Ayurveda

AN OBSERVATIONAL STUDY TO ASSESS THE PRAKRUTHI OF INDIVIDUALS WITH TYPE 2 DIABETES MELLITUS HAVING GLYCOSYLATED HAEMOGLOBIN GREATER THAN SEVEN

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ABSTRACT Kerala is the diabetes capital of India with a prevalence of 21.9%. Diabetes mellitus is a clinical syndrome characterised by hyperglycaemia due to absolute or relative deficiency of insulin. The status of health shows individual variation. The concept of prakruthi shows much interest in finding out what type of individual suffering from the particular diseases. Prakruthi refers to the genetically determined anatomical, physiological and psychological constitution of an individual. Assessment of dosha prakruthi of individuals with diabetes mellitus is useful to take a personalized approach in preventive medicine. Diabetic patients of the age group of 40-60 years with glycosylated haemoglobin greater than 7 were consecutively selected from Govt. Ayurveda college hospital, Pariyaram. The prakruthi of the individuals was assessed using validated computer-assisted questionnaire software Ayusoft developed by C-DAC, Pune. The data were analysed with descriptive statistics. Kapha pradhana prakruthi was found to be more susceptible to develop type 2 diabetes of which Kapha pradhana pithanubandhi prakruthi was seen in most of the participants. Prakruthi plays an important role in the generation and progression of the disease. Kaphaja nidanas leads to the origin of type 2 diabetes and symptomatologies predominantly kaphaja in nature.

KEYWORDS : Diabetes mellitus, Prameha, Prakruthi

INTRODUCTION

Diabetes is a major public health problem and is a leading cause of morbidity and mortality the world over. Kerala is the diabetes capital of India with a prevalence of 21.9%[1]. Diabetes mellitus is a clinical syndrome characterised by hyperglycaemia due to absolute or relative deficiency of insulin. Lack of insulin affects the metabolism of carbohydrates, protein and fat and can cause a significant disturbance of water and electrolyte homeostasis[2]. High HbA1C levels indicate poor control of Diabetes mellitus. DM is expected to continue as a major health problem owing to its serious health complications, especially end-stage renal diseases, diabetic neuropathy, Ischemic Heart Disease, gangrene of the lower extremities and blindness in adults. Diabetes mellitus, the most prevalent metabolic syndrome can be compared to *prameha* in Ayurveda parlance.

Prameha is one among the "A*shtamahagatas"* which indicates the importance of the disease by the ancient seers. It is a *santarpanajanya vyadhi.* According to *Acharya Charaka* first and foremost *dushti* occurs to *Kapha dosha* by indulging *kaphaja nidanas*[3]. In the initial stage of the disease, the mainly affected *dosha, dhatu* and *mala* are *Kapha, meda* and *mootra* respectively. According to Ayurveda, *asyasukham* (sitting at one place), *Swapna sukham* and *kaphamedo vardhaka ahara viharas* are the causative factors of *prameha. Susruta* mentions that the person indulges constantly in day sleep, absence of physical activities, laziness, consumes foods and drinks which are cold, unctuous, fatty and liquid are the causes of *prameha*[4].

DM mainly is of two types, type 1 and type 2. Type 1 diabetes constitutes 5%-10% of subjects diagnosed with diabetes and is due to the destruction of β-cells of the pancreas. Type 2 DM is most common and accounts for 80%-90% of the diabetic population. Patients with type 1 diabetes are usually lean and most of the patients in type 2 DM are obese[5]. A sedentary lifestyle is the major cause of type 2 diabetes mellitus. ADA Recommendations 2007, point out the major risk factors for Type 2 Diabetes mellitus and some of them are family history of type 2 DM**,** Obesity and habitual physical inactivity[6]. According to Acharya Susruta, *prameha* is of two kinds, *sahaja* and *apathya nimithaja*. *Sahaja* is due to *the bija dosha* of mother and father. *Apathya nimithaja* due to the use of unhealthy foods and regimen; in the former, having the disease earlier, and the patient is lean. In the latter the patient is obese, eats more food, desirous of lying in the bed, sitting and sleeping for long periods[7]. Overeating coupled with underactivity leading to obesity acts as a diabetogenic factor in genetically predisposed individuals. The concept of *prakruthi* shows much interest in finding out what type of individual suffering from the particular diseases.

Even though the multifactorial nature of diabetes is well recognized, the genetic component is a strong determinant of this disease. The genetic component has a stronger basis for type 2 DM than type 1A

DM. Every human being is different from the other by his physical, physiological as well as psychic characters. The approach of Ayurveda on the concept of *prakruthi* is quite wide and vivid. Ayurveda classifies people based on *prakruthi* as every person has a unique *prakruthi*. Acharya Charaka considered *prakruthi* examination, as the first point in his ten points of investigations regarding patients. So assessment of *dosha prakruthi* of individuals with diabetes mellitus is useful to take a personalized approach in preventive medicine.

MATERIALS AND METHODS

STUDY DESIGN
This was an observational study.

A consecutive sampling technique was used for selecting samples. A total of 50 individuals were selected for this study according to inclusion and exclusion criteria. Written informed consent was taken from the individual before the study.

SOURCE OF DATA
50 diagnosed cases of Diabetes mellitus having glycosylated haemoglobin greater than 7 %, attending OPD and IPD of Govt. Ayurveda College Hospital, Kannur were consecutively selected for the study.

METHOD OF COLLECTION OF DATA

INCLUSION CRITERIA
Diabetic patients with glycosylated haemoglobin greater than 7%

Age group: 40-60 years

Gender: both male and female

EXCLUSION CRITERIA
Pregnant and lactating mother

Subjects with a history of mental illness

Subjects with other deranged metabolic ailments

ASSESSMENT CRITERIA
The *prakruthi* of the individuals was assessed using validated computer-assisted questionnaire software Ayusoft developed by C-DAC, Pune. The data were analysed with descriptive statistics.

Study tool[8]

The Questionnaire in this application is based on the classical guidelines regarding *prakruthi* assessment. This questionnaire is

specific to age group and gender. It covers anatomical, physiological and psychological assessment with practical options to each question. Questions are of two types: main questions and support questions. The total number of questions is 83 including main and supportive questions. If the examiner is not satisfied with the main type of questions supportive questions can be obtained by checking the supportive radio button. As the questions regarding beard, moustache hair and amount of semen are not applicable for females, there are 83 questions for males and 81questions for females.

Anatomy – 32 questions
Physiology – 40 questions
Psychology – 11 questions

The resultant output from the software displayed the final *prakruthi* of the individual as the combination of predominant *doshas*. In the present study, all subjects were found to be *dvandvaja prakruthi* based on the percentage score obtained for characteristics of each *dosha*.

OBSERVATION & ANALYSIS
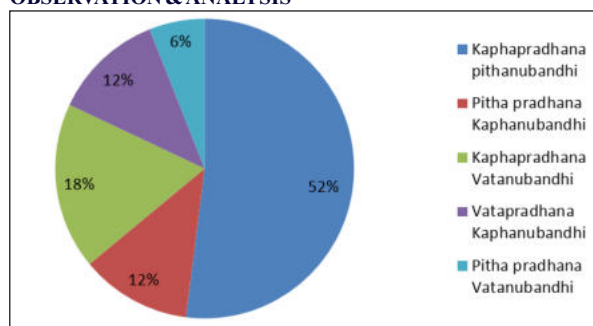
Table 1: Distribution According To *Prakruthi* Of Diabetic Patients

From the above table it is evident that 52% of individuals with diabetes mellitus were of *Kapha pradhana pithanubandi prakruthi,* 18% were of *Kapha pradhana vatanubandi prakruthi*, 12% were of *pitha pradhana kaphanubandi prakruthi*, 12% were of *Vatapradhana kaphanubandi prakruthi* and 6% were of *Pithapradhana vatanubandi prakruthi*.

RESULT
Majority of individuals with diabetes mellitus were of *Kapha pradhana* or *kaphanubandha prakruthi*. 52 % individuals were of *Kapha pradhana pithanubandi prakruthi*, 18% were of *Kaphapradhana vatanubandi prakruthi*, 12% were of *pitha pradhana kaphanubandi prakruthi*, 12% were of *Vatapradhana kaphanubandi prakruthi* and 6% were of *Pithapradhana vatanubandi prakruthi*.

DISCUSSION
According to Ayurveda, all *prakruthi* types except *samaprakriti* always show the tendency to trouble with diseases whenever precipitating factors arrives. Particular *prakruthi* types are more prone to develop certain types of diseases. *Prakruthi* plays an important role in the generation and progression of the disease. In the case of *Kapha predominant prakruthis*, there is a proneness to *kaphaja vikaras*. The onset of complications and severity of diseases depend upon the *prakruthi* of individuals along with other factors. The degree of *sammoorchana* of *doshas* with the *dooshyas* determines the severity of the disease. Here *tulya dosha, dushya* and *prakruthi* initiate the disease. When the *doshas* in the *prakruthi* are similar to the *doshas* involved in the *samprapti* of disease there is a chance of the occurrence of the disease. Here the majority of subjects with type 2 DM belonged to *Kapha pradhana or Kapha samsarga prakruthi*. *Prameha* is a *vyadhi* with *Kapha pradhana tridosha dusti*. Out of ten *dooshyas* of *prameha*, the majority are *soumya* in quality. *Kaphaja nidanas* leads to the origin of the disease and symptomatologies predominantly *kaphaja* in nature. So this may be the reason for the greater incidence of diabetes among the *Kapha pradhana* or *kaphanubandha prakruthi*.

Individuals of each *prakruthi* exhibit different behaviour for the utilization of energy. *Kapha prakruthi* individuals exhibit physical inactivity and are sleepier. A sedentary lifestyle and obesity are important risk factors of type 2 diabetes mellitus. Sedentary people are therefore more insulin-resistant than active people with the same degree of obesity. Inactivity is associated with the down-regulation of insulin-sensitive kinases and may also increase the accumulation of

FFAs which may lead to insulin resistance. William H. Sheldon classified somatotypes to ectomorphs, mesomorphs and endomorphs based on observations. It bears a resemblance to the observations made by ancient Ayurvedic *Acharyas*. The endomorphs are characterized by a well-built, heavy, round body and fatty, due to increased accumulation of fat, like that of *Kapha prakriti* individuals. *Kapha prakruthi* individuals tend to gain weight and very difficult to lose it. *Snigdha, Sandra, guru gunas* of *Kapha* helps to obtain the fatty round body. The endomorphs also show slow metabolism like *Kapha Prakriti* individuals. They are physically inactive and prefer a sedentary lifestyle due to *manda* and *sthimitha guna* of *Kapha*. *Kapha* predominant *prakriti* individuals tend to get increase their body weight due to the involvement of *prithvi* and *jalamahabhoota* predominance. The factors which cause an increase of *Kapha* and *medas* also lead to *prameha*. Physical inactivity is one of the important *nidana* of *prameha*. *Sthoola prameha* was mentioned in ayurvedic classics can be considered as diabetes mellitus produced due to overweight or obesity.

CONCLUSION
The present study was done to assess the *prakruthi* of individuals with type 2 diabetes mellitus. Findings of this study suggest that *Kapha pradhana prakruthi* was found to be more susceptible to develop type 2 diabetes of which *Kapha pradhana pithanubandhi prakruthi* was seen in most of the participants. A sedentary lifestyle and obesity are important risk factors of type 2 diabetes mellitus. Sedentary people are therefore more insulin-resistant than active people with the same degree of obesity. *Kaphaja nidanas* leads to the origin of type 2 diabetes and symptomatologies predominantly *kaphaja* in nature. So this may be the reason for greater incidence of diabetes among the *kapha pradhana* or *kaphanubandha prakruthi*. Hence the assessment of *dosha prakruthi* of individuals with diabetes mellitus is useful to take a personalized approach in preventive medicine.

REFERENCE
1. Gadadharan Vijayakumar et al. (2019, January31).BMC Public Health. *Incidence of type 2 diabetes mellitus and prediabetes in Kerala, India*: results from a 10-year prospective cohort. [Sited on January31; 19(1):140.doi:10.1186/s12889-019]https://pubmed.ncbi.nlm.nih.gov.in
2. Sir Stanley Davidson. *Davidson's principles & practice of medicine*. 20th edition. London: Churchhill livingstone Elsevier; 2006.Chapter 21.p.808
3. Dr Ram Karan Sharma and Vaidya Bhagwan Dash. *Agnivesa's Charaka samhita, text with an English translation and critical exposition based on Chakrapanidatta's Ayurveda dipika*. Reprint edition. Varanasi: Chaowkhamba Sanskrit series office; 2013. Volume II, Nidanasthana sthana. Chapter 4/5. P. 54
4. Prof .K.R Sreekantha Murthy. *Illustrated Susruta Samhita, text with English translation, notes, appendices and index*. Reprint edition. Varanasi: Choukhamba Orientalia; 2012. Volume II, Chikitsa sthana. Chapter 11/1. P.124
5. Indu Khurana, Arushi Khurana. *Textbook of Medical Physiology*. 3rd edition. New Delhi: Elsevier;2020.Chapter 8.6.p.710
6. Harsh Mohan. *Textbook of pathology*. 6th edition. New Delhi: Jaypee Brothers medical publishers (p) limited;2010.Chapter 27.p.824
7. Prof .K.R Sreekantha Murthy. *Illustrated Susruta Samhita, text with English translation, notes, appendices and index*. Reprint edition. Varanasi: Choukhamba Orientalia; 2012. Volume II, Chikitsa sthana. Chapter 11/1. P.124
8. Home page of CDAC: Centre for Development of Advanced Computing. Available from https://www.cdac.in/