Relationships between patient variables and computerised dietary assessment in a primary healthcare setting

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Computers in dietetics

• Use of computer technology in dietetic practice often restricted
  – analysis of nutrients

• DietAdvice website
  – patients self-report usual dietary intake
  – Dietitian’s interface for analysis
The CAST Model

1. Recruiting patients with Metabolic Syndrome
2. Discussing dietary prescription with patients

General Practitioner

1. Entering their information into the website
2. Re-visiting their GP for dietary prescription

Patient

Dietitian

1. Analysing website input
2. Telephoning patients if incomplete questionnaire
3. Developing dietary prescriptions
Aim

- To determine relationships between Patient variables and DietAdvice website.
Methods

- Chi square and ordinal regression models for:
  - Age
    - <35 years, 35-55 years, >56 years
  - BMI
    - Overweight (<25 kg/m²), overweight (25-30 kg/m²), obese (>30 kg/m²)
  - Computer experience
  - Computer ownership
  - Computer usage

\[ \log \left( \frac{\sum_{k=1}^{j} \pi_k}{1 - \sum_{k=1}^{j} \pi_k} \right) = \alpha + \beta x \]
Methods

• Nutrient data obtained from dietitian’s interface
Methods

• Comparison
  - reported energy intake (EI)
  - basal metabolic rate (BMR)

• Patients classified as

  - <1.35: under-reporting
  - 1.35-2.40: on target
  - >2.40: over-reporting
Results

November 2005

Total GP recruitment
N=224

Did not consent
N=10

Cross section of patients
N=200

October 2005

Did not start using website/account error
N=12

Demographic information
N=188

Nutrient intake data
N=143
Patient profile (n=188)

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Age</strong></td>
<td>49.1 ±14.6 yrs</td>
</tr>
<tr>
<td><strong>BMI</strong></td>
<td>32.6 ± 6.5 kg/m²</td>
</tr>
<tr>
<td>- Overweight</td>
<td>72.9%</td>
</tr>
<tr>
<td><strong>Male</strong></td>
<td>63 (33.5%)</td>
</tr>
<tr>
<td><strong>Female</strong></td>
<td>125 (66.5%)</td>
</tr>
<tr>
<td><strong>High school education</strong></td>
<td>95 (50.5%)</td>
</tr>
<tr>
<td><strong>Own a computer</strong></td>
<td>151 (80.3%)</td>
</tr>
</tbody>
</table>
Computer experience/usage

- Computer experience
  - advanced (n=20)
  - intermediate (n=73)
  - beginners (n=40)
  - ‘never used’ a computer (n=10)

(p=0.00)
BMI

1.0x

1.9x

(p=0.04)

GP practice

Home
Age

>56 years

<35 years

GP practice

Home

Advanced user

1.0x

16.8x (p=0.00)

2.8x (p=0.00)

4.5x (p=0.00)
Results

November 2005

Total GP recruitment
N=224

Did not consent
N=10

Cross section of patients
N=200

October 2005

Did not start using website/account error
N=12

Demographic information
N=188

N=45 Did not finish

Nutrient intake data
N=143
• Nutrient intake data more likely to be over-reported or on target than under-reported
### Relationship to age

<table>
<thead>
<tr>
<th>Age category</th>
<th>Under-reporting</th>
<th>On target</th>
<th>Over-reporting</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;35 years</td>
<td>9 (33%)</td>
<td>14 (52%)</td>
<td>4 (15%)</td>
</tr>
<tr>
<td>36-55 years</td>
<td>17 (27%)</td>
<td>28 (45%)</td>
<td>17 (27%)</td>
</tr>
<tr>
<td>&gt;56 years</td>
<td>20 (37%)</td>
<td>24 (44%)</td>
<td>10 (19%)</td>
</tr>
<tr>
<td>Total</td>
<td>46 (32%)</td>
<td>66 (46%)</td>
<td>31 (22%)</td>
</tr>
</tbody>
</table>

- No relationship to age

  p=0.58 (χ²=2.86)
## Relationship to BMI

<table>
<thead>
<tr>
<th>BMI category</th>
<th>Under-reporting</th>
<th>On target</th>
<th>Over-reporting</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normal BMI</td>
<td>3 (50%)</td>
<td>2 (33%)</td>
<td>1 (17%)</td>
</tr>
<tr>
<td>Overweight BMI</td>
<td>13 (27%)</td>
<td>29 (59%)</td>
<td>7 (14%)</td>
</tr>
<tr>
<td>Obese BMI</td>
<td>30 (34%)</td>
<td>35 (40%)</td>
<td>23 (26%)</td>
</tr>
<tr>
<td>Total</td>
<td>46 (32%)</td>
<td>66 (46%)</td>
<td>31 (22%)</td>
</tr>
</tbody>
</table>

- No relationship to BMI
  
  \( p = 0.19 \) (\( \chi^2 = 6.08 \))
Relationship to gender

<table>
<thead>
<tr>
<th>Gender</th>
<th>Under-reporting</th>
<th>On target</th>
<th>Over-reporting</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>17 (35%)</td>
<td>23 (47%)</td>
<td>9 (18%)</td>
</tr>
<tr>
<td>Female</td>
<td>29 (31%)</td>
<td>43 (46%)</td>
<td>22 (23%)</td>
</tr>
<tr>
<td>Total</td>
<td>46 (32%)</td>
<td>66 (46%)</td>
<td>31 (22%)</td>
</tr>
</tbody>
</table>

- No relationship to gender
  - p=0.77 (χ²=0.54)
Discussion

- Overweight patients may feel greater comfort having diet assessed at home
  - ↓ social desirability bias due to ↓ face-to-face contact required

- Computerised assessment
  - report usual diet with less bias than verbal diet history assessment with a dietitian
**Conclusion**

- Finding innovative ways for overweight patients to report intakes may include the use of computers
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