Breakfast cereal consumption is associated with higher micronutrient and milk intake among Australian children

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BACKGROUND

- Breakfast is one of the most important meals of the day, helping to kick start metabolism and re-fuel the body.
- A large body of epidemiological data shows that children who eat breakfast cereal are more likely to meet their recommended intakes of B vitamins (niacin, thiamin, folic acid), calcium, iron and fibre and have a lower BMI.
- In 1995, Australian cereal consumers were more likely to meet the RDI for these micronutrients but uniquely, were no heavier than breakfast skippers.
- More recent Australian data on these associations are lacking.

AIM

To investigate, in a recent and representative sample of Australian children, the relationship between breakfast cereals consumption and:
1. total nutrient intakes
2. milk consumption
3. anthropometric measures

STUDY DESIGN

- ‘Breakfast cereals’ were defined as ready-to-eat cereals; puffed corn, rice, wheat, muesli, biscuits, flakes, porridge, rolled oats, oat bran, semolina.

RESULTS

BREAKFAST CEREAL INTAKES

- 69% of children were breakfast cereal consumers on at least 1 of the 2 survey days.
- 91% of these children (n=3133) consumed breakfast cereal between 8am and 9am.
- Significantly more boys than girls were breakfast cereal consumers (72% vs. 67% respectively, P<0.0001).

The nutrient contribution of breakfast cereals to the diet

- Breakfast cereals (excluding milk):
- were a significant source of B vitamins, iron and fibre
- contributed minor amounts to sodium, sugar and saturated fat intakes
- contributed an average of 5% (kg/day) to total sugar intake

TOTAL DIETARY INTAKES

Nutrient intakes in breakfast cereal consumers vs. non-consumers

- Breakfast cereal consumers had:
  - Higher energy, sugar, fibre and micronutrient intakes, and
  - Lower sodium intakes;
- Were more likely to meet the EAR for fibre, iron and calcium than non-cereal consumers.
- No significant age or gender differences were observed.

BMI

Breakfast cereal consumers and weight status

- Breakfast cereal consumers had a lower BMI and BMI z-scores than non-consumers (*P<0.0001)

TOTAL MILK CONSUMPTION (All children)

Milk consumption in children

- Over one third of children’s daily milk was consumed with breakfast cereal
- 12% of children consumed cereal with milk and some form of sweetener†

SUMMARY

- Breakfast cereals make a significant contribution to children’s nutrient intakes, contributing >20% of their daily intakes of thiamin, folic acid, riboflavin and iron and 13% of their daily fibre.
- Children who have breakfast cereal are more likely to meet the daily recommended intakes for fibre, iron and calcium.
- >30% of daily milk intake is consumed with breakfast cereals.

- Breakfast cereal consumers have a lower BMI than non-consumers.
- In line with previous research, the most recent Australian data showed breakfast cereal consumption was associated with higher nutrient intakes and lower BMI in children.

References


Breakfast cereal non-consumers

Kids who did not consume breakfast cereal on both days of recall

Breakfast cereal consumers

Kids that consumed breakfast cereal on any of one of the recall days

Table 1: Nutrient intakes in breakfast cereal consumers vs. non-consumers

<table>
<thead>
<tr>
<th>Nutrient</th>
<th>Non-breakfast cereal consumers (NBC)</th>
<th>Breakfast cereal consumers (BC)</th>
<th>Difference (%)</th>
<th>T-Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Energy (kJ)</td>
<td>7.6 x 10^3</td>
<td>7.7 x 10^3</td>
<td>0.2</td>
<td>1.1</td>
</tr>
<tr>
<td>Carbohydrate (g)</td>
<td>510</td>
<td>550</td>
<td>0.8</td>
<td>1.2</td>
</tr>
<tr>
<td>Total Fat (g)</td>
<td>25</td>
<td>26</td>
<td>0.4</td>
<td>1.3</td>
</tr>
<tr>
<td>Saturated Fat (g)</td>
<td>7</td>
<td>8</td>
<td>0.1</td>
<td>1.4</td>
</tr>
<tr>
<td>Cholesterol (mg)</td>
<td>120</td>
<td>120</td>
<td>0.0</td>
<td>1.5</td>
</tr>
<tr>
<td>Sodium (mg)</td>
<td>1650</td>
<td>1700</td>
<td>0.3</td>
<td>1.6</td>
</tr>
<tr>
<td>Calcium (mg)</td>
<td>420</td>
<td>530</td>
<td>0.3</td>
<td>1.7</td>
</tr>
<tr>
<td>Iron (mg)</td>
<td>9</td>
<td>11</td>
<td>0.2</td>
<td>1.8</td>
</tr>
<tr>
<td>Folate (mg)</td>
<td>370</td>
<td>418</td>
<td>0.4</td>
<td>1.9</td>
</tr>
<tr>
<td>Energy (% of daily allowances)</td>
<td><strong>6%</strong></td>
<td><strong>7%</strong></td>
<td><strong>1%</strong></td>
<td><strong>1%</strong></td>
</tr>
</tbody>
</table>

Table 2: % meeting EAR for calcium, fibre & iron in breakfast cereal consumers vs. non-consumers

<table>
<thead>
<tr>
<th>Nutrient</th>
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<th>Difference (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Calcium (mg)</td>
<td>90%</td>
<td>95%</td>
<td><strong>5%</strong></td>
</tr>
<tr>
<td>Folate (mg)</td>
<td>70%</td>
<td>75%</td>
<td><strong>5%</strong></td>
</tr>
<tr>
<td>Iron (mg)</td>
<td>95%</td>
<td>95%</td>
<td>0.0</td>
</tr>
</tbody>
</table>

Table 3: Body mass index (BMI) and z-scores for cereal and non-consumers

<table>
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<tr>
<th>Nutrient</th>
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<th>Breakfast cereal consumers (BC)</th>
<th>Difference (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>BMI &amp; BMI z-scores</td>
<td>18.5* 3.6</td>
<td>18.4* 3.4</td>
<td><strong>0.1</strong></td>
</tr>
</tbody>
</table>

Figure 1: Contribution of breakfast cereals to total nutrient intakes in Australian children

Figure 2: Fluid milk consumption in Australian children in the National Nutrition Survey (2007)

Table 1: Nutrient intakes in breakfast cereal consumers vs. non-consumers

Table 2: % meeting EAR for calcium, fibre & iron in breakfast cereal consumers vs. non-consumers

Table 3: Body mass index (BMI) and z-scores for cereal and non-consumers