

## Study identifies unique clusters of T2D in Indians

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**This could help in predicting the risk of complications and in focusing more attention on individuals with the highest risk of developing complications of diabetes.**



A recent study entitled ‘Novel subgroups of type 2 diabetes and their association with microvascular outcomes in an Asian Indian population: a data-driven cluster analysis – The INSPIRED STUDY’, was published online in BMJ Open Diabetes Research and Care on August 18, 2020.

This project, called as the INSPIRED study is a collaborative project between the Madras Diabetes Research Foundation and Dr.Mohan’s Diabetes Specialities Centre, Chennai and the Division of Population, Health and Genomics, and the Division of Cardiovascular and Diabetes Medicine, University of Dundee, School of Medicine, Dundee, Scotland, UK. This research was funded by the National Institute for Health Research (NIHR).

### **Salient features of this study-**

- Recently five distinct “clusters” of individuals with diabetes with significantly different characteristics have been identified in a Scandinavian (White Caucasian) population, based on five parameters representing the clinical presentation as well as the presence of insulin resistance and beta-cell dysfunction. These five subgroups were termed as Severe Autoimmune Diabetes (SAID), Severe Insulin Deficient Diabetes (SIDD), Severe Insulin Resistant Diabetes (SIRD), Mild Obesity-related Diabetes (MOD) and Mild Age Related Diabetes (MARD).
- Asian Indians (South Asians) represent an ethnic group with high predilection for developing type 2 diabetes; indeed, some of the largest increases in diabetes prevalence have been reported from the South Asian region.
- Type 2 diabetes in Asian Indians differs from that in white Caucasians in a number of significant ways and this referred to as the ‘Asian Indian Phenotype’
- The “Asian Indian Phenotype”, characterized by high levels of abdominal fat and increased insulin resistance even at low levels of body-mass index (BMI), has been postulated as the main reason for this increased propensity to develop

type 2 diabetes at younger age. Recent studies from our group suggest that beta-cell dysfunction occurs quite early and rapidly in Asian Indians.

- For the first time in India (and South Asia), clustering of diabetes was done on 19,084 individuals with type 2 diabetes using eight clinically relevant variables (age at diagnosis, BMI, waist circumference, HbA1c, triglycerides, HDL cholesterol and C-peptide fasting and stimulated) and published in BMJ Open Diabetes Research & Care.

**For the first time**, type 2 diabetes in the Asian Indians has been shown to be classified into **four distinct phenotypic clusters** and this has important implications for prognosis and management of diabetes in Indians.

SIDD (Severe Insulin Deficient Diabetes)

IROD (Insulin Resistant Obese Diabetes)

CIRDD (Combined Insulin Resistant and Deficient Diabetes)

MARD (Mild Age-Related Diabetes)

Classifying Asian Indians with type 2 diabetes into phenotypic clusters provides insights into the pathophysiological processes driving diabetes in this ethnic group which could help in predicting the risk of complications and in focusing more attention on individuals with the highest risk of developing complications of diabetes.

Dr.V.Mohan, Chairman of Dr.Mohan's Diabetes Specialities Centre and President of Madras Diabetes Research Foundation and the senior author of the study said that *"These sub groups of type 2 diabetes have implications as far as treatment is concerned and the choice of anti-diabetic drugs, for eg. the severely dependent diabetes (SID) variety would probably respond better to sulfonylurea agents or secretagogues or may need insulin, whereas the insulin resistant variety would respond better to an insulin sensitizer like metformin."*