

Do Early-life Environmental Exposures Predict the Presence of NCD Risk Factors in Rarotongan Adolescents

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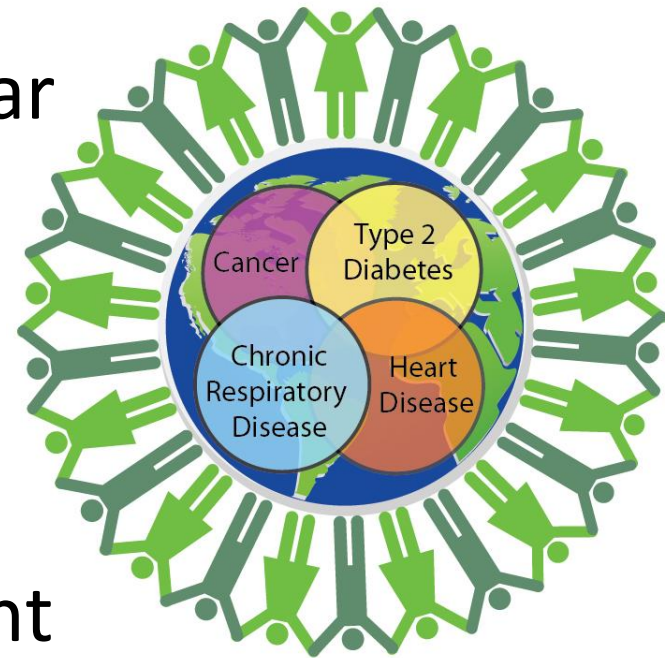
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NCDs in the Cook Islands

- 80% deaths are NCD-related
- 36% NCD-related deaths occur before 60yrs
- 200 new cases of CVD each year
- 27% diabetes
- 91% adults overweight/obese
- 64% 13-17 year olds overweight



Early-life Exposures

- “DOHaD” – *Developmental Origins of Health & Disease*
- Exposure to poor early-life environments can negatively impact the future health of the developing fetus
- E.g. obesity, poor parental nutrition, GDM, smoking
- Birth factors can be used as a proxy measure of these early-life determinants



Pilot Study

- Aim: To explore the impact of early-life environment exposures on later adolescent health in Rarotongan adolescents
- 70 Rarotongan born Year 9 school students

BIRTH FACTORS

Birth weight
Birth length
Antenatal risk factors
Mother's age
Gestation
Firstborn
Mode of delivery

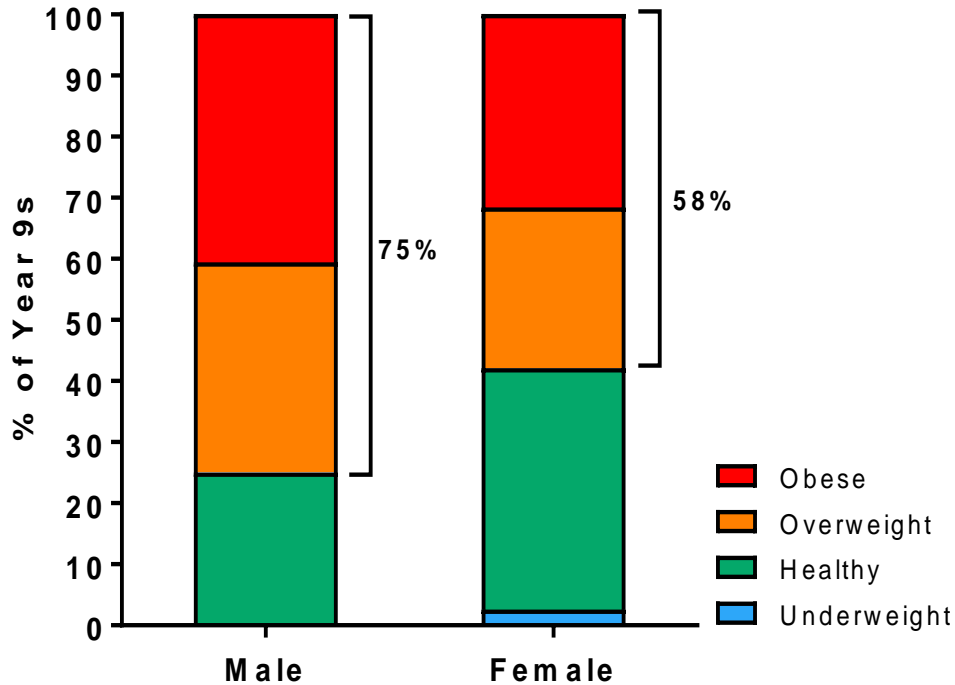


ADOLESCENT HEALTH FACTORS

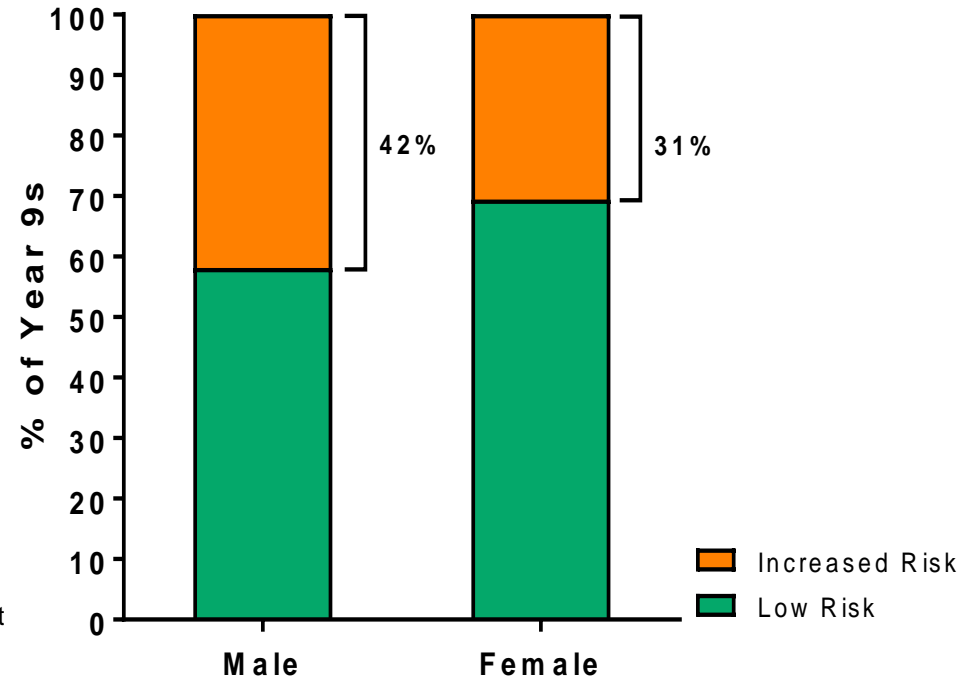
Height, weight
Waist circumference
Blood pressure
Blood glucose
LDL
Total cholesterol

Adolescent Health Profile

BMI



W HtR



Main Trends & Associations

Birth



Adolescence

Perinatal Environment

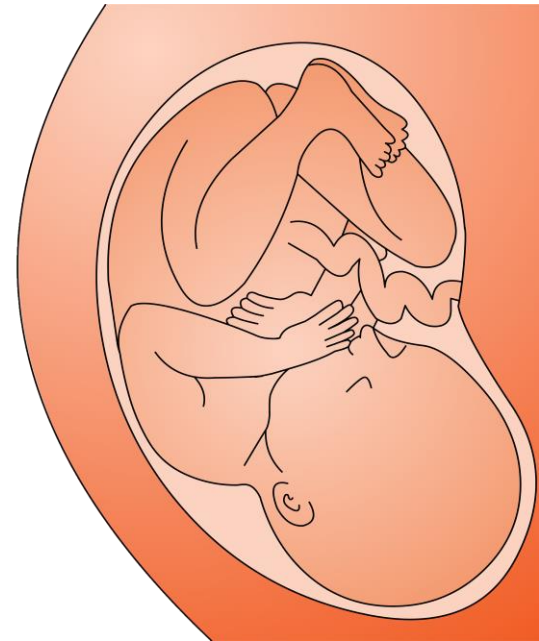
- Longer newborns **1.22 times** more likely to be overweight/obese
- Firstborns **1.39 times** more likely to have raised blood glucose
- Newborns delivered 'abnormally' **1.27 times** more likely to have raised blood pressure

Anomalies

- Those with antenatal risk factors **1.37 times** more likely to have normal blood glucose
- High birth weight newborns **1.82 times** more likely to have healthy adolescent BMI

Implications

- Evidence for associations of perinatal environment exposures with adolescent health outcomes
- Highlights the importance of early prevention for reducing NCDs
- Limited by small sample size



Moving Forward

Proposed Data Collection

- Year 9 & Year 10 Rarotongan cohort 2017/18
- Larger matched sample, increase statistical power

Translating Research into Practice

- Continue collaborations with CIMOH, CIMOE and other local experts to identify how findings can be implemented to improve health
- May include resources, PLD workshops, websites, nutrition booklet for parents



Nutrition Booklet

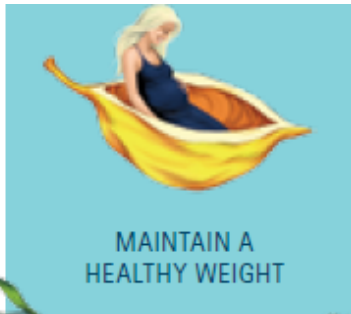
“Nurturing Future Health Through Nutrition”

- Distributed to all mothers in New Zealand and Australia
- 20 recommendations from pre-conception to toddlerhood to help lay the foundations for the child's life-long health



Example Page

6. PREGNANCY



MAINTAIN A
HEALTHY WEIGHT



A FOUNDATION FOR

Reducing the risk of obesity, heart disease and type 2 diabetes

Putting on too much weight can lead to high (or low) birth weights, and increases your child's risk of diabetes and obesity in later years. Steady weight gain during pregnancy is normal, and important for your health and your baby's – but it's important to achieve this through a healthy, nutrient rich diet.

PRACTICAL ADVICE

- Your appetite will probably change during pregnancy. *Remember, it's certain nutrients that need boosting, focus on nutrient rich foods.*
- Get weighed regularly by your healthcare professional, and discuss any issues.

RECOMMENDED WEIGHT GAIN DURING PREGNANCY

Pre-pregnancy body mass index	Recommended total weight gain
Less than 18.5kg/m ²	12.5 to 18kg
18.5 to 24.9kg/m ²	11.5 to 16kg
25 to 29.9kg/m ²	7 to 11.5kg
More than 30kg/m ²	5 to 9kg

Focus on healthy eating, and don't diet while pregnant unless you get advice and supervision from your healthcare professional, as it may damage the health of your unborn child.



How Do We Assess Impact

- Baseline knowledge around early-life environmental impact on later health: general public, parents
- Implement nutrition booklet; What other resources would be useful? Community workshops?
- Assess public knowledge afterwards to identify whether positive change has occurred



Summary

- Links between early-life environment and adolescent health – further assessments to be carried out
- Resources, such as the '*Nurturing Future Health Through Nutrition*' booklet, will be implemented to provide opportunities for health improvement
- Continue collaborating to identify how best this research can be translated into meaningful outcomes

Acknowledgements

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