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ORIGINAL ARTICLE

A hospital based cross-sectional pilot study on the relation between *Prakriti* (psychosomatic constitution) and risk for cardiovascular diseases in adults

Radhika Rani R K [1] & Renjith V Raj [2]

[1]Associate Professor, Department of Roganidana, Govt Ayurveda College, Tripunithura, Ernakulam

[2]Research Associate, Department of Roganidana, Govt Ayurveda College, Tripunithura, Ernakulam

*Email: drradhekarani@yahoo.co.in

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Abstract

Cardiovascular disease (CVD) is a major cause of disability and premature death throughout the world. The epidemic of cardiovascular disease in India is advancing rapidly. The concept of *Prakriti,* mentioned in Ayurveda, is said to influence the vulnerability of an individual to certain diseases. *Prakriti* is the phenotype-based constitution of an individual, formed at the time of conception. There are basically three sets of phenotypes – *Vata, Pitta* and *Kapha*. Human beings have any one or mixed gradients of these distinct variants. The objective of this work was to study the relation between any of the *Prakriti* with risk for cardiovascular disease .

Methodology: The design was hospital based cross sectional observational study. One hundred subjects above 35 years of age who were not diagnosed with a CVD were observed. Assessment of *Prakriti* was done by using validated *Prakriti* questionnaire, CVD risk was assessed using Q-risk score. The parameters used for Qrisk3®2018 risk assessment include history of diabetes, smoking, body mass index, systolic blood pressure and lipid profile. Descriptive statistic and Chi square were done after collecting the data.

Result: The mean score of CVD risk was found higher in *Vatakapha Prakriti* (19.77 ± 13.0) as compared to the others. This high score has significant difference ($p < 0.05$) with that of other two groups.

Conclusion: It was observed that there was a significant difference in mean CVD predictive score among individuals of *Vatakapha Prakriti* compared to the other two *Prakriti*.

Introduction

According to Ayurveda, the state of health or diseases is determined by the normalcy of the *Dosha* (bio-humors), the *Dhatu* (body tissue) and the *Mala* (metabolic by-products). Among these *Vata, Pitta* and *Kapha* are the Dosha (body humors)[1]. *Vata* governs the movements of the body and elements within the body. *Pitta* is concerned with functions of digestion, metabolism and energy production and *Kapha* governs physical structure, fluid balance and immune response of the body[2].

Prakriti is a unique concept in Ayurveda, which states that each human being belongs to one among the three distinct psycho-somatic constitution or a combination of them. It is named after the three *Dosha*s based on their general characteristics or *Gunas*. The seven types of body constitutions (*Prakriti*) are the three distinct types namely, *Vata, Pitta, Kapha,* and the four combinations namely *Vata-Pitta, Vata-Kapha, Kapha-Pitta* and *Vata-Pitta-Kapha*. This classification of an individual is based on their physical, physiological and psychological characteristics[3]. According to Acharya Sushruta, the *Prakriti* of an individual does not change until death[4].

Prakriti, the inherent constitution of an individual refers to the genetically determined physical and mental makeup. The specific characters in sperms and ovum, the intra-uterine environment, the food and regimens of the mother during pregnancy and the nature of predominant *Mahabhuta* of the foetus are the factors influencing the *Prakriti*. The resultant dominance of the bio-humors determine *Prakriti*[3]. Each of these phenotypical constitutions are susceptible to certain diseases caused by the respective bio-humours[5]. Different *Prakriti* has different susceptibility for different diseases. Acharya Charaka mentions that individuals with each variant of *Prakriti* should adopt specific measures to restore health[6]. This shows that though *Prakriti* is determined by genetic factors, it can be modified by environmental factors.

Cardiovascular diseases (CVDs) are a group of disorders of the heart and blood vessels, including coronary heart disease, cerebrovascular disease, peripheral arterial disease, rheumatic heart disease, congenital heart disease, deep vein thrombosis and pulmonary embolism. An estimated 17.9 million people died from CVDs in 2016, representing 31% of all global deaths. In India reported 63% of total deaths due to NCDs, of which 27% were attributed to CVDs. Of these deaths, 85% were due to heart attack and stroke[7]. The incidence of lifestyle diseases such as hypertension, diabetes mellitus, dyslipidemia, and overweight/obesity associated with cardiovascular diseases is on the rise. With rapid economic development and increasing westernization of lifestyle in the past few decades, prevalence of these diseases has reached alarming proportions among Indians in the recent years[8]. Lifestyle changes and medications has been proven to modify the risk for these diseases by producing epigenetic changes. Therefore, the relation of *Prakriti* with such diseases could be vital in prevention and management strategies The study was undertaken to observe the relation of risk of CVD with different *Prakriti.*

Materials and Methods

Study population and setting – Individuals attending the OPDs of Government Ayurveda College, Tripunithura, Ernakulam for management of non-communicable disorders.

Sampling method – Consecutive sampling

Sample size – Being a pilot study, the sample size was fixed as 100.

Inclusion criteria – Willing participants without any overt /diagnosed CVD above the age of 35 years

Exclusion criteria –

- Participants with established hepatic diseases
- Participants with any acute clinically overt diseases

Assessment of CVD risk - The CVD risk was assessed using Qrisk3®2018,[9] an online CVD risk score calculator, specific for Indian population. Besides the smoking and medical history of the participants, parameters like body mass index, systolic BP were recorded. Fasting blood sugar to assess the Diabetes status in undiagnosed cases. Fasting levels of total cholesterol and HDL were analysed in the clinical laboratory. Total cholesterol/HDL ratio was assessed. Confirmatory lab investigation for liver function and renal function were also done along with clinical assessment to identify any other systemic illness.

Assessment of *Prakriti* - *Prakriti* assessment was done using a validated questionnaire[10]. The classification broadly considers features like stature, physical and mental endurances, and physiological attributes. Individuals those showing characteristics of two *doshas* were considered as dual constitution. While deciding the dual constitution dominance and subdominant among the two *doshas* were ignored to avoid increase in categorisation.

Statistical analysis – The data were summarised using descriptive statistic and charts. The relation between the mean scores of the continuous variables with *Prakriti* was analysed using one way ANOVA.

Ethical considerations – The consent of the participants was obtained after informing them the purpose of the study. Being a pilot observation, no additional liabilities were imposed and no compensations were provided for participation.

Results

Demographic characters among the 100 participants are summarised as below

Age distribution – Majority of the participants belonged to the age group of 56 – 65, as shown in table 1.

Table 1. Distribution of age

Age	*Frequency*	*Percent*
35 - 45	16	16.0
46 - 55	30	30.0
56 - 65	39	39.0
Above 65	15	15.0
Total	100	100.0

Gender distribution – Male participation was relatively higher (65%) in this study.

Distribution of the risk factors

Table 2. Distribution of the risk factors

	Status of risk factors		%
1.	Smoking history	Present	18
		Absent	82
2.	Hypertension	Present	32
		Absent	68
3.	Diabetes mellitus	Present	33
		Absent	67
4.	Dyslipidemia	Present	23
		Absent	77
5.	Family history	CAD	5
		Stroke	3
6.	BMI	≥ 25	34
		< 24.9	66

Among the 100 individuals observed 18% had history of smoking, 32% were hypertensive, 33% had Diabetes mellitus, 23% had dyslipidemia. Only 5% had family history of CAD and 3% were having family history of stroke. 34% of participants had BMI ≥ 25 and 66% were having BMI < 24.9, as shown in table 2.

Distribution of biological variables

The mean (SD) of the continuous variables observed were as shown in table 3

The data of all these continuous variables were tested for normality, among which BMI and HDL showed insignificance.

Table 3. Mean value of variables

	Mean	SD
BMI	24.24	0.27
SBP	137.14	1.4
T C	196.9	3.5
HDL	48.1	1.2
TC/HDL	4.3	0.14
Qrisk3®2018	15.27	1.15

Distribution of CVD risk score

Among the 100 individuals observed 44 % had very low, 27% had fair risk and 29% had moderate to high risk for developing cardiovascular disease in next 10 years using the Qrisk3®2018 scoring system, as shown in fig 1.

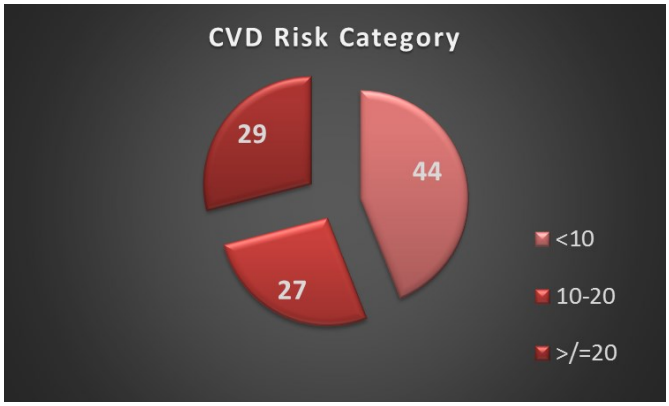

Fig 1. Distribution of CVD risk

Distribution of *Prakriti* Among the participants 46% were *Pitta Kapha Pakriti*. There was almost equal distribution of *Vata Kapha*(2and *Vata Pitta* (25%) *Prakriti*, as shown in fig 2.

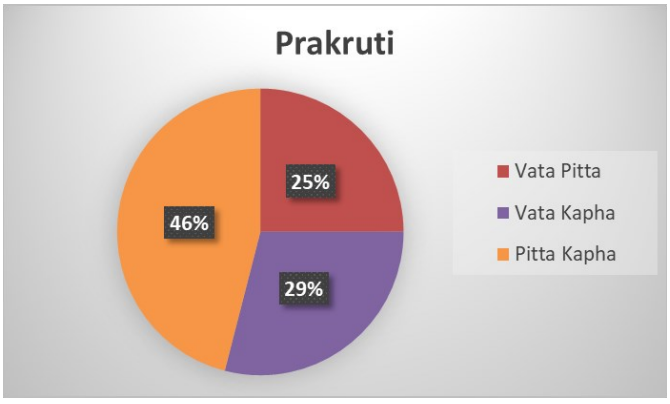

Fig 2. Distribution of *Prakriti*

Relation between *Prakriti* and QRISK 3 – 2018

The mean score of CVD risk was found higher in *Vatakapha Prakriti* (19.77 ± 13.0) as compared to the others. The score of *Vatakapha Prakriti* was significantly higher ($p < 0.05$) with that of other two groups, as shown in table 4.

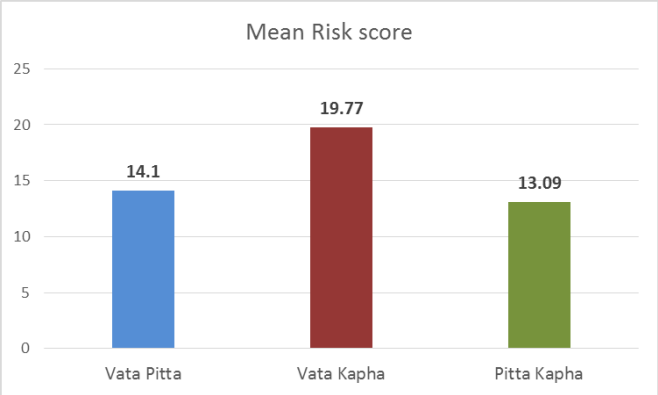

Fig 3. Chart showing mean Qrisk3®2018 score among the *Prakriti*

Table 4. Relation between CVD risk score and *Prakriti*

Prakriti	N	Risk score Mean ± SD	F	p - value
Vata Pitta	25	14.1 ± 9.91		
Vata Kapha	29	19.77 ± 13.0	3.345	0.039
Pitta Kapha	46	13.09 ± 10.7		

Discussion

The study was an attempt to observe the pattern of *Prakriti* among individuals at various levels of risk for developing cardiovascular diseases and to analyse if it has any relation with the risk. Being a hospital-based observation, the method of sampling cannot be considered a perfect probability sampling. The data thus obtained was analysed for normality, in which, all continuous variables except HDL and BMI had normal distribution. As the observations were done in the individuals attending the hospital OPD, there was a higher proportion of BMI above 25, hypertension, diabetes and dyslipidaemia as against the prevalence of these conditions in Kerala. Even then, 44% of participants had global CVD risk score of <10, which is a very low risk categorisation. Only 29% had moderate to high-risk scores of above 20%.

None of the participants had *Ekadosha* and *Samadosha Prakriti*. For the ease of analysis, the individual dosha predominance among the two in the *Dwandwaprakriti* was ignored. Majority of the participants (46%) were *Pithakapha Prakriti*. None of the three variants had significant relation with any of the biological variables observed. BMI showed a significant difference ($p<0.05$) with *Pithakapha Prakriti*, but as the data was not normal, such an interpretation seems meaningless. The Qrisk3®2018 score is a predictive scoring system indicating the overall risk of a person to get a cardiovascular event in next 10 years. This is a comprehensive score calculated taking into account almost all the risk factors like gender, family history, diabetic history, smoking status, body mass index, systolic blood pressure, lipid profile and other medical history. This may be the reason for significantly higher mean Qrisk3®2018 score in *Vatakapha Prakriti* even in the absence of significant difference in the individual variables among the three variants. This is a relevant observation showing the vulnerability of this *Prakriti* for developing CVD in future. The degree of risk of *Vatakapha Prakriti* to develop CVD has to be further studied.

Being a hospital-based observation, the external validity of the findings is weak. From the above observations it seems significant to go for a well-designed epidemiologic observational study. Moreover, a better validated instrument for the *prakriti* assessment could be incorporated in such works. If greater risk for particular constitutional phenotype to develop CVD were established, it would be a major breakthrough in the primary prevention of CVD, to include *Prakriti*-specific Ayurvedic management along with other risk reduction strategies.

Conclusion

Ayurvedic texts proclaim that constitution of individual, the *Prakriti*, influences the risk for certain types of morbidity. The study was designed around this theme. In this hospital-based observation, it was found that there was a significant difference in mean CVD predictive score among individuals of *Vatakapha Prakriti* compared to the other two *Prakriti*. If supported by further epidemiologic findings, it would be a re-validation of the above postulation. Besides, there opens a new scope for developing constitution-specific or even customised Ayurvedic strategies for the primary prevention of cardiovascular diseases.

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Conflict of interest: None

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