Effects of parent and child behaviours on weight in infants and young children from socioeconomically disadvantaged and Indigenous backgrounds

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BACKGROUND
• **Prevalence of childhood obesity**
  – Increasing prevalence over the past 3 decades
  – Approximately 17% of Australian infants aged 2 to 3 years old are overweight, 4% are obese
  – Children and infants from disadvantaged and Indigenous backgrounds are at greater risk of obesity than their more advantaged counterparts

• **Causes of childhood obesity**
  – Parental feeding behaviours affect child eating behaviours, food intakes and child weight
  – Child eating behaviours and sedentary / active behaviours affect child weight
• Arguably there is a need to better understand the determinants of unhealthy weight gain in disadvantaged groups to enable the development of targeted intervention strategies
  – mechanisms and pathways have not been examined in detail

• **Aim**
  – To identify and synthesize research on the pathways through which infants and children from disadvantaged and Indigenous families may experience greater weight gain than those from more advantaged or non-Indigenous families.
METHODS
Pathways Assessed In The Review

- Pathway A: Parental Behaviours to Child Eating
- Pathway B: Parental Behaviours to Child physical activity or sedentary behaviour
- Pathway C: Child Eating to Child Weight
- Pathway D: Child physical activity or sedentary behaviour to Child Weight
- Pathway E: Child Eating to Child physical activity or sedentary behaviour

Figure 1.
Search strategy and review process

Inclusion
- Published in English
- Disadvantaged background
- Children 0-5 years

DATABASES SEARCHED – (June 2013 and January 2014)
Academic Search Complete, PsycINFO, CINAHL, Medline, EMBASE, Health Collection, Google Scholar, Joanna Briggs Institute, Scopus, Proquest

CITATIONS IDENTIFIED
- Literature search* 4062
- Scanned for relevancy & duplicates 948 removed

ABSTRACTS
- Scanned for relevancy 3117

FULL TEXT STUDIES
- Scanned for relevancy 80
- 20 studies remained
  - 5 included after snowballing
  - 4 after rerun of the search

29 STUDIES INCLUDED
Study quality appraisal

• Quality of the selected studies was independently appraised using the Mixed Methods Appraisal Tool (MMAT) by one of the authors

  McGill University: Pace et al., 2012

• Quality ratings range from a raw score of zero to four where zero indicates that none of the criteria were met and four indicates that they were all met
RESULTS
Results - Locations

Majority of studies were from North America and Europe
Results - Pathways

- Parental Behaviours
  - Pathway A: N=11
  - Pathway B: N=1

- Child Eating
  - N=8

- Child physical activity or sedentary behaviour
  - Pathway D: N=1

- Child Weight
  - Pathway E: N=17

Figure 1.
Study design

- Cross sectional: 54%
- Longitudinal cohorts: 19%
- Retrospective cohorts: 8%
- Randomised controlled trials: 15%
- Quasi experimental study: 4%
Results – Study Designs & Quality

Quality assessment rating

- Quality rate 1/4: 4%
- Quality rate 2/4: 19%
- Quality rate 3/4: 50%
- Quality rate 4/4: 27%

MMAT ratings 0-4 (dependent on number of quality criteria met)
Results – Settings

Primary Health Care
N= 16

Preschools / Kindergartens
N= 6

Community Centres
N= 6
Results – Pathway A

Measures
- Parenting styles, parental capacity for resilience, various parental feeding practices
- Sugary beverages, snacks, fruit intake, veg intake, nutrient-dense foods

Statistically significant positive associations
- Indulgent / permissive style → increased non-core foods
- Availability / accessibility → increased soft drink
- Pressure to eat / rewarding / child’s control → poorer diets
- Monitoring / parent’s consumption → increased soft drink/ unhealthy snack
- Capacity for resilience → increased fruit and vegetable and decreased soda consumption

Not statistically significant
- Capacity for resilience → weight status
Results – Pathway B

Measures
- Parental modeling
- Television viewing

Statistically significant positive associations
- Parental modeling (maternal TV viewing) → increased time infants spent watching TV

Not statistically significant
- N/A
Results – Pathway C

Measures
• Fruit juice intake, snacks, fruit intake, veg intake, nutrient-dense foods
• Weight (overweight/obesity), excess weight gain

Statistically significant positive associations
• Fruit juice intake $\rightarrow$ associated with child overweight
• Fruit, bread and other carbohydrates as well as more soda and total calories $\rightarrow$ consumed more in obese children
• but mixed findings (see below)!

Not statistically significant
• Fruit juice intake $\rightarrow$ no association with child overweight
• Vegetables, grains, fruits, milk, meat, high-fat fast foods and foods with high sugar content $\rightarrow$ no association with weight
Results – Pathway D

Measures
- Television viewing (time)
- Weight (overweight/obesity), excess weight gain

Statistically significant positive association
- Number of hours of TV children watched each day → was associated with overweight

Not statistically significant
- N/A
Results – Pathway E

Measures

- Parental feeding behaviours: pushiness, sensitivity to satiety cues, pressure to eat and restriction, breastfeeding, formula feeding, bottle feeding
- Weight (overweight/obesity), excess weight gain

Statistically significant positive associations

- Breastfeeding beyond three months → Protection against obesity at 4 years
- Intervention on breastfeeding → increased rates in American Indian/Alaskan Native children
- Frequency of formula/day & maternal insensitivity to infant satiety cues → child overweight at one year of age
- ‘Pressure to eat’ → lower BMI
- But mixed results (see below)!!!
Conclusion

• The measured relationships between parent and child behaviours and child weight differed considerably across studies.

• Few studies measured the same combination of behaviours and confounders.

• Definition of constructs and their measurement also varied widely across studies.
Recommendations

• More research to understand why disadvantaged populations experience greater weight gain
  – Large population based samples in various groups
  – Control for confounders
  – Understand mechanisms
  – In Australia!

• Broaden focus within disadvantaged groups beyond breastfeeding and parental pressure to eat to other behaviours such as feeding to appetite and formula feeding behaviours
Questions