

DOHaD 2026 ABSTRACT

Associations Between Birth and Adolescent Health Data in the Cook Islands: A Cross-Sectional Study from the Island of Rarotonga

Bay JL¹, Renelle A¹, Cummings H², John T², Ngamata K², Barrett-Watson C³, Bisili K², Bates M² and Vickers MH¹

¹Liggins Institute, University of Auckland, Auckland, New Zealand

²Te Marae Ora Ministry of Health, Rarotonga, Cook Islands

³Maraurau o te Pae Api'i Ministry of Education Cook, Rarotonga, Cook Islands

Email: j.bay@auckland.ac.nz

Background: Reducing the burden of adult obesity (75%) and related noncommunicable diseases is a priority for the Cook Islands. Understanding associations between early life and adolescent health indicators could inform public health actions.

Methods: Birth and adolescent health records were matched from 2016-2019, (n = 270), and 2022-2025 (n = 317) for Rarotonga Island (population, 10,000).

Results: Mean birth weight, 3488.9g; median gestational age, 276 days. Adolescent measures reflected substantial variability in growth and adiposity (Median age 13.8; Mean BMI-z = 1.17). Higher birth weight (SDS) was significantly associated with increased adolescent height in both univariate ($p < 0.001$) and multivariate models ($\beta = 1.437$, $p = 0.007$). Higher birth weight predicted reduced central adiposity, with significant decreases in waist circumference ($p = 0.01$) and waist-to-height ratio ($p = 0.014$). In contrast, associations involving Birth Length attenuated after adjustment, and most secondary neonatal and maternal variables did not retain significance, suggesting they functioned as proxies for overall fetal growth. Normal APGAR scores (≥ 7) were associated with lower waist circumference ($p = 0.003$) and reduced waist-to-height ratio ($p = 0.008$). Metabolic risk modelling demonstrated a protective effect of higher birth weight against adolescent obesity (OR = 0.63, $p = 0.031$). Elevated blood pressure risk was primarily driven by Large for Gestational Age status (OR = 0.48, $p = 0.030$) and male sex (OR = 2.86, $p = 0.001$).

Conclusions: Overall, findings indicate that birth weight and immediate perinatal vitality provide the most reliable early-life indicators of adolescent growth and metabolic risk.