“Necessary but not sufficient”

Adding voice and choice to Big Data

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28 June 2018
At first glance, it may seem implausible that your mother's exposure to stress or toxins while she was pregnant with you, how she fed you when you were an infant, or how fast you grew during childhood can determine your risk for chronic disease as an adult. Mounting evidence, however, indicates that events occurring in the earliest stages of human development can have profound effects on disease outcomes decades later. Researchers have found consistent inverse associations between birth weight and a central distribution of body fat, insulin resistance, the metabolic syndrome, type 2 diabetes mellitus, and ischemic cardiovascular disease. Moreover, the phenotype of lower birth weight coupled with a higher body mass index in
Challenges for providing evidence for change

- Strong associations are not sufficient to inform action
- Needed to move beyond “risk factorology”
- Causation usually multifactorial, accumulating over time and interacting over time, acting at multiple levels of influence – and resulting in co-morbidities

**SCIENCE vs. THE PEOPLE!**

correlation is not causation!
i dunno what those are but i disagree and i vote!
Providing evidence to inform policy

“It is one thing to understand the health effects of (insert childhood condition here) – but taking action to relieve its effects entails a far richer understanding of the health effects of social and economic policies ....”

Sir Michael Marmot

(Fair Society, Healthy Lives, 2010)
Overarching aim of *Growing Up in New Zealand*

To provide **robust evidence** about what shapes **development and wellbeing** for New Zealand children growing up in New Zealand today in the context of their diverse families.
Growing Up in New Zealand – cohort

- **6,853** children recruited before their birth – via pregnant mothers in 2009 and 2010
- Partners recruited during pregnancy (**4,401**)
- Wellbeing central – acknowledges multidimensional and dynamic
- Cohort **size and diversity** ensure adequate explanatory power to consider trajectories for Māori (1 in 4), Pacific (1 in 5) and Asian (1 in 6) children, and multiple ethnicities (50%)
- Cohort **broadly generalisable** to current NZ births (diversity of ethnicity and family SES)
- **Retention rates** to 4.5 years have been very high (over 92% with minimal attrition bias)
“Extraordinary things emerge from following ordinary people’s lives”

That they feel like that they are part of a ethnically diverse country and part of a community, e.g. school, neighbourhood, friends. Freedom to comfortably come and go as they please.

We want our child to be happy and healthy, and to finish school. Education is extremely important — as long as she gets an education she can make her own decisions.

I hope my child will grow up in a safe neighbourhood, with people who care about them.
Churn – at individual level and contexts

AN only depression (PN EPDS ≤12) 8.3%
PN EPDS>12 7.4%
AN, PN & 54M depression (54M PHQ-9>9) 0.8%

Perinatal only depression (54m PHQ-9≤9) 2%
PN & 54m depression (54m PHQ-9>9) 1.2%
PN only depression (54m PHQ-9≤9) 3.5%
AN & 54m depression (54m PHQ-9>9) 1.3%

No perinatal depression (PN EPDS ≤12) 84.3%
No depression (54m PHQ-9≤9) 79.8%

54m only depression (54m PHQ-9>9) 4.5%

No AN depression (AN EDS ≤12) 89%

AN only depression (PN EPDS ≤12) 8.3%

AN EDS>12 N = 5,664
AN only depression (PN EPDS ≤12) 8.3%

AN & PN data N = 5,301
AN & PN & 54m data N = 4,893

AN EDS>12 11%
AN & PN depression (PN EPDS>12) 2.8%

No AN depression (AN EDS ≤12) 89%

PN EPDS>12 4.7%

No perinatal depression (PN EPDS ≤12) 84.3%

AN & PN depression (PN EPDS>12) 2.8%

AN, PN data N = 5,664
AN only depression (PN EPDS ≤12) 8.3%

n = 5 non-biological mothers

n = 358 lost to follow-up
n = 408 lost to follow-up

"Not just new mums: dads get the blues too"

UK Express Feb 2017
Stability over time (indicators and outcomes)

NZDep2006 9&10

Antenatal 1,684

239

1,445

9 months 1,673

228

Maternal Depression

Antenatal 909

637

272

9 months 608

336

Child SDQ

6% resolve

Abnormal at 2 years 10%

4%

Abnormal at 4 years 11%

7% newly identified
## Residential Mobility – household tenure and safety

<table>
<thead>
<tr>
<th>Tenure type</th>
<th>Antenatal</th>
<th>9 months</th>
<th>2 years</th>
<th>54 months</th>
</tr>
</thead>
<tbody>
<tr>
<td>Family Home</td>
<td>55.2</td>
<td>56.2</td>
<td>56.2</td>
<td>57.8</td>
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<tr>
<td>Private rental</td>
<td>38.3</td>
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<td>38.1</td>
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<td>Public rental</td>
<td>6.5</td>
<td>6.0</td>
<td>5.7</td>
<td>6.4</td>
</tr>
</tbody>
</table>
Focusing on Vulnerable children

Proximal Family Variables
- Maternal depression (antenatal using EPDS>12)
- Maternal physical wellbeing (poor or fair)
- Maternal smoking in pregnancy (after first trimester)
- Maternal age (teenage pregnancy)

Distal Family Variables
- Relationship status (no partner/single)
- Maternal education (no secondary school qualification)
- Financial stress (regular money worries)

Home environment
- Deprivation area (NZDep2006 decile 9 or 10)
- Unemployment (mother not in work or on parental leave)
- Tenure (public rental)
- Income tested benefit (yes/no)
- Overcrowding (≥2 per bedroom)
Cumulative exposure to indicators – maternal ethnicity

Percent (%)

Total number of risks by maternal self-prioritised ethnicity

- NZ European
- Māori
- Pacific
- Asian

0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15+
Impact of exposure over time – behaviour

SDQ score in Abnormal range at 4.5 years (%)

- High (4 or more risk factors)
- Not high
- Medium (1–3 risk factors)
- Low (no risk factors)
Impact of vulnerability on BMI at 4 years

Obesity (WHO reference) at 4.5 years (%)

KEY

- High (4 or more risk factors)
- Not high
- Medium (1–3 risk factors)
- Low (no risk factors)

Impact over time – overweight/obesity

antenatal 9 months 2 years

- 28 28 -
- 30 27 -
- 30 18 -
- 23 16 -
- 11 -
Collaborative partnership between Growing Up in New Zealand and the Southern Initiative (South Auckland) to facilitate the development of a community intervention programme to promote story-reading and “talking” to the under-2’s – used a co-design process.
Daily screen time increased to an average of greater than two hours a day.
Reality gap – Parental Perception

- 1 in 3 NZ children (aged 2–14) are overweight or obese
- 14% of the cohort are overweight or obese by 4 years of age (9% at 2 years)
Measuring “vulnerability” and meeting need

**Social Service Access**

- **1 in 25** of children in the **low risk** group had access to social services.
- **22%**
- **35%**
- **43%**
- **1 in 5** of children in the **high risk** group had access to social services.
- **1 in 12** of children in the **medium risk** group had access to social services.

TOTAL SERVICE ACCESS
Proxy measures for:

- “Participation”
- “Referrals”
- “Hospitalisations”
- “Notifications”
- “WELLBEING”
Context relevant solutions – understanding why and what works for whom, when and where

Positive proof of global warming.

Children’s own voices at 8 years (2017–18)
Acknowledgements

- Children and their families
- *UoA Growing Up* team
- Ministry of Social Development
- Superu
- Other government agencies
- Policy Forum
- Advisory and Stakeholder groups
- All funders (government)

*Dame Whina Cooper*