Factors associated with french fry consumption among two year olds in the 2005 Oregon PRAMS-2 cohort

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French Fries

Background

- Most common vegetable consumed by 15 to 24 month olds in the US (Fox, 2004)
- Childhood obesity → larger societal shift with parents working outside of the home, high screen time, less physical activity
- French fries appear to be a common part of the Western Dietary Pattern (WDP) (Ambrosini, 2009; Grzywacz, 2010)
- Obesity
  - Maternal BMI
  - Breastfeeding
- Diet
  - Energy density
  - Fat content vs. energy intake
- SES
  - Food insecurity
  - Stressors
  - Education
1. Estimate the prevalence of french fries consumption in two year olds;

2. Characterize the associations with predictors of child health behaviors, including maternal age, educational attainment, and maternal BMI; and,

3. Using these variables, create a multivariate model to test the hypothesis that mother-child dyads who breastfed during infancy are less likely than non-breastfed ones to consume french fries when the child is two years old, while also identifying other significant predictors.
PRAMS and PRAMS-2

Methods

- Pregnancy Risk Assessment Monitoring System (PRAMS)
  - Ongoing survey of mothers identified by stratified random sample from birth certificates
  - Over-sampling, non-response, non-coverage
  - Mean age = 107 d.o.

- PRAMS-2
  - Two year follow-up, weighted response rate = 63%
  - Mean age = 25 m.o.
Many predictors...
PRAMS, BC
PRAMS-2
Hosmer and Lemeshow Model Building

Methods

• Systematic, parsimonious model development

• Overview of steps
  • Include all variables with univariate p>0.25
  • Remove predictor highest p-value (Wald test)
  • Continue until all predictors p<0.05
  • Add back-in removed variables and test sig.
  • Interactions
  • Goodness-of-fit testing
Prevalence
Results

French Fry Consumption by 2 y.o. in Oregon, 2007

67.0% consumed french fries in a typical week (weighted)
Univariate Results
Univariate
Results
Univariate Results
Other predictors tested for inclusion:
Maternal Race/Ethnicity, Maternal Education, WIC Status, Income >185% FPL, Marital/Partner Status, Financial Stress, Traumatic Stress, Postpartum Depression, Food Insecurity, Smoking, Health Insurance
## Comparison

### Discussion

<table>
<thead>
<tr>
<th>Age</th>
<th>Location</th>
<th>Percentage and Description</th>
<th>Year</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>8 mo</td>
<td>NC, US</td>
<td>22.2% had french fries in last week</td>
<td>? ~2000's</td>
<td>Grzywacz, 2010</td>
</tr>
<tr>
<td>9–11 mo</td>
<td>US</td>
<td>9% had french fries in past 24 hrs (= 63% / week)</td>
<td>2002</td>
<td>Briefel, 2004</td>
</tr>
<tr>
<td>19–24 mo</td>
<td>US</td>
<td>25.5% had french fries and other fried potatoes at least once per day</td>
<td>2002</td>
<td>Fox, 2004</td>
</tr>
<tr>
<td>30 mo</td>
<td>Sweden</td>
<td>68.8% had french fries or fried potatoes at least once per week</td>
<td>1997</td>
<td>Huus, 2009</td>
</tr>
<tr>
<td>2–9 yo</td>
<td>US</td>
<td>42% had fast food in last 24 hours</td>
<td>1998</td>
<td>Paeratakul, 2003</td>
</tr>
<tr>
<td>25 mo</td>
<td>OR, US</td>
<td>67.0% had french fries in a typical week</td>
<td>2007</td>
<td></td>
</tr>
</tbody>
</table>
Western Dietary Pattern (WDP) -- meats, desserts, processed foods, sodas, and french fries. Low in fresh fruits and vegetables, whole grains.

WDP associated with increased risk of cancer-, cardiovascular-, and all cause-mortality (Heidemann, 2008)
“Lifestyle”.... or Socioeconomic Status

Discussion

WDP ~ television and video watching, single-parent household, lower income, a smoking parent, and a increased calorie intake, after adjustment for BMI for age, physical activity, and maternal education in Australian 14 y.o. (Ambrosini, 2009)

French fries at 8 m.o. ~ not married/partnered and less than a college education (Grzywacz, 2010)

French fries and other fried potatoes at 2.5 y.o. inversely associated with BMI increase at 5 y.o., adjusting for other foods, parents' BMI and education (Huus, 2009)
Limitations and Strengths

Discussion

• Confounding
  • Residual, untested measurement
  • Unmeasured, french fries~fast food, SES
  • Unknown

• Bias
  • Selection: adjustment, positive findings
  • Measurement
Implications

Discussion

• High prevalence of french fry consumption in a young group
  • French fry consumption likely part of larger SES and dietary context

• 3.5–5.4 y.o.'s preferences for french fries ~ marketing (Robinson, 2007)
  • “parent of the nation” regulation?

• Existing MCH programs support
  • Breastfeeding, healthy BMI, Preg Intention
Acknowledgements

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## Eating out, TV, and french fries

### Addendum

#### Days/last week eating-out

<table>
<thead>
<tr>
<th>fastFood_num</th>
<th>0 vs &gt;=1</th>
<th>0 days/w</th>
<th>&gt;=1 days</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>0.1888</td>
<td>0.0955</td>
<td>0.1983</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>0.1516</td>
<td>0.2611</td>
<td>0.4127</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>0.0453</td>
<td>0.1953</td>
<td>0.2406</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>0.0104</td>
<td>0.1011</td>
<td>0.1115</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>0.0061</td>
<td>0.021</td>
<td>0.0272</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>0.0045</td>
<td>0.002</td>
<td>0.0066</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>0</td>
<td>7.7e-04</td>
<td>7.7e-04</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>0.0025</td>
<td>0</td>
<td>0.0025</td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>0.3292</td>
<td>0.6708</td>
<td>1</td>
<td></td>
</tr>
</tbody>
</table>

Key: cell proportions

**Pearson:**
- Uncorrected chi^2(7) = 106.1957
- Design-based F(6, 82, 5978.27) = 8.1600, P = 0.0000