



Research Article

Association of Prakriti with Dietary Habits, Nutritional Status, and Morbidity Patterns among School-Aged Children: A Cross-Sectional Study

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Abstract

Background: *Prakriti* (constitutional type) is a fundamental concept in Ayurveda that reflects an individual's inherent physiological and psychological characteristics. It is considered relevant to dietary preferences, nutritional status, and disease susceptibility. Understanding its association with these factors in children may provide insights for individualized dietary guidance and preventive health strategies. **Objectives:** To assess the association of *Prakriti* with dietary habits, nutritional status, and disease prevalence among apparently healthy school-aged children. **Materials and Methods:** A cross-sectional observational study was conducted among apparently healthy school-aged children. *Prakriti* was assessed using a validated Ayurvedic assessment tool. 120 apparently healthy subjects were selected based on dominant prakriti with 40 children each categorized as *Vata*, *Pitta*, or *Kapha* dominant. Dietary habits were assessed using a structured questionnaire, while calorie intake was estimated using a 24-hour dietary recall. Nutritional status was evaluated through anthropometric measurements, and disease prevalence was assessed based on past medical history. Data were analysed using one-way ANOVA, with $p < 0.05$ considered statistically significant. **Results:** Significant variations were observed across *Prakriti* groups in dietary habits, calorie intake, nutritional status, and prevalence of selected health conditions ($p < 0.05$). Distinct patterns in dietary practices and calorie intake were observed across *Vata*, *Pitta*, and *Kapha* groups. Variations in reported disease prevalence were also observed among the three *Prakriti* groups. **Conclusion:** The findings indicate an association between *Prakriti* and dietary habits, nutritional status, and disease prevalence among school-aged children. These observations may inform individualized dietary guidance and preventive health strategies. However, causal relationships cannot be established from this observational study, and further research is warranted to evaluate the clinical relevance of these associations.

Keywords: *Prakriti*, Constitutional Type, Dietary Habits, Nutritional Status, School-Aged Children, Ayurveda.

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Introduction

Ayurveda, the ancient system of holistic medicine originating in India, places significant emphasis on diet as a primary tool for promoting health, preventing disease, and ensuring longevity. According to Ayurvedic philosophy, each individual possesses a unique constitution, known as *Prakriti*, which is determined by the predominance of the three bio-energies or *doshas*, *Vata*, *Pitta*, and *Kapha* at the time of conception (1). *Prakriti* governs an individual's physical, physiological, and psychological traits. In childhood, when growth and development are rapid, an appropriate diet plays a critical role in maintaining optimal health,

supporting cognitive abilities, and preventing lifestyle-related disorders (2). While modern nutritional science provides guidelines based on age, gender, and activity level, it often overlooks constitutional differences among children. Ayurvedic dietetics, however, emphasizes tailoring dietary recommendations according to an individual's *Prakriti*, and digestive capacity (3).

Recent lifestyle changes, urbanization, and exposure to processed foods have led to increasing cases of obesity, micronutrient deficiencies, and gastrointestinal problems in children (4). Although *Prakriti* is considered an important determinant of individual physiological characteristics and disease susceptibility in Ayurveda, its relationship with dietary behaviour and nutritional health in children has not been adequately investigated. Available evidence is limited and often focuses on isolated parameters or specific health conditions, with relatively few studies providing a comprehensive comparison of dietary habits, calorie intake, nutritional status, and disease prevalence across *Vata*, *Pitta*, and *Kapha* dominant children. In particular, evidence from apparently

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healthy school-aged children remains scarce, and the extent to which constitutional differences are reflected in measurable dietary and nutritional characteristics is not clearly established. This evidence gap limits the development of evidence-based, constitution-specific dietary and preventive health recommendations for children. Therefore, the present study was undertaken to assess the association of *Prakriti* with dietary habits, nutritional status, and disease prevalence among apparently healthy school-aged children by aligning ancient principles with present-day dietary challenges, so that a practical, culturally relevant, and sustainable dietary guidelines and constitution-specific dietary plans can be designed for the paediatric population.

The study hypothesized that *Prakriti* is significantly associated with dietary habits, nutrient intake, nutritional status, and the prevalence of common diseases among apparently healthy school-aged children. The null hypothesis (H_0) was that there is no significant association or difference in these parameters across Vata, Pitta, and Kapha-dominant children, whereas the alternative hypothesis (H_1) was that significant differences and/or associations exist across these *Prakriti* groups.

Materials and Methods

Research Design and Study Protocol

The study was designed as Cross-sectional observational survey study. The research design seeks to find the relationship between the independent and dependent variables. The variables studied here *Prakriti* and dietary habits, nutritional status, and disease prevalence. *Prakriti* of an individual is determined at the time of conception, and it remains the same throughout their life. Therefore, this is the independent variable that affects the dependent variables, dietary habits, nutritional status, and disease prevalence. Study period was from June 2024 to June 2025. Apparently healthy children were enrolled from the *Swarnprashan* OPD in the Kaumarbhritya department, Sir Sundarlal Hospital OPD No. 25, Faculty of Ayurveda, Institute of Medical Science, Varanasi. Also, survey was done in nearby school, Indrajeet Paradise Shikshan Sansthan, Chhittipur Varanasi

Sample size calculation

The sample size for the present study has been children calculated based on previously publish study ($p=0.94$) (7)

The formula for sample size calculation is

$$\{n = z^2 \cdot p \cdot \{1-p\} / e^2\}$$

Where z square = 1.96 at 95% level of confidence

p = prevalence is = 0.06

e = absolute error = 0.05

n = 87 for assuming 10% non- response and round of $n=100$

Study Population, Inclusion and Exclusion Criteria

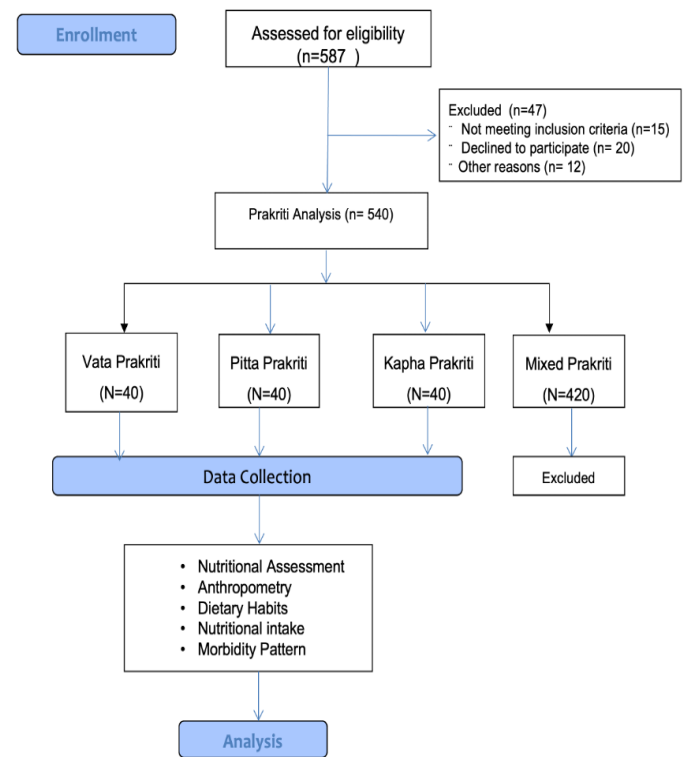
Apparently healthy children of the age group 5-12 years, irrespective of gender, race, caste or socioeconomic status, without chronic illness and whose parents provide written consent as per the proforma were included in the study. Children, suffering from any acute or chronic illness or any metabolic, congenital or genetic problem and whose parents/ guardians not willing to participate were excluded from the study.

Ethical Approval and Informed Consent

IEC (Institutional Ethical Committee) approval for Cross-sectional study on children was attained from institutional ethical committee of Institute of Medical Sciences, Banaras Hindu University, Varanasi. (2023/EC/6646). The study was registered with the CTRI (Clinical Trials Registry of India). CTRI Registration no. is I/2024/06/068550 [Registered on: 06/06/2024]. Written informed consent was obtained prior to the participation from the Parent/ Guardian.

Selection of Sample and Data Collection

Figure 1: CONSORT flow diagram of the study



A total of 587 children were initially screened for eligibility, of whom 47 were excluded based on the predefined exclusion criteria. The remaining 540 children fulfilling the inclusion criteria underwent *Prakriti* assessment using a standardized and validated *Prakriti Assessment Questionnaire* appropriate for children aged 5–12 years (5). The percentage of traits corresponding to each *Prakriti* was calculated for every child. Following *Prakriti* assessment, children demonstrating a clear predominance of a single *Prakriti*, defined as more than 75% of the respective *Prakriti* traits, were considered eligible for registered for the study. Children with mixed or without a clear predominance of a single *Prakriti* were excluded from the final analysis. A predefined allocation of 40 children for each predominant *Prakriti* category was set to ensure equal representation of the three constitutional groups. Eligible children were included consecutively until 40 children were obtained in each category; once the allowance of 40 was reached for a particular *Prakriti*, further inclusion in that category was discontinued. Thus, 120 children were included in the final analysis, comprising 40 children each with predominant *Vata*, *Pitta*, and *Kapha* *Prakriti*. Children's dietary history was obtained using the 24 hr recall method (mean of 3 days record), personally or telephonically (6). Overall health, anthropometry, and history of common illnesses and issues

affecting children were documented by the clinical case record. Relevant anthropometric data required were measured using standard instruments and noted in the assessment form, to assess the nutritional status. (Figure 1)

Data were entered, tabulated, and analysed using IBM SPSS Statistics, version 26.0. Continuous variables were expressed as mean $\pm$ standard deviation (SD) for normally distributed data. Categorical variables were presented as frequency and percentage. Data were analysed using one-way ANOVA, with $p < 0.05$ considered statistically significant. Chi-square test was used for comparison of the three Prakriti groups.

Results

Demographic details of the participants

Demographic details of the participants ($n = 120$) are represented in table 1. Among the three groups ($n = 40$ each), the highest proportion of children in all Prakriti types belonged to the 9–12 year age group. Males predominated in Kapha Prakriti, while females were more common in Vata and Pitta Prakriti. Most children across all Prakriti groups belonged to the middle socio-economic class, followed by the lower class, with the least representation from the upper class. (Table 1) Using a Pearson's chi-square test for comparison of the three Prakriti groups (*Vata*, *Pitta* and *Kapha*; $n=40$ each), the p-values are:

Table 1: Demographic details of the participants

Observation	Vata n (%)	Pitta n (%)	Kapha n (%)	χ^2	df	p-value	Significance
Age group							
5–7 yr	12 (30%)	14 (35%)	10 (25%)	2.057	4	0.725	NS
>7–9 yr	10 (25%)	9 (22.5%)	14 (35%)				
>9–12 yr	18 (45%)	17 (42.5%)	16 (40%)				
Gender							
Male	14 (35%)	15 (37.5%)	21 (52.5%)	2.949	2	0.229	NS
Female	26 (65%)	25 (62.5%)	19 (47.5%)				
Socio-economic status							
Upper class	4 (10%)	5 (12.5%)	7 (17.5%)	2.331	4	0.675	NS
Middle class	27 (67.5%)	30 (75%)	26 (65%)				
Lower class	9 (22.5%)	5 (12.5%)	7 (17.5%)				

NS = Not statistically significant

Table 2: Pairwise Demographic comparisons

Variable	Vata Prakriti vs Pitta Prakriti	Vata Prakriti vs Kapha Prakriti	Pitta Prakriti vs Kapha Prakriti
Age group	0.889	0.617	0.410
Gender	1.000	0.176	0.261
Socio-economic status	0.494	0.581	0.621

Thus, none of the demographic variables showed a statistically significant difference among the three Prakriti groups ($p > 0.05$).

The table compares Vata, Pitta, and Kapha Prakriti individuals ($n = 40$ each) across type of diet, appetite, junk food intake and bowel habits. (Table 3)

Gastro-Intestinal System Assessment

Table 3: Gastro-Intestinal System Assessment (Pearson's Chi-square test of independence)

Parameters	Vata Prakriti n (%)	Pitta Prakriti n (%)	Kapha Prakriti n (%)	χ^2	df	p-value	Significance
Appetite							
More	12 (30%)	14 (35%)	08 (20%)	7.893	4	0.096	NS
Good	20 (50%)	22 (55%)	18 (45%)				
Poor	08 (20%)	04 (10%)	14 (35%)				
Diet Preference							
Vegetarian	30 (75%)	34 (85%)	36 (90%)	3.360	2	0.186	NS
Mixed	10 (25%)	06 (15%)	04 (10%)				
Junk food intake							
>3 times in a week	12 (30%)	10 (25%)	08 (20%)	6.000	6	0.423	NS
1-3times in a week	18 (45%)	22 (55%)	16 (40%)				
Occasionally	08 (20%)	06 (15%)	10 (25%)				
Never	02 (05%)	02 (05%)	06 (15%)				

Koshta (Bowel Habit)

<i>Mridu</i> (frequent loose motions even with milk)	10 (25%)	14 (35%)	08 (20%)	4.150	4	0.386	NS
<i>Madhyam</i> (regular, well-formed stools 1,2 times a day)	18 (45%)	20 (50%)	22 (55%)				
<i>Krura</i> (constipated once in 2-3 days)	12 (30%)	06 (15%)	10 (25%)				

NS = Not statistically significant

Table 4: Pairwise Comparison of Gastro-Intestinal Assessment

Variable	<i>Vata Prakriti</i> vs <i>Pitta Prakriti</i>	<i>Vata Prakriti</i> vs <i>Kapha Prakriti</i>	<i>Pitta Prakriti</i> vs <i>Kapha Prakriti</i>
Appetite	0.453	0.281	0.022
Diet Preference	0.402	0.141	0.735
Junk food intake	0.833	0.371	0.244
Koshta (Bowel Habit)	0.250	0.669	0.255

Thus, none of the demographic variables showed a statistically significant difference among the three Prakriti groups ($p > 0.05$). Overall comparison was not statistically significant among the three Prakriti groups ($p > 0.05$). However, the *Pitta Prakriti* vs *Kapha Prakriti* pairwise comparison was significant for appetite ($p = 0.022$).

Dietary Habits and Preferences Assessment

The Analysis of dietary habits and food preferences of individuals according to *Prakriti* were assessed using a 4-point Likert scale (Always, Sometimes, Seldom, and Never).

Table 5: Dietary Habits and Preferences– 4-point Likert Scale

S.No.	Parameters	<i>Vata Prakriti</i>	<i>Pitta Prakriti</i>	<i>Kapha Prakriti</i>
1	<i>Samashana</i> (wrong food combinations)	32% always	28% always	18% always
		37% sometimes	40% sometimes	32% sometimes
		25% seldom	24% seldom	34% seldom
		06% Never	08% Never	16% Never
2	<i>Adhyashana</i> (Consuming food before previous food gets digested)	35% always	29% always	21% always
		37% sometimes	40% sometimes	29% sometimes
		21% seldom	21% seldom	36% seldom
		07% Never	10% Never	14% Never
3	<i>Vishamashana</i> (Irregular eating habits)	40% always	29% always	55% always
		37% sometimes	40% sometimes	18% sometimes
		16% seldom	21% seldom	28% seldom
		07% Never	10% Never	37% Never
4	Skipping breakfast	32% always	22% always	17% always
		37% sometimes	30% sometimes	25% sometimes
		22% seldom	31% seldom	32% seldom
		08% Never	17% Never	26% Never
5	Skipping lunch	27% always	12% always	10% always
		35% sometimes	24% sometimes	22% sometimes
		25% seldom	34% seldom	32% seldom
		13% Never	30% Never	36% Never
6	Skipping Dinner	22% always	18% always	14% always
		32% sometimes	28% sometimes	22% sometimes
		30% seldom	34% seldom	36% seldom
		16% Never	20% Never	28% Never
7	Prefers <i>Madhur ahara</i>	32% always	28% always	40% always
		38% sometimes	36% sometimes	36% sometimes
		22% seldom	26% seldom	18% seldom
		08% Never	12% Never	06% Never

8	Prefers <i>Amla ahara</i>	28% always	38% always	18% always
		36% sometimes	36% sometimes	30% sometimes
		26% seldom	18% seldom	34% seldom
		10% Never	08% Never	18% Never
9	Prefers <i>Lavan ahara</i>	28% always	36% always	22% always
		36% sometimes	38% sometimes	28% sometimes
		24% seldom	18% seldom	32% seldom
		12% Never	08% Never	18% Never
10	Prefers <i>Katu ahara</i>	18% always	36% always	36% always
		30% sometimes	34% sometimes	34% sometimes
		32% seldom	20% seldom	22% seldom
		20% Never	10% Never	08% Never
11	Prefers <i>Tikta ahara</i>	22% always	36% always	28% always
		30% sometimes	38% sometimes	36% sometimes
		30% seldom	18% seldom	26% seldom
		18% Never	08% Never	10% Never
12	Prefers <i>Kashaya ahara</i>	16% always	20% always	32% always
		36% sometimes	36% sometimes	38% sometimes
		30% seldom	28% seldom	22% seldom
		18% Never	16% Never	08% Never
13	Prefers <i>Guru</i> (difficult to digest) and <i>Snigdha</i> (oily food)	36% always	28% always	40% always
		34% sometimes	36% sometimes	34% sometimes
		20% seldom	22% seldom	18% seldom
		10% Never	14% Never	08% Never
14	Prefers <i>Ushna</i> (heating property)	34% always	22% always	36% always
		38% sometimes	24% sometimes	38% sometimes
		20% seldom	34% seldom	18% seldom
		08% Never	20% Never	08% Never
15	Eating food (With due concentration)	18% always	30% always	34% always
		30% sometimes	34% sometimes	36% sometimes
		32% seldom	22% seldom	22% seldom
		20% Never	14% Never	08% Never

*% values are rounded off.

The results reveal distinct *Prakriti*-wise patterns with respect to faulty dietary practices, meal timing, taste preference, food qualities, and eating behavior. Clear *Prakriti*-wise patterns are observed across faulty dietary habits, meal skipping behavior, rasa preference, and food qualities. (Table 5)

Using Pearson's chi-square test to compare disease susceptibility across the three *Prakriti* groups (Vata, Pitta and Kapha; n=40 each), the observations can be presented as follows:

Disease Incidences in the last six months (≥ 3 episodes)

Table 6: Disease Incidences in the last six months (≥ 3 episodes) Pearson's Chi-square test of independence

Parameters	Vata Prakriti n (%)	Pitta Prakriti n (%)	Kapha Prakriti n (%)	χ^2	df	p-value	Significance
Fever	12 (30%)	16 (40%)	10 (25%)	2.157	2	0.340	NS
Headache	9 (22.5%)	7 (17.5%)	5 (12.5%)	1.385	2	0.500	NS
Sleep disturbance	9 (22.5%)	5 (12.5%)	2 (5%)	5.337	2	0.069	NS
Upper RTI	14 (35%)	10 (25%)	11 (27.5%)	1.049	2	0.592	NS
Lower RTI	7 (17.5%)	5 (12.5%)	10 (25%)	2.115	2	0.347	NS
Autism / ADHD / Temper Tantrum	14 (35%)	10 (25%)	4 (10%)	7.081	2	0.029	S
Nocturia	4 (10%)	1 (2.5%)	6 (15%)	3.803	2	0.149	NS
Dermatitis	6 (15%)	5 (12.5%)	3 (7.5%)	1.132	2	0.568	NS
Diarrhea	4 (10%)	7 (17.5%)	2 (5%)	3.278	2	0.194	NS
Vomiting	5 (12.5%)	7 (17.5%)	9 (22.5%)	1.385	2	0.500	NS

Only Autism/ADHD/Temper Tantrum showed a statistically significant difference among the three Prakriti groups ($\chi^2 = 7.081$, $df = 2$, $p = 0.029$). All other disease-susceptibility parameters showed no statistically significant difference ($p > 0.05$). The sleep disturbance finding approached statistical significance ($p = 0.069$) but remained non-significant at the 5% level.

For pairwise comparison (2×2 chi-square test) among the three Prakriti groups, the p-values are as follows:

Table 7: Pairwise Comparison of Disease Susceptibility

Disease Susceptibility	<i>Vata Prakriti vs Pitta Prakriti</i> (p-value)	<i>Vata Prakriti vs Kapha Prakriti</i> (p-value)	<i>Pitta Prakriti vs Kapha Prakriti</i> (p-value)
Fever	0.350	0.640	0.146
Headache	0.589	0.218	0.529
Sleep disturbance	0.229	0.017	0.236
Upper RTI	0.342	0.484	0.806
Lower RTI	0.531	0.434	0.163
Autism / ADHD / Temper	0.342	0.008	0.102
Nocturia	0.167	0.504	0.049
Dermatitis	0.744	0.288	0.458
Diarrhea	0.326	0.396	0.041
Vomiting	0.529	0.218	0.589

Since three pairwise comparisons are performed, a Bonferroni correction may be applied:

After correction Autism/ADHD/Temper Tantrum (*Vata Prakriti vs Kapha Prakriti*, $p=0.008$) remains significant. Sleep disturbance (*Vata Prakriti vs Kapha Prakriti*, $p=0.017$) becomes borderline/non-significant. Nocturia and Diarrhoea lose significance.

Assessment of Nutritional Status

Table 8: Assessment of Nutritional Status

Age group	<i>Prakriti</i>	n	Height (cm) Mean $\pm$ SD	Weight (kg) Mean $\pm$ SD	BMI (kg/m ²) Mean $\pm$ SD
5–7 yr	<i>Vata</i>	12	112 $\pm$ 1.14	17.0 $\pm$ 0.98	14.0 $\pm$ 2.08
	<i>Pitta</i>	14	110 $\pm$ 1.32	18.5 $\pm$ 2.76	15.0 $\pm$ 1.45
	<i>Kapha</i>	10	108 $\pm$ 1.04	20.0 $\pm$ 2.06	16.0 $\pm$ 1.07
>7–9 yr	<i>Vata</i>	10	125 $\pm$ 1.38	22.0 $\pm$ 1.40	14.8 $\pm$ 0.85
	<i>Pitta</i>	9	123 $\pm$ 2.31	24.0 $\pm$ 1.65	16.0 $\pm$ 1.38
	<i>Kapha</i>	14	123 $\pm$ 1.07	24.5 $\pm$ 1.45	17.2 $\pm$ 1.14
>9–12 yr	<i>Vata</i>	18	140 $\pm$ 0.94	24.0 $\pm$ 1.67	15.5 $\pm$ 0.98
	<i>Pitta</i>	17	137 $\pm$ 1.96	25.0 $\pm$ 0.89	17.0 $\pm$ 1.67
	<i>Kapha</i>	16	134 $\pm$ 1.48	25.5 $\pm$ 2.20	18.5 $\pm$ 1.04

Values are expressed as mean $\pm$ SD. SD: Standard deviation, n: the number of subjects in each subgroup, BMI: Body mass index. The present data indicate a clear variation in height, weight, and Body Mass Index (BMI) among children of different *Prakriti* types across various age groups (5–12 years). The analysis reveals distinct patterns corresponding to the dominant dosha constitution. (Table 8)

Average Energy and Protein Intake of Children According to *Prakriti* and Age Group (Assessed by 24-Hour Dietary Recall Method) (6)

Table 9: Average Energy and Protein Intake of Children According to *Prakriti* and Age Group

Age Group (years)	<i>Prakriti</i>	n	Energy Intake (kcal/day) Mean $\pm$ SD	ICMR–NIN RDA (kcal/day)	Protein Intake (g/day) Mean $\pm$ SD	ICMR–NIN RDA (g/day)
5–7	Vata	12	1105 $\pm$ 115	1360	16.2 $\pm$ 2.0	16
	Pitta	14	1265 $\pm$ 120	1360	18.0 $\pm$ 2.3	16
	Kapha	10	1190 $\pm$ 110	1360	16.8 $\pm$ 2.5	16
>7–9	Vata	10	1370 $\pm$ 135	1700	21.0 $\pm$ 2.6	23
	Pitta	9	1540 $\pm$ 145	1700	24.2 $\pm$ 3.0	23
	Kapha	14	1495 $\pm$ 140	1700	25.0 $\pm$ 3.4	23
>9–12	Vata	18	1835 $\pm$ 175	2190	31.8 $\pm$ 3.4	33
	Pitta	17	2060 $\pm$ 185	2190	32.5 $\pm$ 3.8	33
	Kapha	16	1965 $\pm$ 180	2190	31.0 $\pm$ 4.0	33

Values are expressed as Mean $\pm$ Standard Deviation (SD). RDA values are based on ICMR–NIN, Nutrient Requirements for Indians, 2020 (updated 2024) for children with moderate physical activity. One-way ANOVA showed statistically significant differences in

both energy and protein intake among Vata, Pitta, and Kapha Prakriti groups within each age category (all $p < 0.05$). Energy intake was consistently highest in the *Pitta* group, followed by *Kapha* and *Vata*, whereas protein intake was highest in *Kapha*, followed by *Pitta* and *Vata*. (Table 9)

Table 10: Statistical Comparison of Mean Energy Intake Among Different *Prakriti* Groups

Age group	Comparison	Mean difference (kcal/day)	t	p-value	Interpretation
5–7	Vata vs Pitta	-160	-3.47	0.002	S
5–7	Vata vs Kapha	-85	-1.77	0.092	NS
5–7	Pitta vs Kapha	75	1.59	0.128	NS
>7–9	Vata vs Pitta	-170	-2.64	0.016	S
>7–9	Vata vs Kapha	-125	-2.20	0.036	S
>7–9	Pitta vs Kapha	45	0.74	0.468	NS
>9–12	Vata vs Pitta	-225	-3.69	<0.001	S
>9–12	Vata vs Kapha	-130	-2.13	0.041	S
>9–12	Pitta vs Kapha	95	1.49	0.145	NS

S = Significant; NS = Not significant ($p > 0.05$).

Table 11: Statistical Comparison of Protein Intake Among Different *Prakriti* Groups

Age group	Comparison	Mean difference (g/day)	p-value	t	Interpretation
5–7	Vata vs Pitta	-1.8	-2.14	0.044	S
5–7	Vata vs Kapha	-0.6	-0.61	0.547	NS
5–7	Pitta vs Kapha	1.2	1.20	0.244	NS
>7–9	Vata vs Pitta	-3.2	-2.47	0.024	S
>7–9	Vata vs Kapha	-4.0	-2.66	0.014	S
>7–9	Pitta vs Kapha	-0.8	-0.59	0.561	NS
>9–12	Vata vs Pitta	-0.7	-0.57	0.573	NS
>9–12	Vata vs Kapha	0.8	0.62	0.540	NS
>9–12	Pitta vs Kapha	1.5	1.10	0.278	NS

S = Significant; NS = Not significant ($p > 0.05$)

The pairwise analysis indicates that Vata generally had significantly lower energy and protein intake than Pitta and/or Kapha, particularly in the older age groups. In contrast, the differences between Pitta and Kapha were generally not statistically significant, despite Kapha having slightly higher mean protein intake and Pitta having higher mean energy intake in several age groups. (Table 7, 8)

Discussion

The present study examined the association of *Prakriti* with demographic characteristics, morbidity patterns, nutritional behaviour, anthropometric parameters, and dietary intake among children aged 5–12 years. Although most of the observed differences did not reach statistical significance, variations in the distribution and percentage values were evident across majority of the parameters. The absence of statistical significance may partly be attributed to the apparently healthy status of the study population, in whom marked variations in growth, nutritional status, or morbidity may be less pronounced.

Furthermore, the observed associations may be influenced by potential confounding factors, including dietary practices, socioeconomic status, and parental influence on food choices, eating habits, healthcare-seeking behavior, and lifestyle practices. Since the present study was cross-sectional in design, these factors could not be completely separated from the influence of *Prakriti*. Nevertheless, the observed variations across demographic, nutritional, anthropometric, and morbidity-related domains suggest that *Prakriti* may have a role in shaping growth patterns, dietary

behavior, and disease susceptibility, broadly consistent with classical Ayurvedic concepts.

Gastro-Intestinal System Assessment

Appetite pattern shows, good appetite dominates across all *Prakriti*. This may be because the sample size corresponds to apparently healthy children. Although relatively, number of children with more appetite are higher in *Pitta Prakriti* (35%) and poor appetite in *Kapha Prakriti* (35%). *Pitta Prakriti* is classically described as having *ati-kshudha* (excess hunger) due to dominant Agni Mahabhuta whereas *Kapha Prakriti* often experiences *mandakshudha* (low appetite) due to sluggish digestion. Also, higher appetite in *Pitta* correlates with increased gastric acid secretion and metabolic turnover, whereas *Kapha* is associated with delayed gastric emptying and altered leptin signaling (8).

Study shows vegetarian preference increases from Vata (75%) to Pitta (85%) and to Kapha (90%). Ayurveda emphasizes that dietary inclination is constitution-dependent. *Kapha Prakriti*, characterized by *mandaagni* (slow digestive fire) (8). *Pitta Prakriti*, with *tikshnaagni* (excessive digestive fire), can digest a wider variety of foods but is advised to avoid excess meat and spicy foods due to their heat-producing nature (9). *Vata Prakriti*, characterized by *vishamaagni* (unstable digestive fire), often seeks foods including mixed diets (9). Plant-based dietary preference in *Kaphaj* individuals may be associated with lower basal metabolic rate, while *Vataj* one demonstrate higher metabolic variability and dietary diversity (10). Preference for non-vegetarian food was highest among *Pitta Prakriti* individuals, a finding that aligns with the recent studies, who observed that individuals with *Tikshna Agni*

often prefer *Mamsa Ahara* to meet higher metabolic demands (11). Diet preference is also affected by familial and cultural background of the children (12).

Frequent junk intake was observed highest in Vata and Pitta (55%) whereas *Kapha Prakriti* shows higher restraint. Ayurveda explains this through Vata's instability and sensory-seeking tendencies, which drive cravings for salty, crunchy, fast foods (*lavana* and *katu rasa*) (13). *Vata* individuals resemble high stress-reactive eaters. Pitta enjoys stimulating foods but usually maintains moderation unless stressed (13). Studies on eating behavior suggest that individuals with high stress reactivity and autonomic nervous system that are comparable to *Vata* Constitutional type, and are more prone to emotional and impulsive eating (14). *Kapha* individuals, being routine-oriented, lower novelty-seeking and easily satiated, show less impulsive eating behavior.

Observations on *Koshta* (Bowel Habits) shows that *Mridu koshta* (loose, frequent stools) highest in Pitta (35%) and *Krurakoshta* (hard bowel, constipation) highest in *Vata* (30%) whereas *Madhyama koshta* (regular, well-formed stools) found highest in *Kapha* (55%). This is supported by ayurvedic concept on *Koshta* of individuals of different *Prakriti* (15). *Vata* corresponds to reduced gut motility and constipation-predominant IBS, *Pitta* to hypermotility and diarrhea-predominant IBS, and *Kapha* to stable enteric nervous system regulation. (Table 2)

Dietary Habits and Preferences– 4-point Likert Scale

Faulty Dietary Practices assessment presents that *Samashana* (wrong food combinations) was most prevalent in *Vata Prakriti*, indicating a tendency toward unregulated dietary choices. Pitta individuals showed moderate indulgence, while *Kapha* individuals showed comparatively better control. *Adhyashana* (consuming food before previous food gets digested) was again more common in *Vata* followed by *Pitta Prakriti*, reflecting impulsive or appetite-driven eating. *Kapha Prakriti* individuals demonstrated comparatively healthier behavior. *Vishamashana* (irregular eating habits) showed a striking predominance in *Vata Prakriti*, with 40% always and 37% sometimes, supporting classical Ayurvedic descriptions of *Vata's* irregularity. Pitta showed moderate irregularity, while *Kapha* showed a mixed response. (Table 5)

The higher prevalence of *Samashana*, *Adhyashana*, and *Vishamashana* among *Vata Prakriti* individuals observed in this study is in agreement with the previous studies, who reported that *Vata*-dominant individuals commonly exhibit irregular meal timings, improper food combinations, and inconsistent eating patterns. These behaviors were attributed to the *Chala* and *Anavasthita* nature of *Vata Dosha* (16). Similarly, in another dietary pattern assessment study, observed a statistically significant association between *Vata Prakriti* and irregular eating habits, leading to *Agni Vaishamya* (17).

Meal skipping, was again more common among *Vata Prakriti* individuals. Overall, *Vata Prakriti* children exhibited the highest meal irregularity, while *Kapha Prakriti* demonstrated the most disciplined meal pattern. Charaka has clearly stated that *Kala Bhojana* (timely food intake) is essential for the maintenance of *Agni* and *Dosha* equilibrium, and irregular eating patterns vitiate *Vata Dosha* predominantly (18). The relatively disciplined meal pattern seen in *Kapha Prakriti* may be explained by *Kapha's Sthira* (stable) and *Manda* (slow) qualities, which promote routine and consistency (18).

Madhura Rasa (sweet taste) preference was highest in *Kapha Prakriti* (40% always), consistent with classical texts. *Amla* (sour) and *Lavana* (salty) *Rasa* were most preferred by *Pitta Prakriti* (38%

and 36% always respectively), reflecting *Pitta's* affinity for sour and salty tastes. *Katu* (spicy), *Tikta* (bitter), and *Kashaya* (astringent) *Rasa* showed higher preference among *Pitta* and *Kapha Prakriti*. *Kapha Prakriti* showing notable preference for *Kashaya* (32% always), aligning with *Kapha*-pacifying dietary choices. Preference for *Ushna Ahara* was highest in *Kapha* and *Vata Prakriti*. *Pitta* individuals showed lower preference, indicating some natural avoidance of heating foods. Eating with proper concentration was best observed in *Kapha Prakriti*, where 34% always and 36% sometimes followed mindful eating. *Vata Prakriti* showed the poorest compliance, with 20% never eating with due concentration, reflecting distraction and restlessness. Taste and smell are deeply connected chemical senses. One of the study reveals that individuals from different *Prakriti* groups display distinct phenotypic traits in olfactory perception along with specific molecular variations (19).

Kapha Prakriti individuals showed a greater inclination toward *Guru* and *Snigdha Ahara*, which is consistent with *Kapha's* innate similarity to these qualities. However, excessive intake of *Guru* and *Snigdha Ahara* by *Kapha*-dominant individuals may lead to *Kapha* aggravation increasing susceptibility to *Kapha*-related metabolic disorders (20). Preference for *Ushna Ahara* was higher in *Vata* and *Kapha Prakriti*, aligning with the principle that *Ushna Guna* counteracts *Sheeta Guna*, the predominant quality of both *Doshas*. The comparatively lower preference for *Ushna Ahara* among *Pitta Prakriti* individuals reflects a natural adaptive tendency to avoid excessive heat, as excessive *Ushna* aggravates *Pitta Dosha* (21).

Mindful eating behavior was better observed in *Kapha Prakriti*, whereas *Vata Prakriti* showed greater distraction during meals. Acharya Charaka emphasizes the importance of eating with *Tanmanah* (full attention), stating that eating while distracted leads to improper digestion and *Dosha* imbalance, particularly *Vata* aggravation (22). Eating food with due concentration was best observed in *Kapha Prakriti*, while *Vata Prakriti* individuals showed a higher tendency toward distracted eating.

Disease Susceptibility in different Constitutional Types (≥3 episodes in the last six months)

Among individuals with *Vata Prakriti*, the most commonly observed conditions were upper respiratory tract infections and neuro-developmental and behavioural disorders (Autism, ADHD and Temper Tantrum), both affecting 35% of subjects, followed by fever (30%). Headache and sleep disturbances were reported in 22.5% of cases each, indicating a higher prevalence of neurobehavioral and sleep-related disorders in this group. It also supports classical association of *Vata* with pain disorders as headache. Lower respiratory tract infections were seen in 17.5% of *Vata* individuals, while dermatitis was observed in 15% each. This suggests that *Vata*-dominant individuals are more prone to ailments involving allergies, irregular metabolism neuro-developmental and behavioral problems. In the *Pitta Prakriti* group, fever was the most prevalent illness. Upper respiratory tract infections and neurodevelopmental and behavioural disorders-Autism, ADHD and Temper Tantrum, were observed in 25% of cases each. Gastrointestinal symptoms such as diarrhea and vomiting were present in 17.5% of individuals, reflecting *Pitta* predominance of digestive and metabolic disturbances. Relatively higher incidence of Dermatitis (15%) supports *Pitta's* role in skin and inflammatory conditions. *Kapha Prakriti* individuals showed respiratory tract disorders, vomiting more prevalent which is consistent with *Kapha* dominance. Neurobehavioral conditions, sleep disturbances, and diarrhoea were relatively uncommon in this group, each reported in 5–10% of cases. Also, the complaint of fever is relatively lesser in

children of Kapha *Prakriti*, indicating generally better immune status in these children. Overall, the findings suggest that disease tendencies closely associated with the inherent physiological and psychological traits of each *Prakriti* (23). This close alignment reinforces the predictive and preventive value of *Prakriti* assessment in pediatric healthcare. (Table 6,7)

Nutritional Status in relation to *Prakriti*

Anthropometric findings demonstrated a consistent *Prakriti*-wise pattern across the age groups. *Vata Prakriti* children tended to have greater height and lower body weight and BMI, whereas *Kapha Prakriti* children generally exhibited higher body weight and BMI, with *Pitta* showing intermediate values. The progressive increase in height, weight, and BMI with age across all three groups was consistent with normal growth during childhood. The relatively leaner anthropometric profile observed in *Vata* and the comparatively heavier build observed in *Kapha* are broadly concordant with classical Ayurvedic descriptions of these constitutions. Similar *Prakriti*-wise differences in anthropometric characteristics have also been reported in previous studies (24–26). However, as most differences observed in the present study did not reach statistical significance, the findings can be interpreted as constitutional trends, suggesting that *Prakriti* may provide a primary constitutional basis for individual variation in growth, while dietary, environmental, socioeconomic, familial, and lifestyle factors may contribute to and modify these patterns. (Table 8)

Mean Energy and Protein Intake of Children According to *Prakriti* and Age Group [Assessed by 24-Hour Dietary Recall Method (6)]

The present study evaluated energy and protein intake among children of different *Prakriti* types using the 24-hour dietary recall method. It demonstrated that mean energy intake was lower than the corresponding ICMR–NIN reference values (27). across *Vata*, *Pitta* and *Kapha* children in all three age groups. This finding is consistent with contemporary evidence from Indian children showing inadequate energy intake relative to recommended requirements. (28).

The present study further demonstrated significant differences in energy and protein intake among *Vata*, *Pitta* and *Kapha* groups. *Pitta* children had significantly higher energy intake than *Vata* children in all three age groups.

Vata Prakriti children in all age groups exhibited comparatively lower mean energy and protein intake. Ayurveda describes *Vata Prakriti* as possessing *laghu*, *ruksha*, and *chala* guna, which are associated with irregular appetite and variable digestive capacity. These characteristics may contribute to inconsistent food intake and relatively lower nutrient consumption, as reflected in the present findings. Such dietary inadequacy, if persistent, may affect optimal growth and development during childhood. *Pitta Prakriti* children showed higher mean energy and protein intake, with values closer to RDA levels. This observation aligns with Ayurvedic descriptions of *Pitta Prakriti* having *teekshna agni* (efficient digestive fire), resulting in better appetite, digestion, and assimilation of nutrients. *Kapha Prakriti* is characterized by *guru*, *sthira*, and *manda* qualities, leading to stable appetite and a tendency toward higher consumption of nourishing foods. While this may favor tissue building (*dhatu vridhhi*) during growth years, excess intake without adequate physical activity may predispose these children to increased adiposity, highlighting the importance of balanced dietary planning. (Table 9) Previous studies examining *Prakriti* in children have primarily focused on anthropometric and nutritional-status characteristics rather than quantitative dietary intake.

Conclusion

The present cross-sectional study identified *Prakriti*-wise variations in nutritional status, dietary habits and preferences, and disease susceptibility among children. These findings were broadly consistent with classical Ayurvedic descriptions and observations from previous studies. Deviations from *Prakriti*-appropriate dietary practices may contribute to *Dosha* imbalance and increased vulnerability to lifestyle-related disorders (30). The observed concordance between dietary patterns and classical descriptions further supports the concept of *Prakriti* as a biologically grounded phenotype rather than a symbolic typology (8). Emerging evidence from systems biology and nutrigenomics similarly emphasizes the potential relevance of individualized dietary approaches (31). Incorporating *Prakriti* assessment into paediatric health care may therefore support individualized nutritional planning, early identification of susceptibility patterns, and targeted preventive strategies.

Limitations and future scope

The present study has certain limitations. The relatively small sample size within each *Prakriti* group may limit statistical power and generalizability. As a single-centre cross-sectional study, the findings may not be fully representative of children from diverse geographical, cultural, and socioeconomic backgrounds and cannot establish temporal or causal relationships. . Dietary assessment based on reported information may be subject to recall bias. Potential confounding by dietary practices, socioeconomic status, and parental influence on food choices, lifestyle, and healthcare practices may also have affected the observed associations and could not be completely disentangled from the influence of *Prakriti*. Future research should include larger, multicentric and longitudinal studies to validate *Prakriti*- related variations in growth, nutritional status, dietary patterns, and disease susceptibility. Repeated dietary assessments, micronutrient profiling, biochemical parameters, and Ayurgenomic markers may strengthen the evidence regarding their underlying biological basis.

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