DOHaD in the Pacific

Connecting early-life factors and current health in Rarotongan adolescents

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Rationale

- In 2016, the 10 countries with highest rates of adult overweight/obesity were Pacific Island nations[1].
- The Cook Islands is a Pacific Island, population 17,400, where 1/3 currently live with an NCD[2]. Additionally, overweight/obesity affects 91% of adults and 63% of 5-19 year olds[3,4].

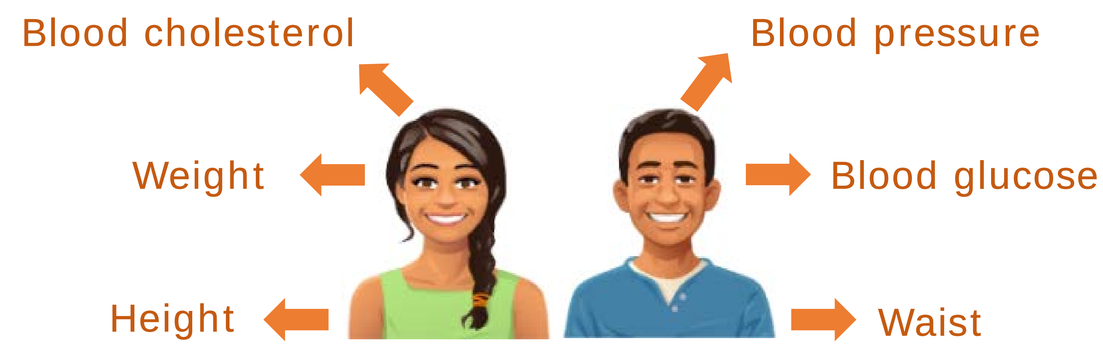
- Despite the NCD burden in Pacific Island countries, no research has been conducted on the influence of the early-life environment on later health, as indicated by the DOHaD paradigm.

Data Analysis

- BMI, central obesity, blood pressure, blood glucose and blood cholesterol were risk categorized by adolescent standards.
- Kruskal-Wallis H tests were used to compare health indicators by high school and year of data collection.
- Spearman's correlation was used to compare birth factors and adolescent health indicators.

Methods

Aim: To explore the current health status and early-life influences on health in Year 9 high school students in Rarotonga, Cook Islands.



- Measured Year 9 students (aged 12–13) at high schools in Rarotonga each year from 2016-2019.
- Tracked students back to their birth records to investigate links between birth factors and later adolescent health.

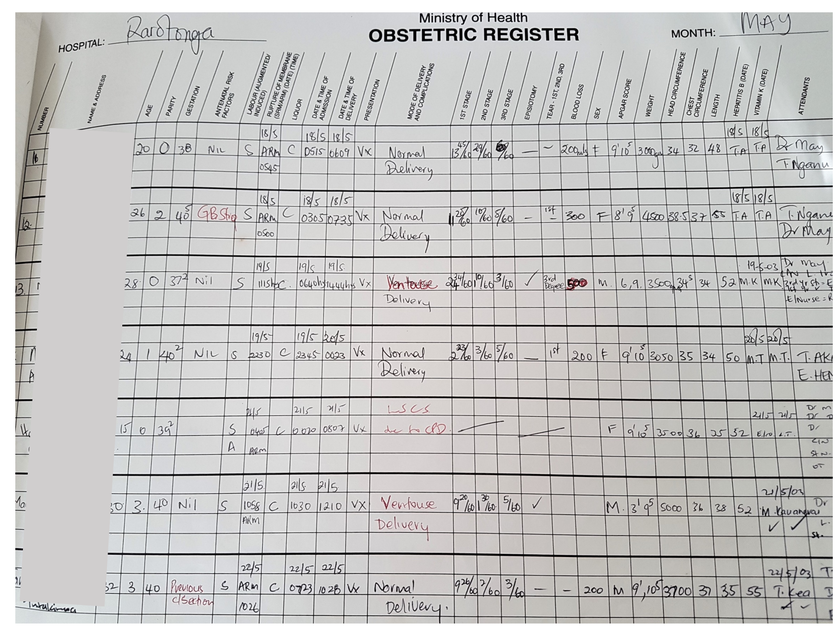


Figure 1. Example page of birth records held in Rarotonga Hospital

Results

Adolescent health indicators

Table 1. Risk indicators in Rarotongan Year 9 students aged 12-13 years old

	2016 n=144 %	2017 n=139 %	2018 n=120 %	2019 n=135 %
Overweight/Obesity	63.2	66.6	58.8	61.2
Central obesity risk	30.8	40.6	61	Not measured
Raised blood pressure	48.2	40.9	27.7	40.2
Raised blood glucose	Not measured	12.2	4.2	22.3
Raised total cholesterol	27.7	30.4	46.5	45.2

Birth data vs Adolescent health indicators

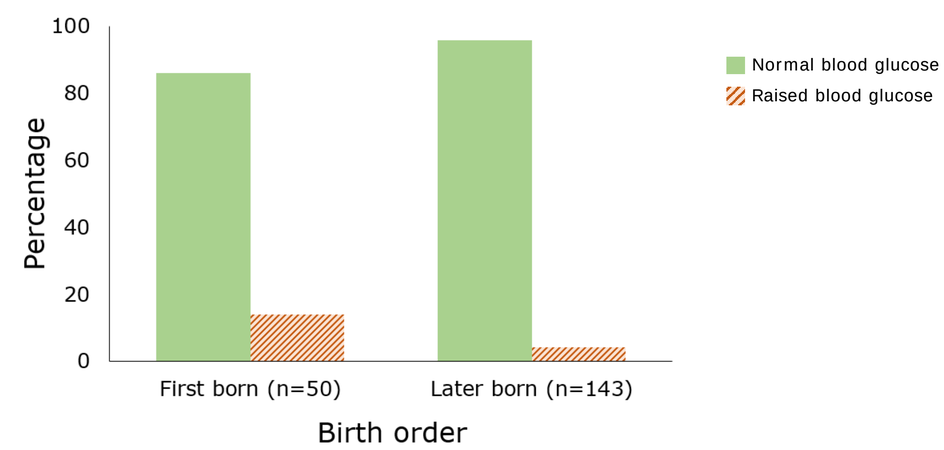


Figure 2. Relationship between birth order and adolescent blood glucose. $r_s(194) = -0.171$, $p=0.02$.

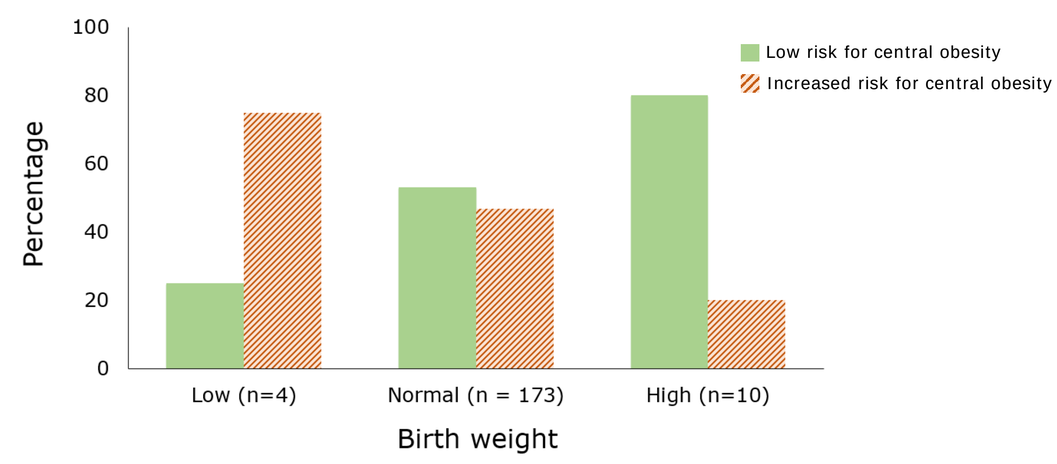


Figure 3. Relationship between birth weight and central obesity risk in adolescence. $r_s(187) = -0.147$, $p=0.043$.

Conclusion

Rarotongan adolescents in Year 9 exhibit high rates of NCD-related risk factors. The links with early-life factors highlight the potential efficacy of DOHaD interventions in this population.

References

1. World Health Organization. Prevalence of overweight among adults, BMI ≥ 25, age-standardized: Estimates by country. Geneva: World Health Organization; 2017 [cited 2019 September]; Available from: http://apps.who.int/gho/data/node.main.A897A?lang=en.
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