Is a healthy diet the most expensive type of diet?; Using dietary data from the UK Women’s Cohort Study

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Background

Cost of Diet

Diet

Health Outcome
UK Women’s Cohort Study

Aim to investigate links between diet and health

Baseline (1994 – 1999)
~35000 Women

Food frequency questionnaire - 217 foods
Lifestyle and demographic questionnaire

Follow up (1999 -2004)
~14000 Women

Four day food diary
Activity Diary
Lifestyle and demographic questionnaire
Cost Database

- 3192 foods assigned online supermarket prices
- Low, Medium, High and an Average price per product
- Correction factors assigned to align prices
- Validation using diet diaries and till receipts

Timmins et al 2012 – Not yet published
Food Frequency Questionnaire (FFQ)
Dietary Patterns

7 dietary patterns

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Greenwood et al 2000
<table>
<thead>
<tr>
<th>Dietary pattern (n)</th>
<th>N</th>
<th>Mean daily diet cost in £</th>
<th>Standard Deviation of mean cost £</th>
</tr>
</thead>
<tbody>
<tr>
<td>Monotonous low quantity omnivore</td>
<td>5148</td>
<td>3.29</td>
<td>0.95</td>
</tr>
<tr>
<td>Health conscious</td>
<td>1987</td>
<td>6.62</td>
<td>1.94</td>
</tr>
<tr>
<td>Traditional meat chips and pudding eater</td>
<td>5835</td>
<td>4.39</td>
<td>1.00</td>
</tr>
<tr>
<td>Higher diversity traditional omnivores</td>
<td>4576</td>
<td>5.50</td>
<td>1.20</td>
</tr>
<tr>
<td>Conservative omnivores</td>
<td>5672</td>
<td>4.14</td>
<td>1.02</td>
</tr>
<tr>
<td>Low diversity vegetarians</td>
<td>4869</td>
<td>3.93</td>
<td>1.01</td>
</tr>
<tr>
<td>High diversity vegetarians</td>
<td>4082</td>
<td>5.00</td>
<td>1.23</td>
</tr>
</tbody>
</table>

Table 1 - Dietary cost in £ by dietary pattern

Intake <300 and >6000 kcal per day have been excluded (n=71)
Traditional Meat Chips and Pudding Eater

Most Common in the UKWCS – Reference group for regression analysis
**Unadjusted Regression Analysis**

<table>
<thead>
<tr>
<th>Dietary Pattern</th>
<th>Coefficient</th>
<th>Std error</th>
<th>95% Confidence interval</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Monotonous Low Quantity Omnivore</td>
<td>-1.10</td>
<td>0.02</td>
<td>-1.15 to -1.06</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Health Conscious</td>
<td>2.24</td>
<td>0.03</td>
<td>2.17 to 2.29</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Higher Diversity Traditional Omnivore</td>
<td>1.11</td>
<td>0.02</td>
<td>1.06 to 1.15</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Conservative Omnivore</td>
<td>-0.25</td>
<td>0.02</td>
<td>-0.29 to -0.20</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Low Diversity Vegetarian</td>
<td>-0.46</td>
<td>0.02</td>
<td>-0.51 to -0.42</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>High Diversity Vegetarian</td>
<td>0.61</td>
<td>0.02</td>
<td>0.57 to 0.66</td>
<td>&lt;0.001</td>
</tr>
</tbody>
</table>

Table 2 – Unadjusted effects of dietary pattern consumed on daily cost of diet in £.

Dietary patterns are compared to a Traditional Meat Chips and Pudding eater dietary pattern, which is most commonly consumed in the UKWCS population

$R^2 = 0.37$
## Adjusted Regression Analysis

<table>
<thead>
<tr>
<th>Dietary Pattern</th>
<th>Coefficient</th>
<th>Std error</th>
<th>95% Confidence interval</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Monotonous Low Quantity Omnivore</td>
<td>-0.25</td>
<td>0.02</td>
<td>-0.28 to -0.22</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Health Conscious</td>
<td>1.80</td>
<td>0.02</td>
<td>1.76 to 1.84</td>
<td>&lt;0.001</td>
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<tr>
<td>Higher Diversity Omnivore</td>
<td>0.57</td>
<td>0.02</td>
<td>0.54 to 0.60</td>
<td>&lt;0.001</td>
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<tr>
<td>Conservative Omnivore</td>
<td>0.39</td>
<td>0.02</td>
<td>0.36 to 0.42</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Low Diversity Vegetarian</td>
<td>-0.46</td>
<td>0.02</td>
<td>-0.08 to -0.01</td>
<td>0.005</td>
</tr>
<tr>
<td>High Diversity Vegetarian</td>
<td>0.43</td>
<td>0.02</td>
<td>0.40 to 0.47</td>
<td>&lt;0.001</td>
</tr>
</tbody>
</table>

Table 3 – Effects of dietary pattern consumed on daily cost of diet in £.

1Dietary patterns are compared to a Traditional Meat Chips and Pudding eater dietary pattern, which is most commonly consumed in the UKWCS population

$R^2 = 0.70$

Results are adjusted for total calorie intake, energy expenditure (METs), age, smoking status, employment, highest level of education
Discussion

- Limitations
  - Under/Over reporting of diet
  - Food frequency questionnaire
  - Only women
  - Volunteer bias

- Strengths
  - Novel research
  - Large sample
Impact

- Suggests that a health conscious dietary pattern is most expensive
- Diversity in one's diet is more expensive
What's next?

Aim to investigate links between diet and health

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Thank you all for listening....

Thanks to my supervisors...

- Professor Janet Cade
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- Dr Claire Hulme
- Professor Graham Clarke

And to my funders...

- ESRC/MRC PhD Studentship
Questions

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References


