Abstract

Risk Factors for Prediabetes in Auckland Primary School Children [†]

D. Lawgun [1], C.A. Conlon [1], K.L. Beck [1], C.S. Gammon [2] and P.R. von Hurst [1,*]

[1] School of Sport, Exercise and Nutrition, College of Health, Massey University, Auckland 0632, New Zealand; donna.lawgun@middlemore.co.nz (D.L.); c.conlon@massey.ac.nz (C.A.C.); k.l.beck@massey.ac.nz (K.L.B.)

[2] School of Health Sciences, College of Health, Massey University, Auckland 0632, New Zealand; c.s.gammon@massey.ac.nz

[*] Correspondence: p.r.vonhurst@massey.ac.nz

[†] Presented at the 2018 Nutrition Society of New Zealand Annual Conference, Auckland, New Zealand, 28–30 November 2018.

Background: The incidence of prediabetes and type 2 diabetes mellitus (T2DM) is increasing in children around the world. Prediabetes increases the risk of T2DM in later life. Early identification of prediabetes is an important first step in preventing this progression, so identification of at risk children needs to become a priority. The aim was to identify reliable indicators of prediabetes risk in children, using glycated haemoglobin (HbA1c) as the dependent variable.

Methods: This data was from a subset of the 730 children recruited for the Children's Bone Study, a cross-sectional study of 8–11 year-old children in Auckland, New Zealand. HbA1c was measured from a finger-prick blood test. Anthropometry included weight, height, waist circumference (WC) and percentage body fat (%BF). Ethnicity, gender, and age were assessed by questionnaires completed by the child and/or parents. Stepwise multiple linear regression analysis was used to explore which independent variables best predicted variance in HbA1c.

Results: When children (n = 451, 10.4 ± 0.6 years, 45% male) were classified by glycaemic status, 71 (15.7%) had HbA1c levels indicative of prediabetes (≥40 mmol/mol). This was greatest in Pacific (n = 29, 27%), South Asian (n = 13, 30%) and Māori (N = 10, 17.8%) children, compared with European children (N = 10, 6%) (p < 0.001). Normal BMI was observed in 45% of children with HbA1c ≥40 mmol/mol, with South Asian children exhibiting highest risk at normal BMI. WC, South Asian and Pacific Island ethnicity were the most significant risk factors for elevated HbA1c and prediabetes.

Conclusions: South Asian and Pacific Island adults are at high risk of T2DM compared with the total New Zealand population. The prevalence of elevated HbA1c in children of these ethnicities suggests that prediabetes is present early in life, supporting the need for identification and intervention in childhood to halt the progression to T2DM. In certain ethnicities, such as South Asian, BMI does not accurately predict risk.

Supplementary Material: The poster is available online at www.mdpi.com/2504-3900/8/1/45/s1.