The growing Canadian energy gap: more the can than the couch?

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Background: Trends in overweight/obesity in Canada

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Background

Agreement:
- Obesity a real and growing problem
- Is the result of increasing energy imbalance or widening ENERGY GAP
- i.e. more energy in than out

Less clear:
- Relative contribution of energy expenditure and energy consumption
- ↑ evidence: dietary excess
Objectives

1. To describe the trajectory of estimated energy (kilocalorie) availability from 1976 to 2003 for the Canadian population.

2. To describe the trajectory of the energy gap (energy imbalance) from 1976 to 2003, and its temporal relationship with adult obesity.

3. To estimate the relative contribution of energy availability and energy expenditure to the increasing energy gap.

4. To assess which foods contributed most to changes in energy consumption.
Design

1. Annual estimates of energy (kilocalorie) availability (EEA) 1976 – 2003:
   - Food balance sheets

2. Annual estimates of energy gap:
   - Energy available (EEA) – energy required (EER) for four physical activity scenarios:
     - Sedentary
     - Moderate
     - Active
     - 1976 moderate to 2003 sedentary

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Design

3. Adult obesity rates:
   - 6 national surveys
4. Relationship between obesity, EEA and energy gap:
   - Regression analysis
5. Foods contributing to EEA:
   - Food balance sheets
Results

- Estimated energy available:
  - Between 1976 and 2003, per capita daily energy availability increased by 417 kilocalories
  - This increase was significantly correlated with increased obesity prevalence

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Per capita daily estimated energy available and adult obesity (BMI ≥ 30) prevalence (1984 – 2003)

R = 0.90
Results

- The energy gap also increased over the study period, for all four activity scenarios:
  - Sedentary
  - Moderate
  - Active
  - 1976 moderate → 2003 sedentary

- Increased energy availability was the major driver of increased energy gap in the Canadian population (not changes in EER)
Per capita daily estimated energy available (EEA) and per capita daily estimated energy requirement (EER) – four physical activity scenarios (1976-2003)
Major foods contributing to net per capita energy change (1976-2003)
• 1976: 57 stores
• 2005: 2,540 stores
• 2007: 3359 stores
Limitations

- Food balance sheets:
  - “Disappearance” data
  - Per capita values
- Ecological study: association (not causation)
- However:
  - Data modeled for consumption
  - FBS data valid for trends (WHO/FAO)
  - Consistent with other research findings
Conclusions

- Energy gap widened from 1976 to 2003 - likely due to increased energy consumption
- Foods driving widening energy gap are major ingredients in highly processed, energy-dense convenience and fast foods (↑ consumption)
- Programs/policies to address population obesity:
  - strong nutrition focus
  - objective of decreasing energy consumption
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