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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 A_{1c} (HbA_{1c}) 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 HbA_{1c} have been used in the management of individuals with diabetes but POCT HbA_{1c} is not recommended for the diagnosis of diabetes. The aim of this study was to compare the performance of a POCT HbA_{1c} test measured by the Afinion™ AS100 Analyser with a reference venous blood measure and investigate associations between HbA_{1c} 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. HbA_{1c} 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 and reference measures. There was a moderate to strong correlation between 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 intakes and HbA_{1c}. The Afinion POCT test has the potential to identify those at early risk of elevated HbA_{1c} and inform dietary advice. The relationship of sugary drinks intake to T2D risk factors needs further investigation.