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

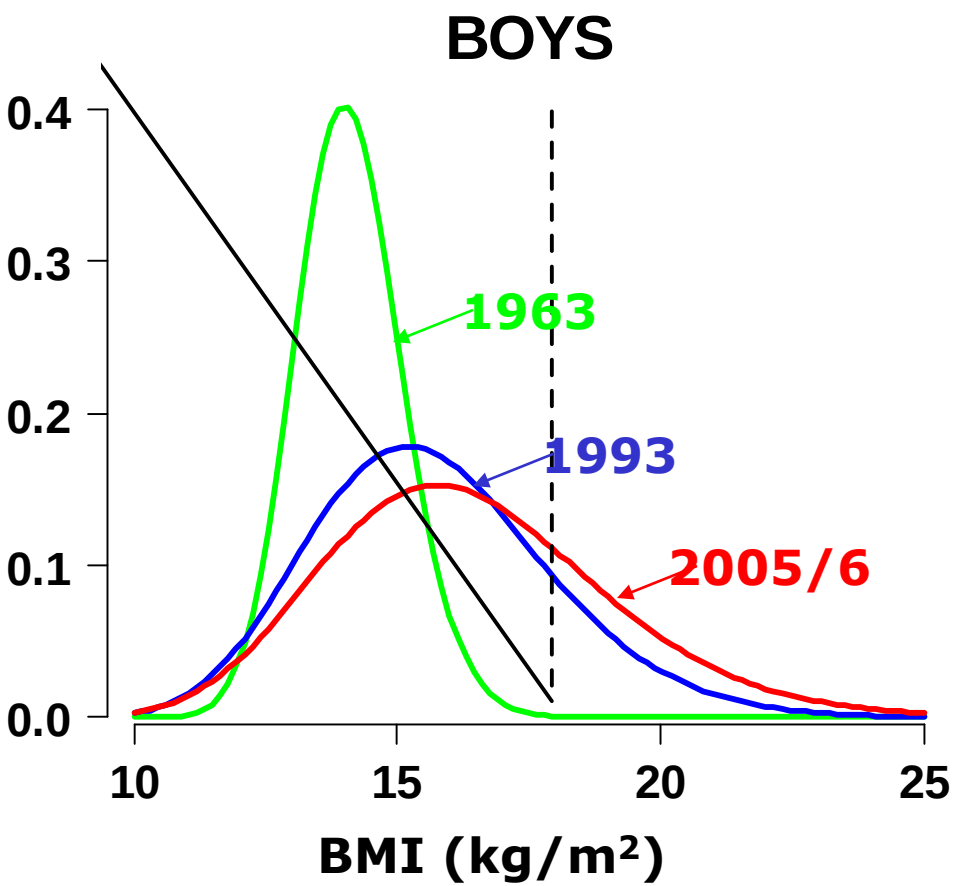
-

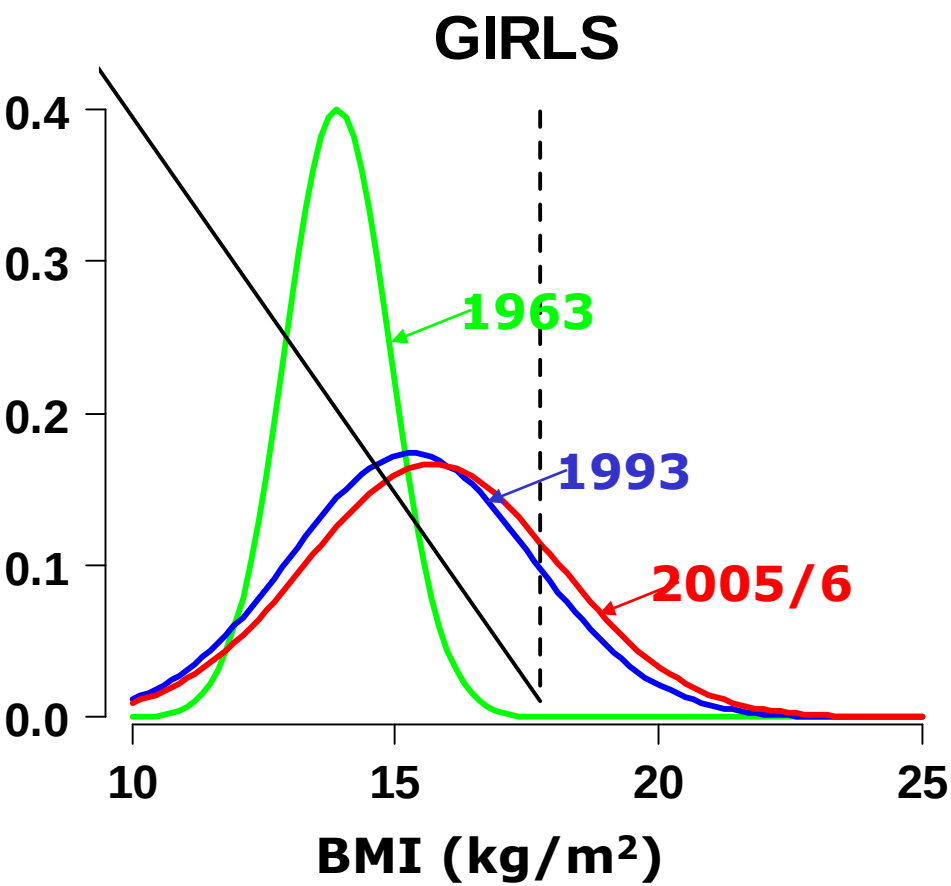
Dr CM Schooling
School of Public Health, The University of Hong Kong

SCHOOL OF PUBLIC HEALTH
THE UNIVERSITY OF HONG KONG
香 港 大 學 公 共 衞 生 學 院

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

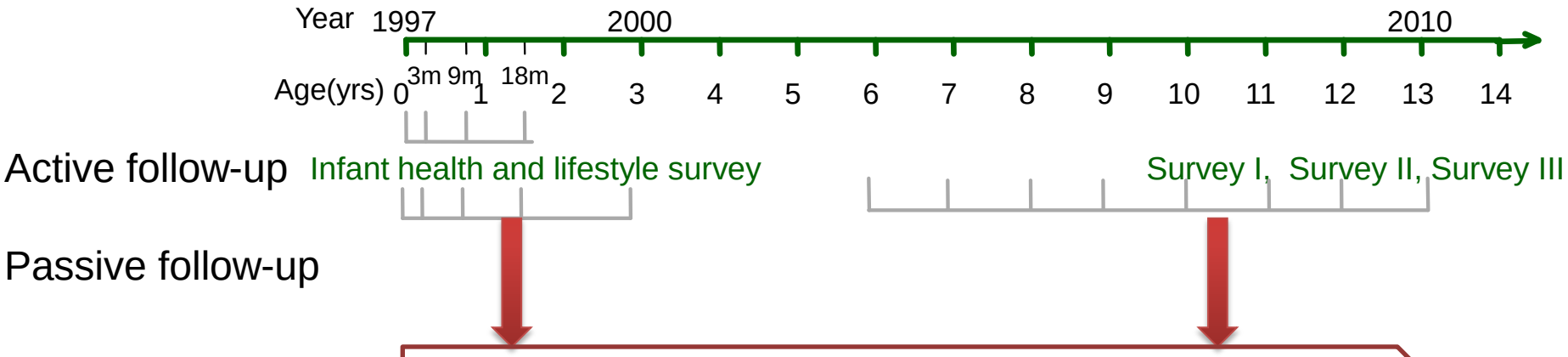
Hong Kong's "Children of 1997" (as on TVB)

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



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

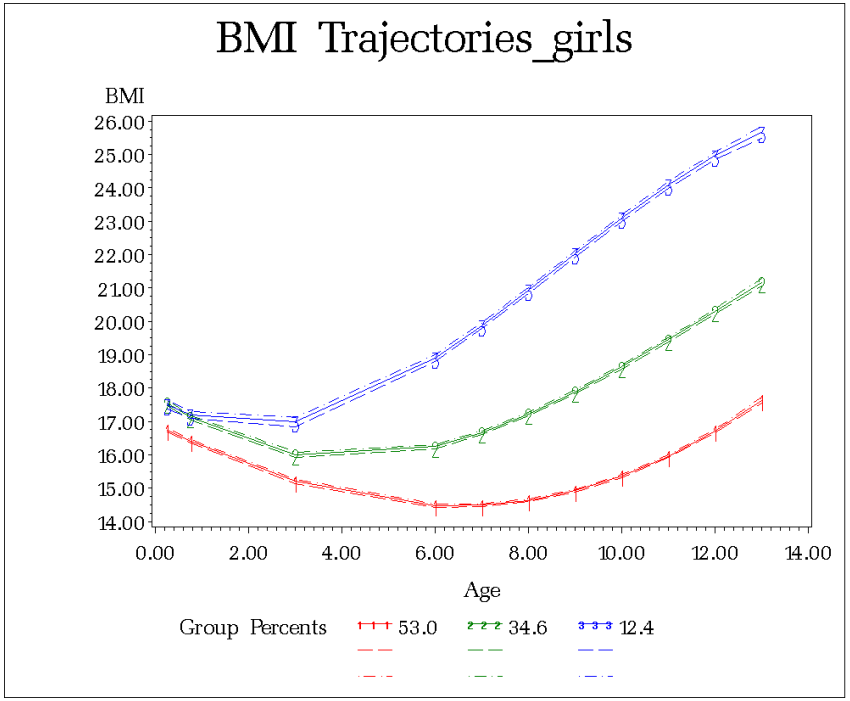
1. Sex and age specific BMI z-score relative to WHO growth standard
2. Overweight/obesity: international obesity task force (IOTF)

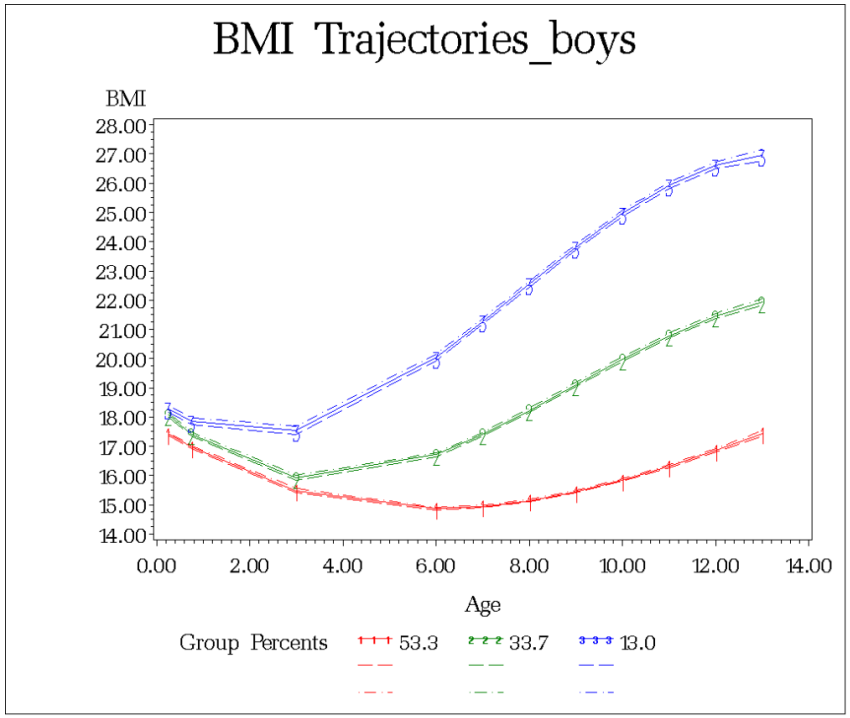
Public hospital use

Physical and psychological assessments from the Student Health Service

Deaths from the Department of Health

Children of 1997
BMI growth trajectories

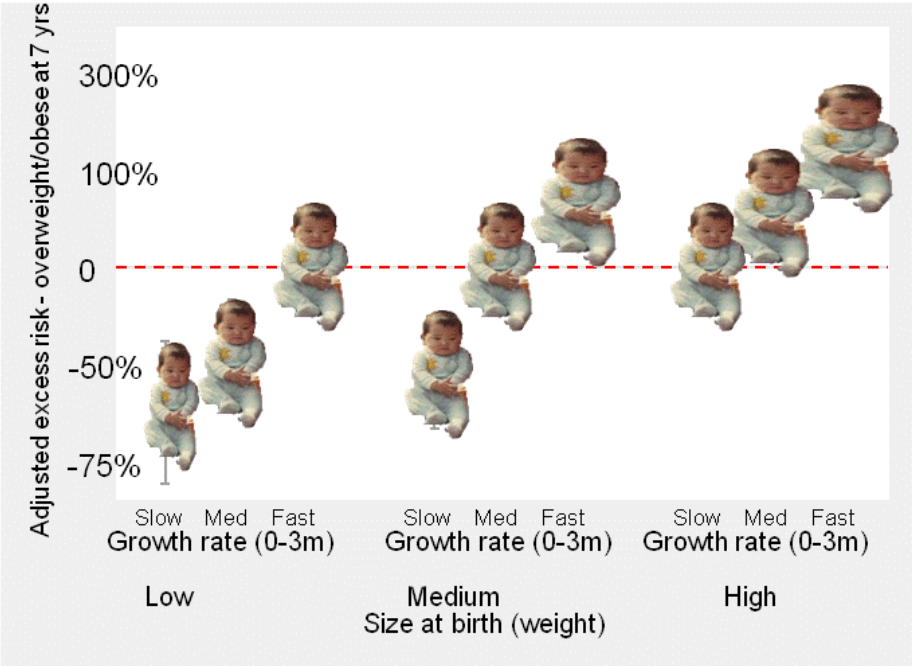




Fetal and infant growth and overweight/obesity

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

Small babies were at lower risk



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

ARCHIVES of PEDIATRICS & ADOLESCENT MEDICINE

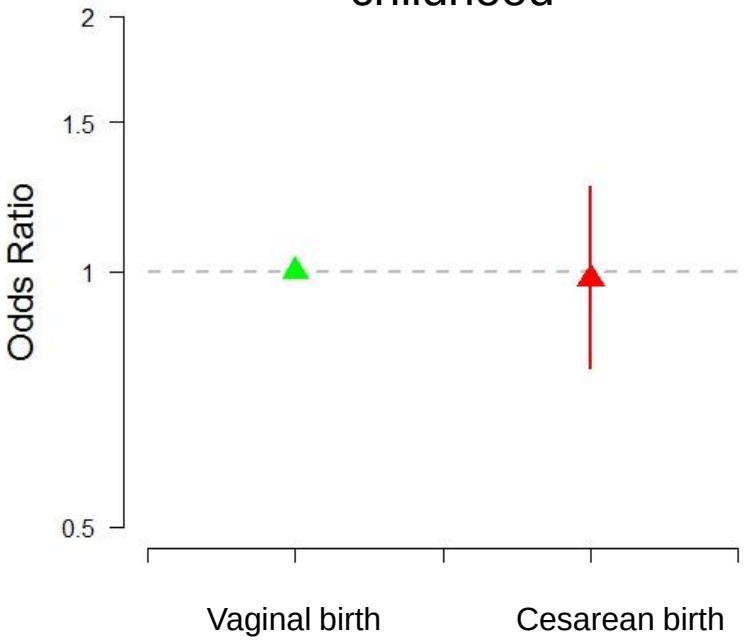
Birth Weight, Infant Growth, and Childhood Body Mass Index

Hong Kong's Children of 1997 Birth Cohort

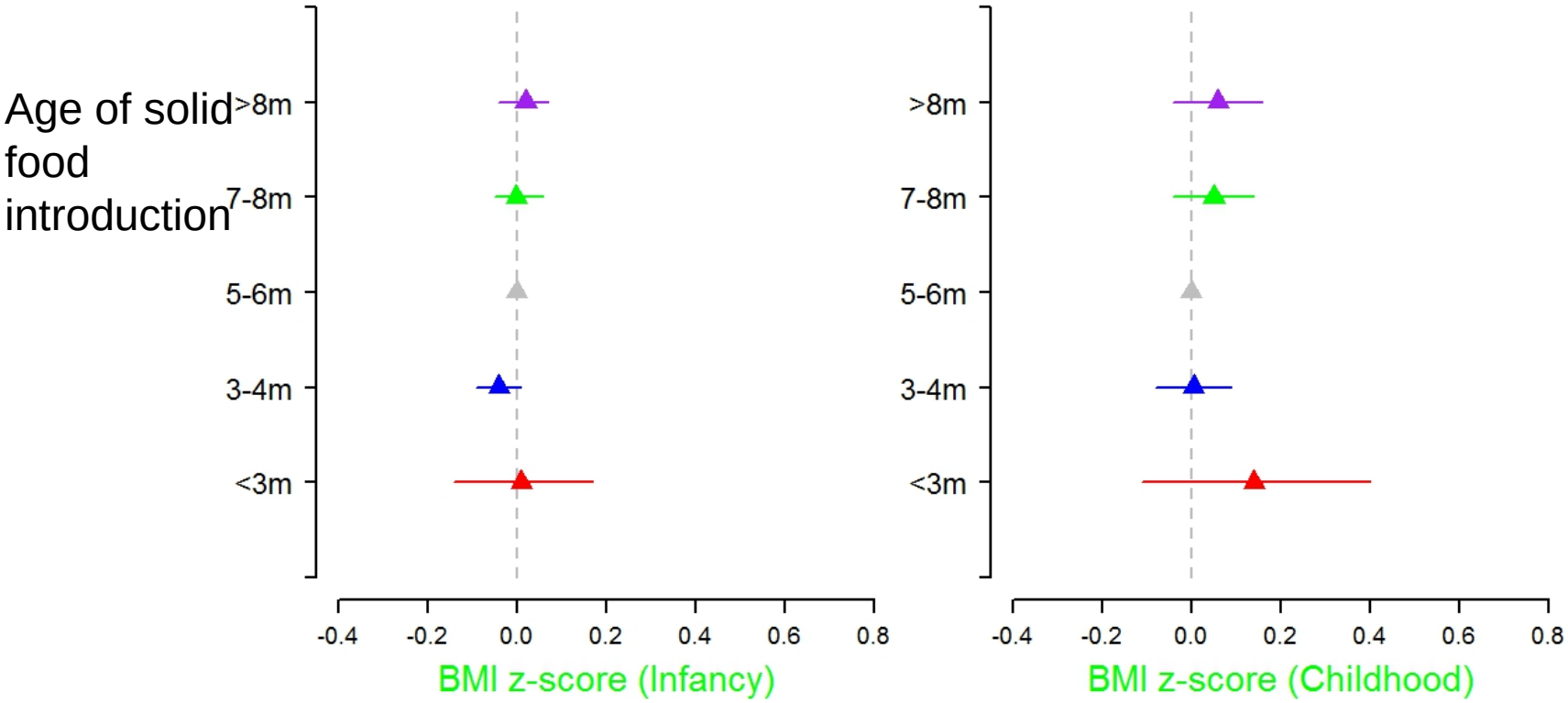
L. L. Hui, MPhil; C. Mary Schooling, PhD; Shirley Sze Lee Leung, MBBS; Kwok Hang Mak, MBBS; Lai Ming Ho, PhD; Tai Hing Lam, MD; Gabriel M. Leung, MD

Cesarean birth and overweight/obesity

Risk of overweight/obesity by type of birth throughout childhood

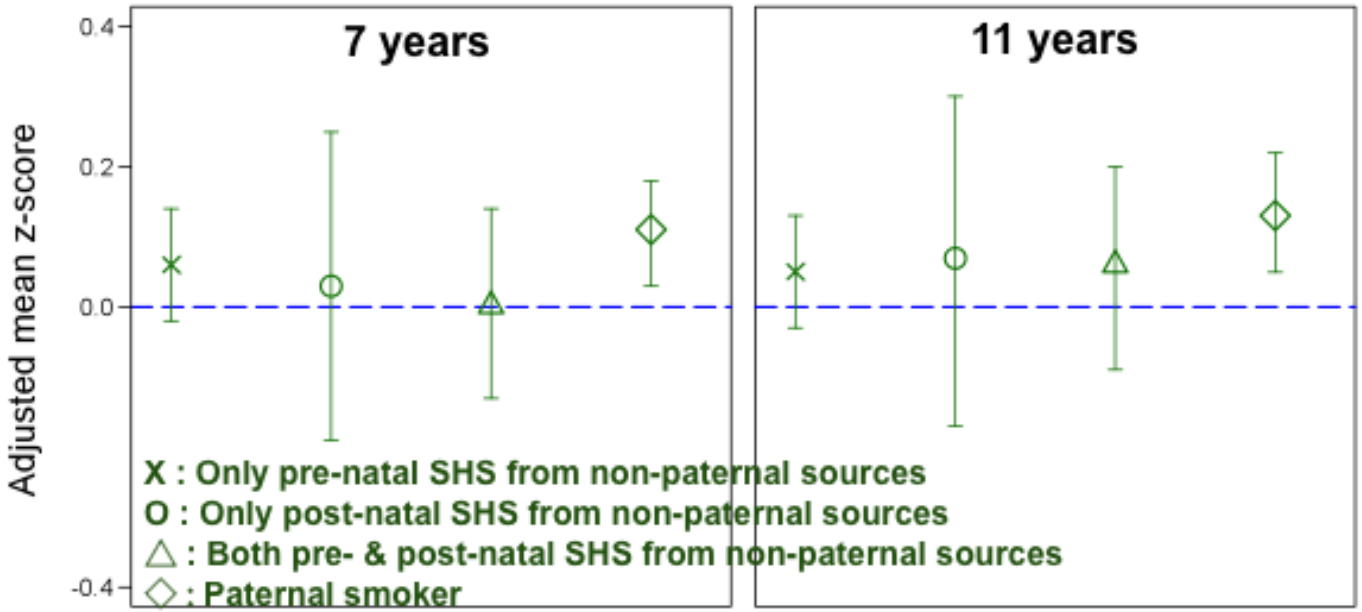


Introduction of solid food and BMI z-score



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)

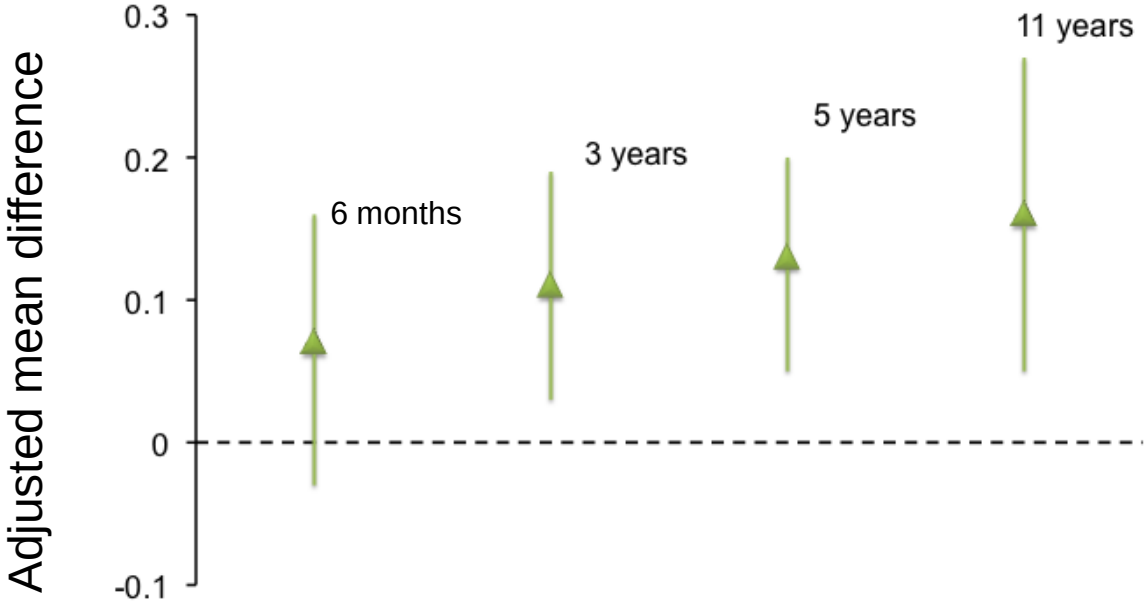
PEDIATRICS®
OFFICIAL JOURNAL OF THE AMERICAN ACADEMY OF PEDIATRICS

Paternal Smoking and Childhood Overweight: Evidence From the Hong Kong "Children of 1997"

Man Ki Kwok, C. Mary Schooling, Tai Hing Lam and Gabriel M. Leung

Pediatrics 2010;126;e46; originally published online June 29, 2010;
DOI: 10.1542/peds.2009-2642

Informal child care and BMI z-score at 11 years



Published by Oxford University Press on behalf of the International Epidemiological Association

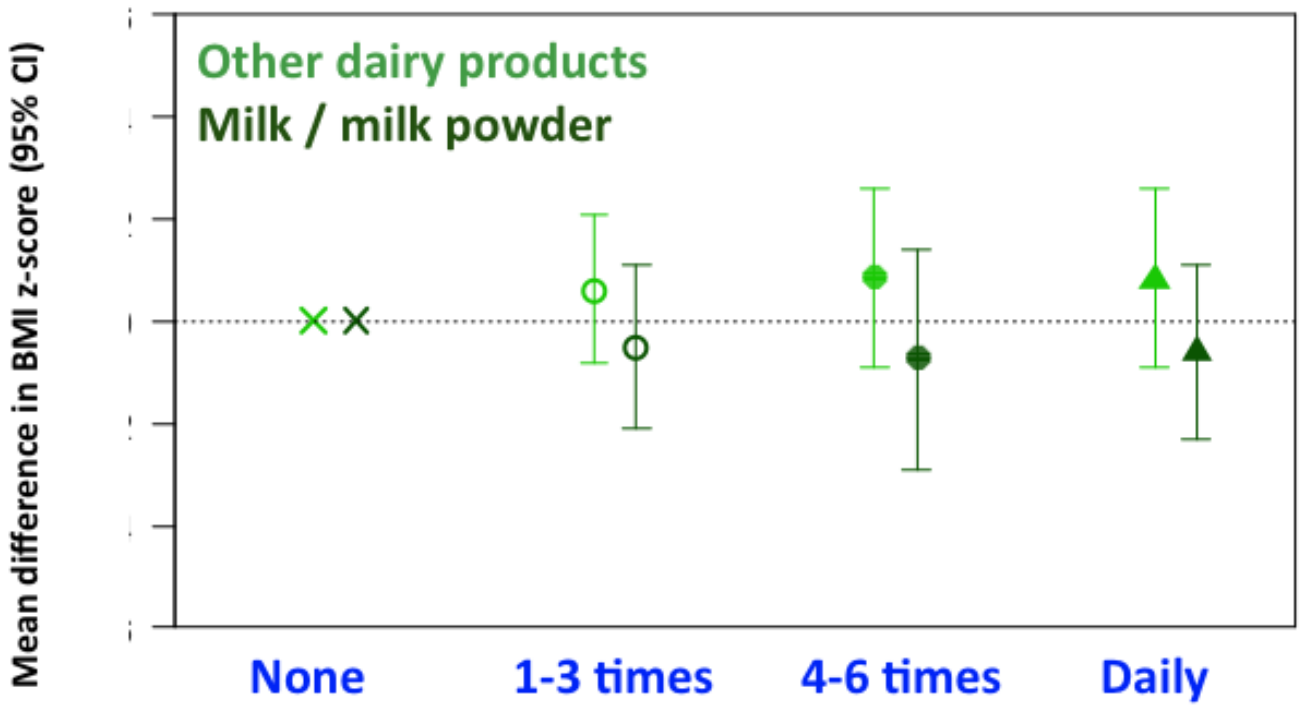
International Journal of Epidemiology 2011;1–9
doi:10.1093/ije/dyr086

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

Acknowledgement

- The Department of Health
- Prof. GM Leung
- Prof. TH Lam
- Cindy Lin, Dr Maggie Kwok, Dr Connie Hui
- The “Children of 1997” birth cohort research team
- Funding sources:
  - Hong Kong Health Care and Promotion Fund
    [HCPF Grant # 216106]
  - Hong Kong Health and Health Services Research Fund
    [HHSRF Grant # 03040771 #07080751 #08090761]
  - Research Fund for the Control of Infectious Diseases
    [RFCID Grant # 04050172]
  - University Research Committee SRT of Public Health Granted Research

Thank you !