Characteristics and Determinants of Infant Catch-Up Growth Trajectories

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Introduction

Background
- Catch-up growth is rapid growth after a period of reduced growth.
- Infant catch-up growth is a strong risk factor for childhood obesity.
- Characteristics and predictors of infant catch-up growth trajectories remain underexplored.

Objectives
- To characterize infant growth trajectories.
- To examine the associations of maternal smoking cessation and other determinants with infant growth trajectories.

Methods

Sample size: 25 mother-infant pairs from UB Smoking Cessation Study

Birth 1-12 months

Determinants:
- Size-for-gestational age
- Pre-pregnancy BMI
- Maternal Education
- Smoking Cessation

Infant growth measures:
- Weight
- Length
- Body mass index (BMI)

Data obtained at monthly visits via surveys and growth measures

Infant anthropometric measurements:
- Weight, length, BMI → SECA Weight and Length Scales
- BMI-for-age Z-scores → World Health Organization Growth Standard

Data Analysis:
- Latent growth trajectory modeling (SAS Proc Traj) to classify infant group trajectories of BMI Z-scores.
- Chi-square and t-test to examine potential predictors of infant growth trajectories.

Results

We identified 3 patterns of infant growth trajectories of BMI Z-score:
- Accelerated Growth
- Early Onset Catch-Up Growth
- Late Onset Catch-Up Growth

Results (cont.)

Small for Gestational Age (N=7)
- Most infants (65.7%) born small for gestational age (SGA) had early onset catch-up growth, while infants born appropriate for gestational age (AGA) tended to have late onset catch-up growth (61.1%; p=0.01)

Appropriate for Gestational Age (N=18)
- There was no significant association between maternal education and infant growth trajectories of BMI Z-score (p=0.460).

Conclusions

- Among infants of smokers, there are 3 common growth trajectories of BMI Z-score: accelerated growth, early and late onset catch-up growth.
- SGA is a strong predictor for early onset catch-up growth in BMI Z-score.
- Timing of maternal smoking cessation initiation during pregnancy had significant impact on infant trajectories of BMI Z-score: early quitting predicted late onset catch-up growth, while late quitting predicted accelerated growth.

Acknowledgements

- Sponsors: NIH CTSA Pilot Fund; UB Dept of Pediatrics; CURCA
- Research Assistants
- All patients and their families
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