Abstract

Early Detection of Risk for Type 2 Diabetes and Sugary Drinks Intake †

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In New Zealand, the incidence of type 2 diabetes (T2D) is increasing in Pacific youth. A high intake of sugary drinks has been proposed as an explanation. Glycated haemoglobin A1c (HbA1c) is a widely used biomarker which reflects the person’s average blood glucose over the last 2–3 months. Point-of-care testing (POCT) of HbA1c have been used in the management of individuals with diabetes but POCT HbA1c is not recommended for the diagnosis of diabetes. The aim of this study was to compare the performance of a POCT HbA1c test measured by the Afinion™ AS100 Analyser with a reference venous blood measure and investigate associations between HbA1c and daily sugary drinks intake among Pacific youth. A sub-sample of 94 girls and 96 boys aged 15y, was drawn from the Pacific Islands Families Study. HbA1c was measured with the Afinion using a capillary finger-prick sample. The measurement was repeated one year later and concurrently a venous blood sample was analysed by boronate affinity chromatography. An online validated qualitative food frequency questionnaire was applied. Bland-Altman, paired t-test, and correlation coefficient compared the two POCT measures between years (r = 0.55, 95% CI 0.44, 0.65, p < 0.001) with a mean difference 0.14 ± 2.18 (SD) mmol.mol⁻¹. For the same day analysis, the mean difference in capillary and venous measures was 0.54 mmol.mol⁻¹ (95% CI mean: 0.25, 0.83, p < 0.001) with ±1.96SD limits of agreement: 4.48, −3.40 mmol.mol⁻¹. Median daily sugary drinks intake was 2.12 servings (1.13, 3.64). There was no relationship between sugary drinks intake and HbA1c. The Afinion POCT test has the potential to identify those at early risk of elevated HbA1c and inform dietary advice. The relationship of sugary drinks intake to T2D risk factors needs further investigation.

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