

Modifiable determinants of child health: What have we learnt from Hong Kong's children of 1997 birth cohort?



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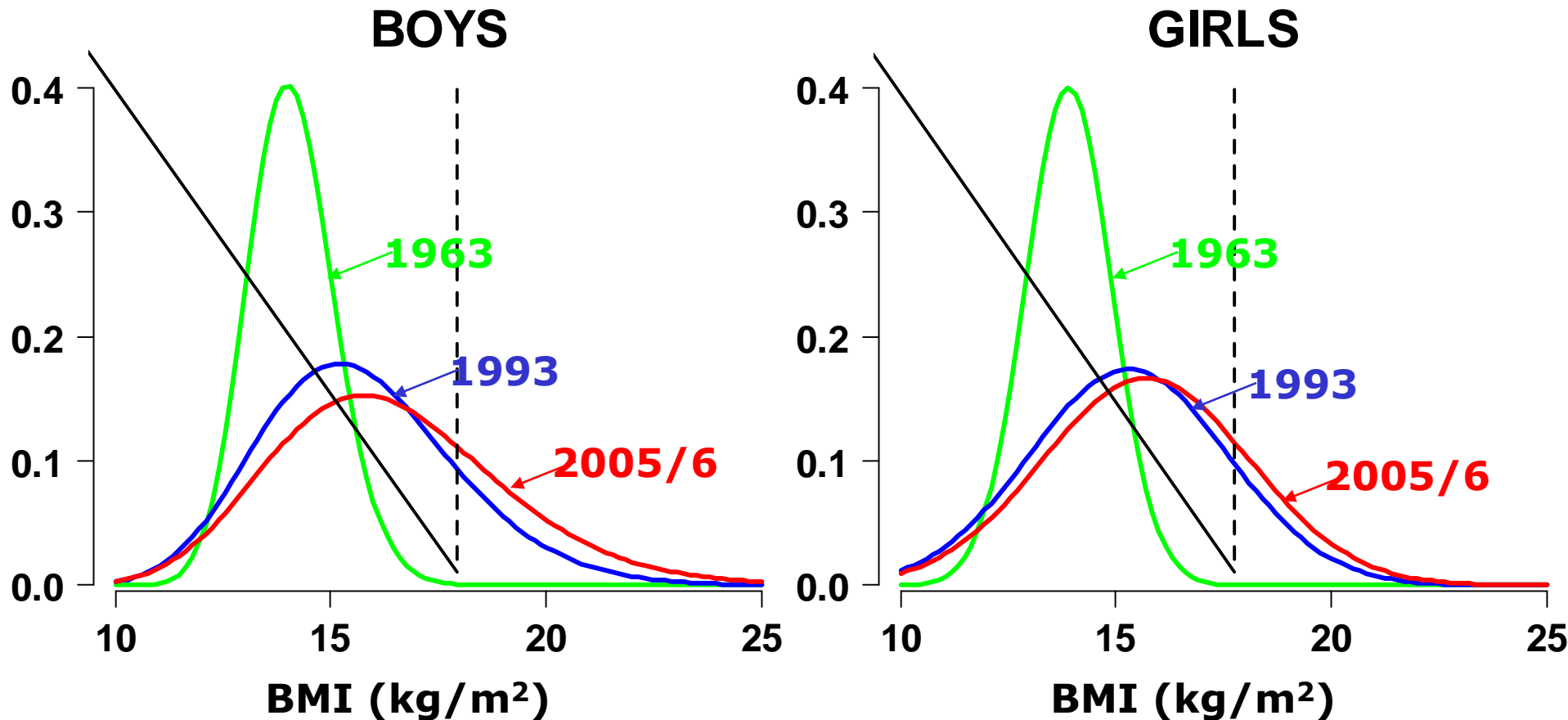
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THE UNIVERSITY OF HONG KONG**

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Childhood BMI in Hong Kong over 50 years



Distribution of 7-year-olds BMI in Hong Kong



Other potential determinants of early obesity/ higher BMI (beyond diet and physical activity)



- Fetal and infant growth
- Cesarean birth
- Introduction of solid food
- Secondhand smoking
- Child care
- Dairy products
- Maternal age
- Birth order
- Gestational age
- Maternal BMI

Hong Kong's "Children of 1997" (as on TVB)



1. First Chinese "First world" generation
 - growing up in a resource rich Chinese environment
2. Only large active Chinese birth cohort, with many differences from more commonly studied western populations
 - Diet and lifestyle
 - Child care, child rearing
 - Less socio-economic patterning of BMI
3. Provides local evidence

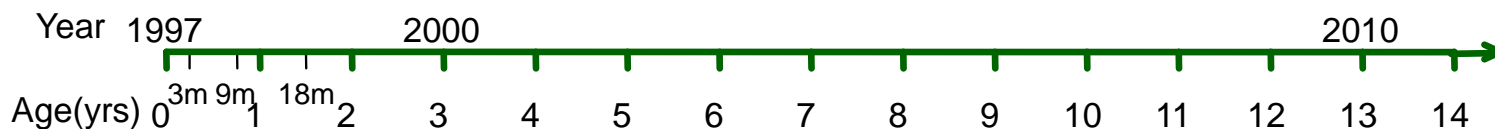


Contrasts with the West may be helpful for understanding East and West

Hong Kong's "Children of 1997" Birth Cohort



8,327 infants born in Hong Kong in April and May 1997



Active follow-up Infant health and lifestyle survey

Survey I, Survey II, Survey III

Passive follow-up

Body Mass Index $BMI = \text{weight} / \text{height}^2 \text{ (kg/m}^2\text{)}$
Weight and height: record linkage with Maternal and Child Health Centres, Student Health Service

1. Sex and age specific **BMI z-score** relative to WHO growth standard
2. **Overweight/obesity**: international obesity task force (IOTF)

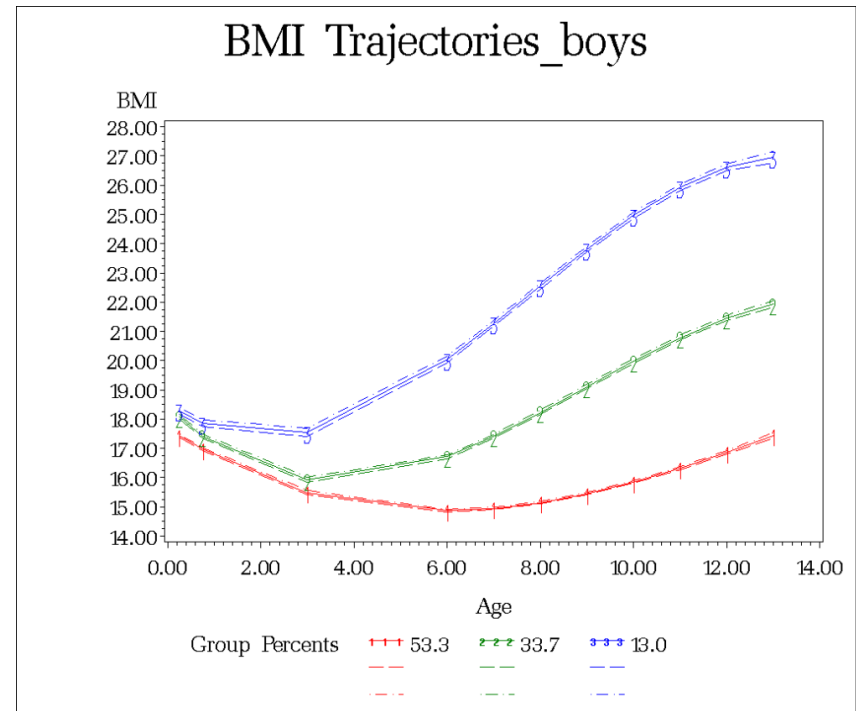
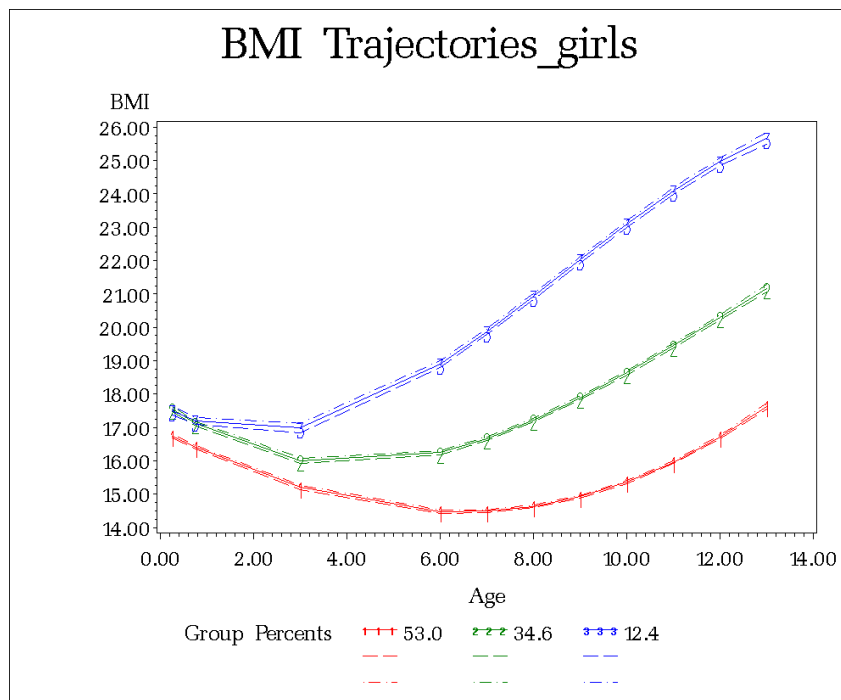
Public hospital use

Physical and psychological assessments from the Student Health Service

Deaths from the Department of Health

Children of 1997

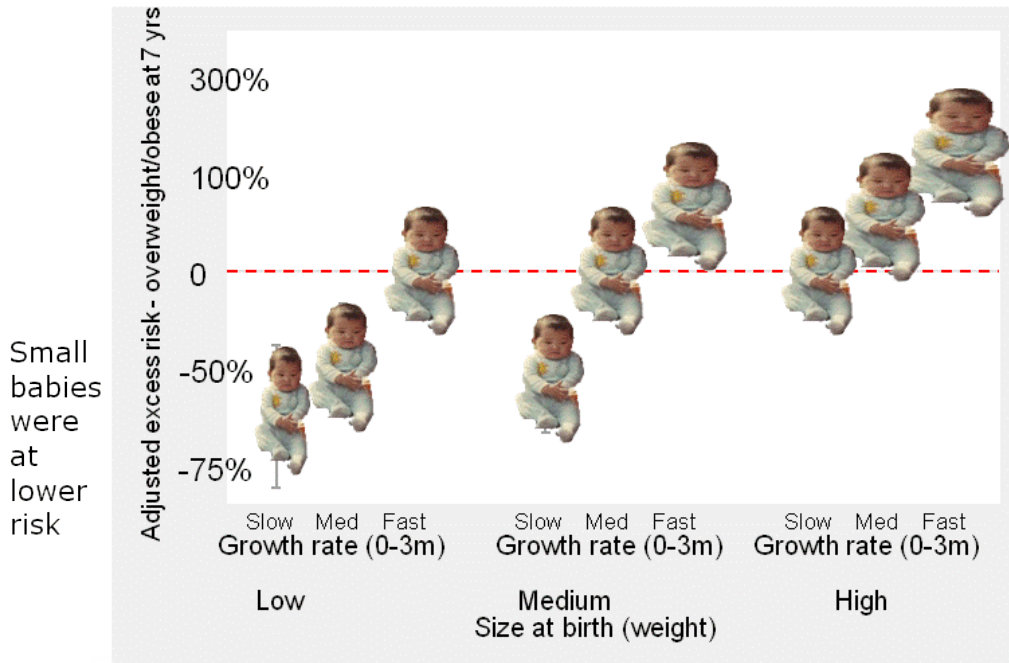
BMI growth trajectories



Fetal and infant growth and overweight/obesity



Birth weight, growth rate at 0-3 months and excess risk of overweight/obesity at 7 years

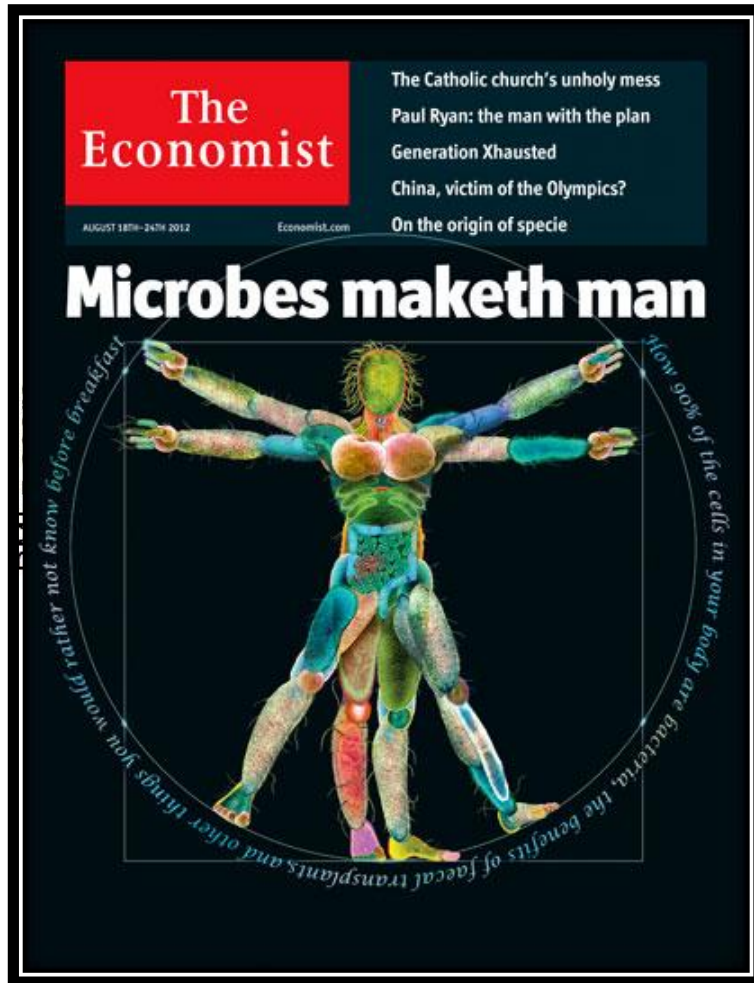


Babies born big who grew fastest at 0-3 months had a 150% excess risk of overweight or obesity at 7 years compared with 'average' babies

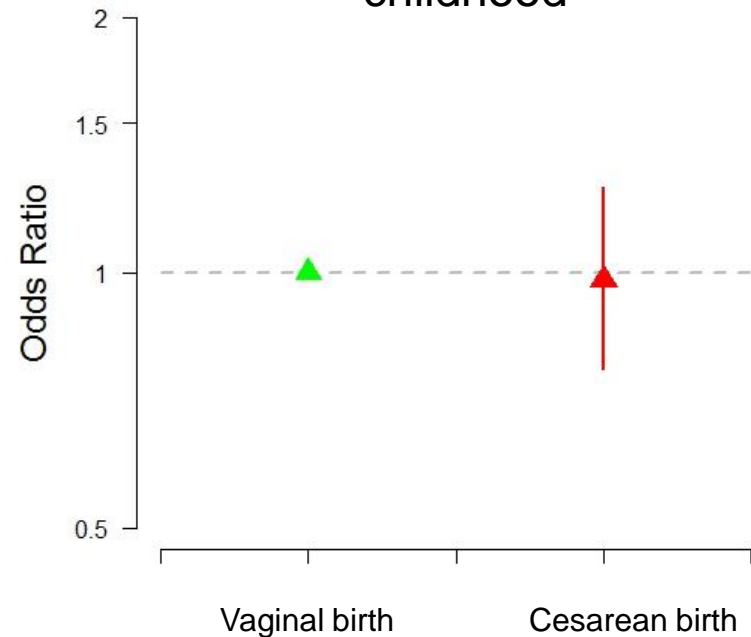
Caveats

- Do not know if these associations will continue to the completion of growth
- Associations may be different for other measures of obesity
- Have not considered body composition

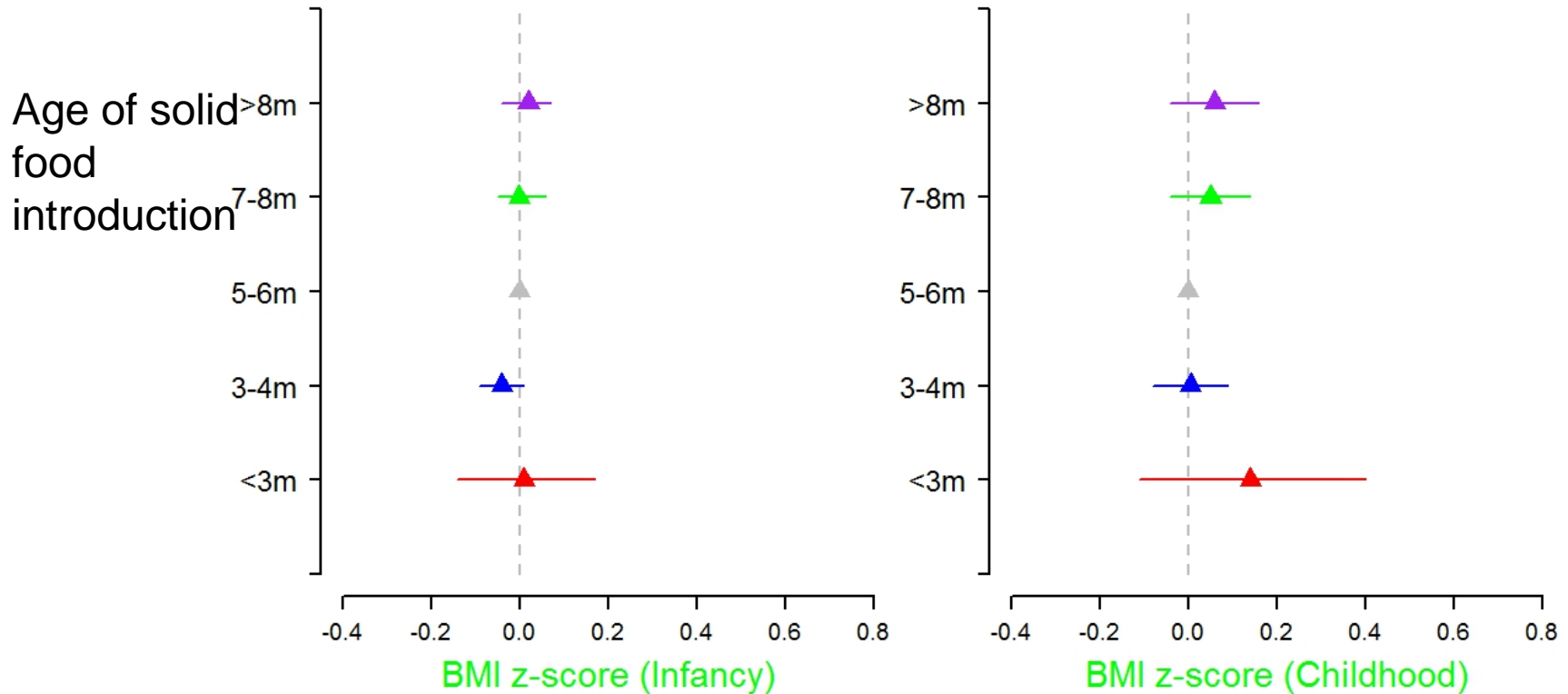
Cesarean birth and overweight/obesity



Risk of overweight/obesity by type of birth throughout childhood



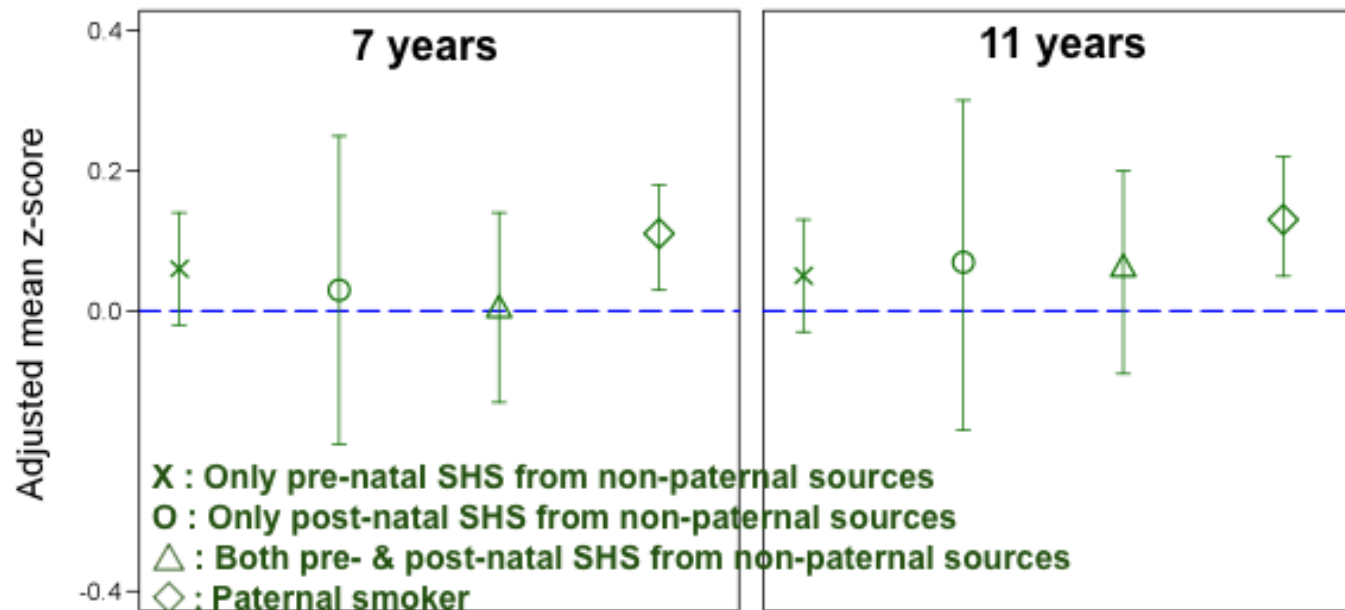
Introduction of solid food and BMI z-score



Secondhand smoking and BMI

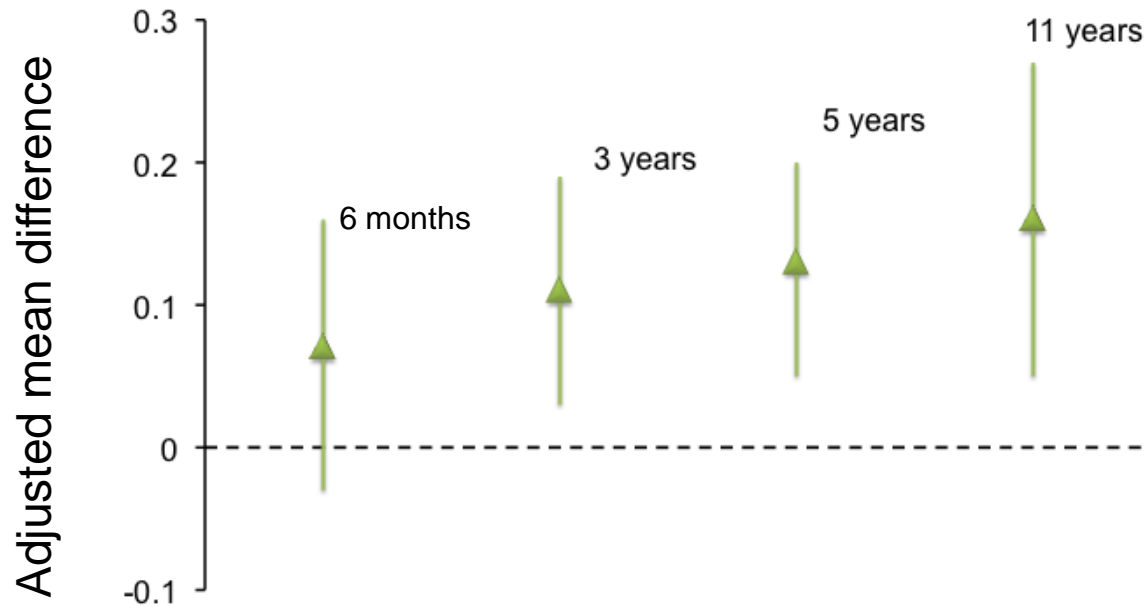


Differences in BMI z-scores at 7 and 11 years by sources of SHS exposure (compared with non SHS-exposed)



Adjusted for sex, parity, highest parental education, mother's place of birth and pubertal status (for age 11)

Informal child care and BMI z-score at 11 years



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Chronic diseases in developing countries
UK Biobank: methods

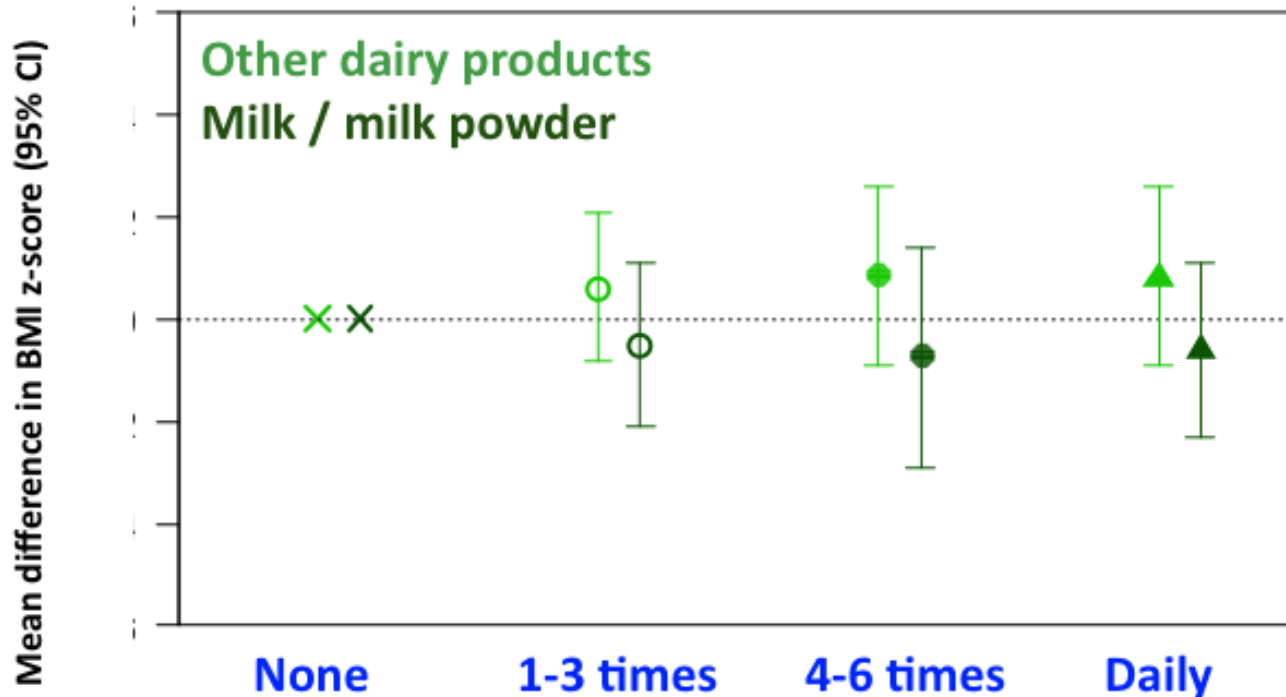
Is informal child care associated with childhood obesity? Evidence from Hong Kong's children of 1997 birth cohort

Shi Lin Lin, Gabriel M Leung, Lai Ling Hui, Tai Hing Lam and C Mary Schooling*

Dairy products and BMI



Mean Difference in BMI z-score at 13 years



Consumption in last week at 11 years (Multiple imputation)

Adjusted for BMI z-score at 11 years, sex, mother's birthplace, parents' education, interaction of mother's birthplace and parents' education, physical activity, vegetable, fruit and soft drink consumption

Summary



1. Childhood BMI has changed dramatically in the last 50 years in Hong Kong
2. Modifiable factors driving early BMI, such as informal childcare or paternal smoking may contribute
3. Social changes such as smaller families (lower birth order) may also play a role

Discussion



Strengths

- Large sample
- Detailed information on growth and BMI
- Unique setting, enables us to test empirically derived hypotheses from the west
- Provides useful etiological information

Limitations

- Exposures not always well defined
- Associations may be different at the completion of growth
- Cannot identify body composition from BMI

Next Steps

- Explanatory framework for population health that unites the social and the biological

Conclusions



- Hard to find individual exposures which explain BMI
- May indicate the need for environmental interventions

A screenshot of the NEJM website. At the top is a purple bar with the NEJM logo. Below it is a navigation menu with links: HOME, ARTICLES & MULTIMEDIA, ISSUES, SPECIALTIES & TOPICS, FOR AUTHORS, and CME. A horizontal strip of small images follows. The main content area features the word 'Perspective' in a large font, followed by the article title 'The Cost-Effectiveness of Environmental Approaches to Disease Prevention'. Below the title are the authors 'Dave A. Chokshi, M.D., and Thomas A. Farley, M.D., M.P.H.' and the citation 'N Engl J Med 2012; 367:295-297 | July 26, 2012'.

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Thank you !