their sides, collecting measurements after a typical expiration. The World Health Organization STEPS manual was adhered to during the waist circumference measurement of participants in a fasting state to mitigate the influence of gastric contents.

(<http://www.who.int/chp/steps/manual/en/index3.html>) During the measurement of hip circumference, participants were told to stand erect with their arms relaxed at their sides and heels together and to remove all things from their pockets. The observer instructed the subject to rotate their foot to locate the hip while the tape was placed at the broadest point of the buttocks, above the trochanters. The tape was securely wrapped around the participant without squeezing the skin.

**Procedure for Mid-thigh & Mid-calf circumference:** Measurements of mid-thigh and mid-calf were conducted on the non-dominant leg. The thigh's circumference was measured across the long axis of the thigh, in the middle spot between the inguinal fold and the top edge of the patella. The mid-calf measurement was taken with the participant standing upright, feet approximately 20 cm apart, body weight evenly

distributed on both feet, at the widest circumference of the calf, situated between the base of the patella and the ankle.

### Skin folds:

- All skin folds were assessed using a skinfold caliper.
- Measurements were obtained from the right side of the body.
- The examiner carefully grabbed the fold of skin and the underlying subcutaneous adipose tissue between the left thumb and forefingers.
- The examiner pinches sufficient skin and adipose tissue to create a clear fold that detaches from the underlying muscle.
- We lightly held the skin fold with our thumb and fingertip, pinching it 2.0 cm above the measurement site.
- The calliper jaws are positioned at the designated level, perpendicular to the fold's length, and the skin fold thickness is measured to the nearest 0.1 mm while maintaining pressure on the skin fold with the fingers.
- We recorded the measurement from the calliper approximately three seconds after removing the tension.

**Triceps & Biceps Skin fold:** The participant stands upright with feet together, shoulders relaxed, and arms hanging freely at the sides. The examiner positions himself or herself behind the participant's right side. The point on the posterior surface of the right upper arm was situated at the same location as the designated midpoint for the upper arm circumference.

The biceps skinfold was measured directly opposite the triceps skinfold, located on the anterior side of the arm at the same midpoint level as specified for the triceps skinfold. We positioned the individual facing the observer, with the left arm hanging relaxed and the palm orientated forward. The middle finger and thumb meet at a point 1 cm above the designated mid-point. This point lines up with the vertical axis that runs from the middle of the antecubital fossa to the head of the humerus.

**Abdomen Skin folds:** A horizontal fold about 3 cm to the side of the midpoint of the umbilicus and 1 cm below it.

**Suprailiac Skin fold:** The measuring location for the suprailiac skinfold was 1 cm superior and 2 cm medial to the anterior superior iliac spine. This was optimally palpate with the person standing in front of the observer. The observer gripped the skin fold between the middle finger and thumb. The calliper was once more positioned beneath the fingers, and upon the cessation of the dial's movement, the measurement was recorded to the nearest completed 0.1 mm.

### Statistical analysis of data:

The data was encoded and input into a Microsoft Excel spreadsheet. We conducted the analysis using SPSS version 20 (IBM SPSS Statistics Inc., Chicago, Illinois, USA) for Windows. Descriptive statistics encompassed the calculation of percentages, means, and standard deviations. The Kruskal-Wallis test was employed for the comparison of quantitative data across three groups. The Chi-square test was employed for qualitative data when comparing two or more groups. The significance level was established at  $P \leq 0.05$ .

### Observations:

**Prakriti:** Among the 100 participants, 46 (F=33, M=13) were of Pittaja dominant Prakriti as per our performance; 30 (F=20, M=10) were of Kapha dominant Prakriti, and 24 (F=21, M=3) were of Vataja dominant Prakriti as in Table no. 1.

**Table No. 1 Gender wise assessment of Prakriti among participants**

			Gender		Total
			F	M	
Prakriti	P	N	33	13	46
		%	71.7%	28.3%	100.0%
	K	N	20	10	30
		%	66.7%	33.3%	100.0%
	V	N	21	3	24
		%	87.5%	12.5%	100.0%
Total		N	74	26	100
		%	74.0%	26.0%	100.0%

### Anthropometry Observations:

The weight of the participants in the Kapha-dominant Prakriti was found to be higher in comparison to Pitta and Vata Prakriti, while the Vata Prakriti participants had the lowest weight. (P Value 0.001). There was no static significance found among participants of various Prakriti in the parameter of height. Table 2 shows that the BMI of people with Kapha dominance was higher than that of people with Pitta and Vata Prakriti. The BMI of people with Vata Prakriti was the lowest. (P Value 0.001)

**Table No. 2 Anthropometrical observations of weight, height & BMI**

		N	Mean	Std. Dev	Minimum	Maximum	P VALUE
Weight	P	46	59.683	10.15	44.3	85.6	0.001 (S)
	K	30	60.157	11.79	44.4	91.2	
	V	24	46.338	6.74	37.0	64.3	
Height	P	46	1.56	0.081	1.420	1.850	0.18
	K	30	1.57	.072	1.410	1.730	
	V	24	1.53	.078	1.420	1.730	
BMI	P	46	24.08	3.01	19.02	31.85	0.001 (S)
	K	30	24.16	3.75	19.08	34.16	
	V	24	19.49	1.61	16.19	21.90	

**Neck circumference:** The neck circumference of participants of the Kapha dominant was found to be higher in comparison to Pitta and Vata Prakriti, while the Vata Prakriti participants had the lowest, as in Table No. 3 (P Value 0.001).

**Table No. 3 Neck circumference (cm)**

	N	Mean	Std. Deviation	Minimum	Maximum	P VALUE
P	46	33.38	3.07	29.50	40.10	0.001 (S)
K	30	33.89	3.68	30.00	41.60	
V	24	29.45	6.07	3.03	36.30	

**Mid-arm circumference:** Table No. 4 shows that the mid-arm circumference of Kapha dominant participants was bigger than that of Pitta dominant participants and Vata dominant participants. It was the smallest for Vata-dominant participants. (P Value 0.001)

**Table No. 4Mid-arm circumference (cm)**

	N	Mean	Std. Deviation	Minimum	Maximum	P VALUE
P	46	27.787	2.62	23.8	35.0	0.001 (S)
K	30	28.033	3.71	20.5	38.0	
V	24	24.438	1.62	22.0	27.3	

**Forearm circumference:** Table 5 shows that the forearm circumference of people who were Kapha dominant was bigger than that of people who were Pitta dominant or Vata dominant. The forearm circumference of people who were Vata-dominant was the smallest. (P Value 0.001)

**Table No. 5Forearmcircumference (cm)**

	N	Mean	Std. Deviation	Minimum	Maximum	P VALUE
P	46	24.215	2.06	20.4	29.0	0.001 (S)
K	30	24.390	2.42	21.6	30.8	
V	24	21.917	1.49	20.0	25.1	

**Waist circumference:** The waist circumference of participants of the Kapha dominant was found to be higher in comparison to Pitta and Vata Prakriti; while the Vata Prakriti participants were having the lowest as in Table 6. (P Value 0.001)\



**Table No. 6 Waist circumference (cm)**

	N	Mean	Std. Deviation	Minimum	Maximum	P VALUE
P	46	85.502	7.72	70.20	110.10	0.001 (S)
K	30	85.90	10.73	67.20	115.30	
V	24	75.5	5.57	63.30	85.50	

**Hip circumference:** The hip circumference of participants of the Kapha dominant was found to be higher in comparison to Pitta and Vata Prakriti; while the Vata Prakriti participants were having the lowest as in Table 7. (P Value 0.001)

**Table No. 7 Hip circumference (cm)**

	N	Mean	Std. Deviation	Minimum	Maximum	P VALUE
P	46	95.376	6.2254	80.2	111.0	0.001 (S)
K	30	96.493	7.4139	85.0	115.9	
V	24	86.588	4.9235	77.2	97.3	

**Mid-thigh circumference:** Mid-thigh circumference of participants of Kapha dominant was found to be higher in comparison to Pitta and Vata Prakriti; while the Vata Prakriti participants were having the lowest as in Table 8. (P Value 0.001)

**Table No. 8Mid-thigh circumference (cm)**

	N	Mean	Std. Deviation	Minimum	Maximum	P VALUE
P	46	48.096	3.7518	39.6	59.6	0.001 (S)
K	30	48.733	5.0745	39.9	60.1	
V	24	42.683	2.7714	38.7	48.2	

**Mid-calf circumference:** Mid-calf circumference of participants of Pitta dominant was found to be higher in comparison to Kapha and Vata Prakriti; while the Vata Prakriti participants were having the lowest as in Table 9. (P Value 0.001)

**Table No. 9Mid-calf circumference (cm)**

	N	Mean	Std. Deviation	Minimum	Maximum	P VALUE
P	46	35.24	2.55	30.00	41.70	0.001 (S)
K	30	34.98	2.903	30.20	40.40	
V	24	31.74	1.68	28.00	35.50	

**Skinfold thickness:**

**Biceps thickness:** As shown in Table 10, the biceps skin thickness of Kapha dominant participants was higher than that of Pitta dominant participants and Vata dominant participants. The Vata-dominant participants had the thinnest skin. (P Value 0.02)

**Table No. 10Bicepsthickness (mm)**

	N	Mean	Std. Deviation	Minimum	Maximum	P VALUE
P	46	2.11	.609	1.40	4.76	0.02 (S)
K	30	2.17	.61	1.60	4.70	
V	24	1.78	.35	1.20	2.60	

**Triceps thickness:** There was no static significance found among participants of various Prakriti in the parameter of Triceps skin fold thickness as in Table 11.

**Table No. 11 Triceps thickness (mm)**

	N	Mean	Std. Deviation	Minimum	Maximum	P VALUE
P	46	2.59	.50	1.80	4.00	0.08
K	30	2.74	.99	1.20	7.30	
V	24	2.32	.45	1.40	3.50	

**Abdomen thickness:** There was no statically significance found among participants of various Prakriti in a parameter of abdominal skin fold thickness as in Table 12.

**Table No. 12 Abdomen thickness (mm)**

	N	Mean	Std. Deviation	Minimum	Maximum	P VALUE
P	46	3.505	.71	2.30	6.00	0.08
K	30	3.29	.72	2.00	5.40	
V	24	3.13	.55	1.40	3.80	

**Suprailiac thickness:** Suprailiac skin thickness of participants of Kapha dominant was found to be higher in comparison to Pitta and Vata Prakriti; while the Vata Prakriti participants were having the lowest as in Table 13. (P Value 0.001)

**Table No. 13 Suprailiac skin folds thickness (mm)**

	N	Mean	Std. Deviation	Minimum	Maximum	P VALUE
P	46	2.88	.73	1.80	5.00	0.001 (S)
K	30	2.93	.82	1.90	5.50	
V	24	2.27	.46	1.60	3.60	

**Table No. 14 Assessment of Prakriti of participants according to State**

State		AP	Assam	ML	MN	MZ	NL	SIKKIM	TR	Total
Prakriti	P	N	12	8	9	10	2	2	0	46
		%	26.1%	17.3%	19.6%	21.7%	4.3%	4.3%	0.0%	100.0%
	K	N	7	3	6	5	1	4	1	30
		%	20.0%	10.0%	20.0%	16.7%	3.3%	13.3%	3.3%	100.0%
	V	N	2	1	11	7	0	1	0	24
		%	8.3%	4.2%	45.8%	29.2%	0.0%	4.2%	0.0%	100.0%
Total	N	21	12	26	22	3	7	1	8	100
	%	21.0%	12.0%	26.0%	22.0%	3.0%	7.0%	1.0%	8.0%	100.0%

Among the 100 student volunteers of NE states, 21% are from Arunachal Pradesh, 12% from Assam, 26% from Meghalaya, 22% from Manipur, 3% from Mizoram, 7% from Nagaland, 1% from Sikkim & 8% in Tripura. There were 46% Pittaja Prakriti dominant volunteers (26.1% in Arunachal Pradesh, 17.3% in Assam, 19.6% in Meghalaya, 21.7% in Manipur, 4.3% in Mizoram, 4.3% in Nagaland, 0% in Sikkim, and 6.5% in Tripura); 30% Kaphaja Prakriti dominant volunteers (20% in Arunachal Pradesh, 10% in Assam, 20% in Meghalaya, 16.7% in Manipur, 3.3% in Mizoram, 13.3% in Nagaland, 0% in Sikkim, and 10% in Tripura); and 30% Vataja Prakriti dominant volunteers (8.3% in Arunachal Pradesh, 4.2% in Assam, 45.8% in Meghalaya, 29.2% in Manipur, 0% in Mizoram, 4.2% in Nagaland, 0% in Sikkim, and 8.3% in Tripura).

## Results:

The survey revealed that the majority of participants were Pittaja-dominant Prakriti. We found that the weight of participants in the Kapha dominant group was higher than that of Pitta and Vata Prakriti. We found that the BMI of participants in the Kapha dominant was higher than that of the Pitta and Vata Prakriti. We found that participants with Kapha dominance had a higher neck circumference compared to those with Pitta and Vata Prakriti. We found that participants with Kapha dominance had a higher mid-arm circumference compared to those with Pitta and Vata Prakriti. The forearm circumference of participants with Kapha dominance was found to be higher in comparison to those with Pitta and Vata Prakriti. The waist circumference of participants with Kapha dominance was found to be higher in comparison to Pitta and Vata Prakriti. The hip circumference of participants with Kapha dominance was found to be higher in comparison to Pitta and Vata Prakriti. The mid-thigh circumference of participants with Kapha dominance was found to be higher in comparison to Pitta and Vata Prakriti. We found that participants with Pitta dominant had a higher mid-calf circumference compared to those with Kapha and Vata Prakriti. We found that participants

with Kapha dominance had thicker biceps skin compared to those with Pitta and Vata Prakriti. We found that participants with Kapha dominance had thicker triceps skin compared to Pitta and Vata Prakriti, although this difference was not statistically significant. We found that the suprailiac skin thickness of Kapha-dominant participants was higher than that of Pitta and Vata Prakriti.

### Discussion:

As per Charaka, the attributes of Kapha Dosha are Guru (heavy), Shita (cold), Mrudu (soft), Snigdha (unctuous), Madhura (sweet), Sthira (stable), & Picchila (sticky).<sup>[7]</sup> Charaka has also elaborated more characters in Vimana Sthana as Shlakshna (smooth), Saara (well-built/firm), Sandra (dense), Staimitya (stable), & Achchha (pure).<sup>[8]</sup>

As per Charaka, the characteristics of Kapha Prakriti Purusha are due to its basic Guna, like Snigdha skin and oily hair. Shlakshna is associated with smooth skin, hair, and body parts. Mrudu: pleasing appearance, tenderness, and fair complexion. Madhura: good quality of semen, Sara—firmness, compactness, and stability of the body. Sandra—well nourished body parts, Manda: sluggish activity, intake of food, and movement. Staimitya—slow initiator, irritable, and morbid manifestation; Guru: stable gait, firm, and heavy-built. Shita represents a lack of intensity in hunger, thirst, heat, and perspiration, while Achacha symbolizes gratitude and contentment in actions and lives.

Based on the characteristics of the three human constitution types of Indian traditional medicine, Kapha body types are more likely to develop obesity. This predisposition for obesity was associated with chronic diseases such as coronary artery,<sup>[9]</sup> disease, hypertension, and diabetes. Kapha-dominant Prakriti subjects showed a stronger correlation between their BMI level and anthropometric and skinfold thickness parameters which was the most commonly used measure for monitoring the prevalence of overweight and obesity at the population level.<sup>[10][11]</sup>

Ayurvedic literature considers Sthoulya as a Kapha disorder.<sup>[12]</sup> The present study also proves the higher prevalence of Sthoulya in Kapha-dominant Prakriti, indicating their increased susceptibility to Sthoulya. Subjects belonged to the young age group, which signifies the increasing trend of a sedentary lifestyle and changing food habits in Indian youth. Recent reports also confirm the rising incidence of obesity among adolescents, a concerning trend for contemporary society.<sup>[13]</sup> According to Ayurveda, in middle age, all body tissues (Dhatu) reach completeness (Paripurnata).

According to Ayurvedic sciences, Kapha Dosha has been associated with the storage of lipid and fat molecules.<sup>[14]</sup> Traditional Ayurvedic texts say that people who are predominantly Kapha Prakriti have slow metabolic rates and are either plump (Upachita) or well-built (Paripurnasarvanga).<sup>[15]</sup> At the molecular level, the human body is composed of lipids, water, proteins, minerals, and carbohydrates.<sup>[16]</sup>

### Conclusion:

The prevalence of Kapha-dominant Prakriti subjects in Sthoulya was greater than that of Vata and Pitta-dominant Prakriti individuals. In individuals with a prominent Kapha Prakriti, a more pronounced correlation existed between BMI and anthropometric as well as skinfold thickness measurements, with the exception of abdominal skinfold thickness. Prakriti significantly influences the expression and progression of the disease, as does the implementation of a tailored management strategy. The Prakriti questionnaire is an efficient and cost-effective tool for identifying the phenotypic of individuals genetically predisposed to obesity for clinical and public health applications. The correlation between Prakriti and chronic disease may facilitate early detection. Utilizing the Prakriti assessment for mass patient screening may prove advantageous. Individuals possessing a specific Prakriti can execute primal prevention. Evaluating the clinical vulnerability of each Prakriti may facilitate the implementation of appropriate preventative strategies to mitigate or postpone certain illnesses.

**Limitations:** Limitations of the study are a small sample size, a less diversified selection of participants, and a large percentage of participants having Pitta predominance. An even distribution of the primary Doshas in the study population may have yielded a different result. It is a cross-sectional study over a limited period. It is only an observational study without suitable diet and lifestyle intervention programs. A more broadly diversified selection of participants may have yielded a better potential result.

**Author Credit Declaration:** Authors 1 and 2 serve as the principals and co-investigators of the study, contributing to the conceptualization, methodology, and writing of the original draft, as well as data analysis. Author 3, also a co-investigator, has engaged in review and editing. Authors 4 and 5 have participated in review editing and coordinating among survey participants from the College of Ayurveda. Author 6 has



contributed to review and editing, along with coordinating among survey participants from the College of Homoeopathy of NEIAH.

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