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To Develop a Non-invasive Technique as a Preliminary Tool to Determine Type 2 Diabetes

Kshama Rahul Joshi, Pervez Haris & Antonio Pena-Fernandez
DeMontefort University, Leicester, UK
correspondence to P12232168@my365.dmu.ac.uk

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Background and aims:

A study was designed to understand a three-dimensional cause and effect relationship among ethnicity-based diet, relevant macro, and micro-nutrients obtained from diet, and prevalence of type 2 diabetes. If such relationship exists, then this link can be used to develop a preliminary non-invasive screening technique to determine if the patient needs any further invasive techniques.

Methods:

A questionnaire and lab-based techniques were used to gather data and samples from 400 participants from community services and NHS GP practices within Leicester, UK.

Results:

Out of 400 participants, Indian (61%), Pakistani (19%), White British (9%) were the top three ethnicities in the research. From the total Cohort, 188 (47%) were diagnosed with type 2 diabetes (T2DM) of which 86% were managing their condition through oral medication, and maximum number of respondents (87%) were unaware of the fact as T2DM preventable and potentially reversible. Ethnically diverse non-diabetes subjects were consuming a high carbohydrate, protein-rich diet. Fat intake was high among non-diabetes Indian, Pakistani, Bangladeshi, and African except White British. Using FETA technique, average food intake of 14 food groups and dependent key elements were found. Magnesium and Zinc which are important for T2DM management were high in non-diabetes subjects whereas Selenium, which acts as an antioxidant in case of T2DM, was found in low concentration within both T2DM & non-diabetes population. Currently, this research is in a lab work analysis phase to determine how the scalp hair and toenail samples using elemental techniques provide the level of macro and micro-nutrients within cohort.

Conclusion:

By accessing dietary data, it is possible to determine the status of nutrients and its importance in prevalence of T2DM.