

Associations of an empirical dietary pattern with cardiometabolic risk factors in Malaysian adolescents

ABSTRACT

Background: This study aimed to identify a dietary pattern (DP) characterised mainly by high intakes of free sugar and other nutrients hypothesised to be associated with obesity such as dietary energy density (DED), percentage of energy from total fat and fibre density in adolescents from three southern states of Peninsular Malaysia, and its associations with cardiometabolic risk factors. **Methods:** This is a cross-sectional study among 335 adolescents who provided both dietary information assessed using a validated food frequency questionnaire (FFQ) and biochemical parameters including lipid profile, blood glucose, serum insulin and homeostatic model assessment-insulin resistance (HOMA-IR). Anthropometric measurements included weight (kg), height (cm) and waist circumference (cm), while body mass index (BMI) in kg/m² was estimated, respectively. Reduced rank regression (RRR) identified a DP with percentage of energy from sugar and total fat, DED and fibre density intake as response variables. **Results:** The identified 'high sugar, high fibre, high DED and low fat' DP was characterised by high intakes of sugar-sweetened beverages, fruits, sweets and low intakes of meat and cereal. Adolescents in the highest tertile of the identified DP had about 3.0 (OR = 2.7; 95%CI: 1.3, 5.6) and 2.0 (OR = 1.9; 95%CI: 1.0, 3.5) times higher odds of having dyslipidaemia or elevated total cholesterol and LDL-cholesterol level, respectively compared to adolescents in the lowest tertile DP after adjusting for sex, school location, maternal education, physical activity, dietary misreporting and BMI z-score. This DP was not significantly associated with overweight and obesity. **Conclusions:** Higher adherence to a DP characterised mainly by free sugars and DED was associated with greater odds of having dyslipidaemia, elevated total cholesterol and LDL-cholesterol levels in Malaysian adolescents.

Keyword: Dietary patterns; Dyslipidemia; Cardiometabolic risk factors; Childhood obesity; Malaysian adolescent