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Assessment of Basal Metabolic Rate (BMR) w.s.r. to *Dwandwaja Prakriti*

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ABSTRACT

Introduction: *Prakriti* (constitution) is formed at the time of union of sperm and ovum inside the womb. Predominance of *Doshas (*Bio-energies*)* at the time of fertilization determines the physical and mental characters. Ayurveda classifies human beings into three distinct types: *Vata*, *Pitta* and *Kapha* with multiple subtypes. According to Ayurveda physiological function of body depends upon the three *Doshas* and in modern science calories are needed to perform body function which is calculated by BMR. The study was designed to asses BMR with respect to *Prakriti*. **Materials and Methods:** For this present Observational and Analytical study, 60 female volunteers were selected between 18 to 30 yrs. *Prakriti Pariksha* was done by questionnaire and six groups were made. BMR was calculated. **Results:** It was observed that the P value is < 0.0001, which is extremely significant. **Discussion:** By statistical analysis it was concluded that BMR is significantly different in *Dwandwaja Prakriti*. From the analyzed data, it is found that *Kapha Vata Prakriti* persons have maximum BMR and *Vata Pitta Prakriti* persons have minimum BMR.

Key words: *Apachita-Alpa Sharira, Sarasamhata-Sthirasharir, Prakriti,* BMR.

INTRODUCTION

According to Ayurveda every individual is unique. Not only each individual has different size and shape but its physiological and even psychological characters are different. This is because presence of predominant *Dosha,* at the time of birth which decides their constitution.[1] Once this constitution is set, it is permanent for that individual. Charaka has described *Prakriti* of *Shukrashonita* (sperms and ovum), *Kala Garbhashaya* (Season and condition of uterus), *Matru Ahar-Vihara* (Foods and regimes of mother) and *Mahabhuta Vikara* (Role of *Mahabhuta* comprising foetus) are responsible for the formation of *Prakruti* of fetus.[2] Ayurveda classifies human beings into three distinct types: *Vata*, *Pitta* and *Kapha* with multiple subtypes. The individuals of these categories exhibit biological variations in terms of structure, functions and behaviour of an individual.

According to *Ayurveda* physiological functions of body depends upon the three *Doshas* and in modern science calories are needed to perform body functions such as breathing, blood circulation, controlling body temperature, cell growth, brain and nerve function, and contraction of muscles etc.[3] which is calculated by BMR. Basal metabolic rate (BMR) is the minimal rate of energy expenditure per unit time by endothermic animals at rest. It is influenced by several factors. BMR typically declines by 1-2% per decade after age 20. In adult male 24 cal/kg and in female 22 cal/kg calories required in rest, the added calories needed ranges from 500 to 3000 cal depending upon daily activities.[4] The Mifflin-St. Jeor equation is considered the standard to calculate BMR.

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Hence the study is aimed to observe relation of basal metabolic rate with respect to *Dwandwaja Prakriti*.

Materials and Methods

Materials

Literature search - Review of Ayurvedic literature was taken regarding *Prakriti*. Review of modern literature was taken regarding basal metabolic rate.

Sample size - 60 volunteers (10 in each group)

Centre for Assessment - D.Y. Patil University, school of Ayurveda, Nerul, Navi Mumbai

Methods

Type of study: Observational and Analytical

Selection Criteria:

a) **Inclusion Criteria -** Healthy female individuals in between the age group 18 to 30 years consuming mixed diet were enrolled for the study.

b) **Exclusion Criteria -** Individuals having history of metabolic and hormonal disorder, Pregnant and lactating women and aged less than 18 years and more than 30 years were excluded from the study.

Plan of study:

a) Volunteers were selected according to inclusion criteria.

b) Written consent of volunteers was taken.

c) Demographical study (Name, Address, Age, Sex, Diet, Education, Occupation, Economic status) was done by *Prashna Pariksha.*

d) Selected volunteers were examined for *Prakriti Pariksha* by questionnaire.[5]

e) Six groups were made as

1. *Kapha-Vata Prakriti* (Group-A)
2. *Kapha-Pitta Prakriti* (Group-B)
3. *Vata-Pitta Prakriti* (Group-C)
4. *Vata-Kapha Prakriti* (Group-D)
5. *Pitta-Kapha Prakriti* (Group-E)
6. *Pitta-Vata Prakriti* (Group-F)

Basal metabolic rate of all volunteers was calculated by following formula

Mifflin St. Jeor Equation

BMR = 10 x weight (kg) + 6.25 x height (cm) – 5 x age (years) – 161

Data was recorded.

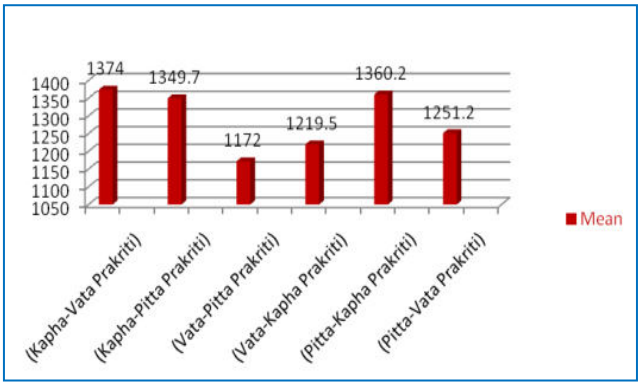
Results

ANOVA test was applied for the data and it is observed that the P value is < 0.0001, which is considered as extremely significant, Variation among column means is significantly greater than expected by chance.

Table 1: Mean and standard deviation in different groups.

Groups	Mean	Standard Deviation
Group A (*Kapha-Vata Prakriti)*	1374.0	44.726
Group B *(Kapha-Pitta Prakriti)*	1349.7	87.972
Group C *(Vata-Pitta Prakriti)*	1172.0	86.685
Group D *(Vata-Kapha Prakriti)*	1219.5	59.932
Group E *(Pitta-Kapha Prakriti)*	1360.2	108.81
Group F *(Pitta-Vata Prakriti)*	1251.2	42.611

Graph 1: Mean BMR in different *Prakriti.*



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It is observed that Group-A (*Kapha-Vata)* persons are having high BMR among these groups.

Group-*C (Vata-Pitta) Prakriti* persons are having low BMR in this study.

Discussion

Charaka Samhita described *Prakriti* characters in accordance to every attribute of predominant *Dosha*. These characteristics can be classified as external morphological features, physiological function and psychological function. Anatomical character varies according to predominance of *Dosha* present in the body. *Vata Prakriti* persons are having *Apachita-Alpa Sharira*[6] (undeveloped-short body) and *Kapha Prakriti* (firm, compact and stable body) persons are having *Sarasamhata-Sthirasharira.*[7]

According to modern science BMR is directly proportional to weight and height. Persons having *Kapha Dosha* in predominance are having firm, compact and stable body so BMR of these persons is found high and *Vata Dosha* predominance persons showed low BMR due to undeveloped-short body frame.

BMR increases as body temperature increases. Due to *Ushna Guna* of *Pitta Dosha*[8], BMR is found more in *Pitta* predominance *Prakriti* as compared to *Vata* dominant *Prakriti*.

Conclusion

From statistical analysis it is concluded that BMR is significantly different in *Dwandwaja Prakriti*. From the analyzed data, it is found that *Kapha Vata Prakriti* persons have maximum BMR and *Vata Pitta Prakriti* persons have minimum BMR. In this study mostly morphological characters were considered as BMR is dependent on height and weight. This study can be decisive by using clinical methods for assessment of BMR with respect to physiological and psychological characteristics of *Prakriti*.

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