Early Life and Obesity

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Presentation

• Contemporary trends in children’s
  – BMI
    • Comparison with birth-weight
    • Social and spatial distribution
    • Associations with growth
    • Tracking
  – Cardio-respiratory endurance

Signals from routine data

• Large samples
  – Approx. 30-75% coverage of population

• Data quality varies
  – Health visiting and school sources
  – Careful cleaning & interpretation
  – Corroborate findings across localities

Status Quo:
The prevalence of child obesity is high, and continues to grow...

International Obesity Taskforce classification applied to Manchester school children 2000 to 2004
Girls were 1.55 (95% CI 1.29 to 1.87) times more likely than boys to be overweight or obese.

At what age do signs of the obesity epidemic appear?

Strongest trends: Rise in BMI at 2 & 3 years and infant length for children born on Wirral between 1990 and 2000

Are some social groups affected more than others?
Babies of affluent families are born heavier in Manchester still

Vanishing social trends in early infant weight in Manchester from late 80s to early 00s

Vanishing social trends in early infant weight gain in Manchester from 1986 to 2004

Babies of deprived families are born lighter in Wirral still

Decreasing inequalities in BMI at 3 years on Wirral

Rochdale 5yr old obesity by deprivation in 2005

No correlation with deprivation (IDAC 2004): $r = -0.04$ (-0.08 to 0.05)
...it is not until late childhood, and then only in females, that poverty becomes a risk factor for obesity...

Women and men from low-income households are fatter in England

Women from low-income households and men from high-income households are fatter in Greater Manchester

...was there a spatial as well as a social diffusion pattern of obesity across the 1990s?...
...height and linear growth are socially sensitive, so how did they change with BMI across the 1990s?

Increasing correlation between height and weight in Wirral 3-yr-olds 88 to 03? Growth effect

Secular trend to increasing BMI is much greater in taller children

Faster infant growth and slower early child growth

Adiposity fluctuates less in young children than it used to
...if fat is sticking more through childhood what is happening to physical fitness?

Cardio-respiratory endurance levels of Liverpool 10 year olds fell in all BMI groups

BMI of Liverpool 10 year olds rose irrespective of cardio-respiratory endurance

Summary
The obesity epidemic in children:
- Concurred with accelerating infant growth
- Showed a temporo-spatial spread pattern
- Cut through socio-economic groups
- Affected the physically fit and unfit alike

Further work
- Explain the interactions of obesity with:
  - Linear growth
  - Gender
  - Inflammation
- Characterise ‘resistance’ to the obesity epidemic
- Seek metabolic health biomarkers for risk modification irrespective of BMI
- Pool data to corroborate (noisy) signals from multiple sources - [www.obesityatlas.org.uk](http://www.obesityatlas.org.uk)