Dietary Intake, Insulin Resistance and Glycaemic Control (DIRG Study) among adults with type 2 diabetes mellitus in Malaysia compared with healthy individuals: An ongoing cross- sectional pilot study

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ABSTRACT

Introduction: Type 2 diabetes mellitus (T2DM) is one of the fastest growing and most burdened chronic diseases worldwide, where prevalence has been increasing drastically over the past decade, largely driven by lifestyle changes, urbanisation, and dietary modifications. Poor dietary patterns and increasing obesity contribute to insulin resistance, which plays a pivotal role in the development and progression of T2DM and its complications. While dietary modification remains another keystone of diabetes management, detailed evidence describing the relationship between dietary intake, insulin resistance, and glycaemic control among Malaysian adults is still limited. In addition, the ongoing nutrition transition in Malaysia has led to increased consumption of calories dense and highly processed foods, which may further worsen metabolic health. Understanding how dietary intake relates to insulin resistance and glycaemic control in individuals with T2DM may help to guide more targeted and culturally relevant dietary recommendations with possible similar alternatives. **Materials and Methods:** This is a cross-sectional pilot study at a primary care clinic. Adults aged 18 years and above are being recruited into two groups: individuals diagnosed with T2DM attending the clinic and healthy volunteers without metabolic disease. Baseline demographic information, medical history, anthropometric measurements, and biochemical parameters are obtained through clinical assessments and medical records. Participants are asked to complete a three-day image-assisted dietary record by submitting photographs and brief descriptions of all meals and beverages consumed using mobile messaging. Trained research personnel would analyse these dietary records to estimate daily energy intake and the composition of macronutrients. Insulin resistance is evaluated using the triglyceride–glucose (TyG) index and the TyG–BMI index; concurrently, glycaemic control is assessed through glycated haemoglobin (HbA1c) measurements. Planned statistical analyses encompass descriptive statistics, group comparisons, and correlation analyses, all designed to investigate the relationships between dietary intake, insulin resistance, and glycaemic control. **Results:** This ongoing pilot study aims to recruit approximately 80 participants, with half diagnosed with T2DM and the remaining half comprising healthy volunteers. Preliminary data during recruitment suggest substantial variability in dietary patterns, energy intake, and macronutrient distribution among participants. The final analysis will compare dietary intake, insulin resistance indices, and glycaemic control between the two groups and examine potential associations between dietary patterns and metabolic outcomes. **Conclusion:** The study eventually provides early insights into identifying dietary patterns that influence metabolic health. The findings are expected to inform future larger cohort studies and contribute to the development of more tailored nutritional strategies for diabetes management in Malaysia.