The impact of front-of-package sodium content labels on grocery products among Canadian consumers

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Background
Sodium & Chronic Disease

• High sodium consumption a major **public health problem**

• Primary **risk factor** for high blood pressure, hypertension and cardiovascular disease^1^

^1^ He FJ, MacGregor GA. A comprehensive review on salt and health and current experience of worldwide salt reduction programmes. Journal of Human Hypertension 2009; 23: 771-772.
Background

Sodium

• Adequate Intake: 1500 mg/day\(^3\)

• Canadian consumption: \(\approx 3400\text{mg/day}^4\)

• Largely in **processed foods**

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Nutrition Labelling

Labelling in Canada

• Nutrition labels on prepackaged foods are a prominent source of nutrition information

• Current labelling process has limitations
Nutrition Labelling
Front-of-Package (FOP) Labels

• Desired by Canadians\(^5\)

• More effective at helping consumers make a healthy choice\(^6,7,8\)

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FOP Nutrition Labelling
Traffic Light Label: “green means go!”

- Traffic Light labels highlight amounts of key nutrients
Rationale

Lack of evidence to inform policy...
Rationale

Study Objectives

• Determine impact of adding a FOP sodium label to grocery products on product selection

• Measure consumer ratings of the labelling formats presented

• Examine socio-demographic factors
Methods

Study Design

• **Research design**: Experimental, between-subjects design

• **Sample**: 336 Canadian adults from Waterloo Region

• **Data collection**: November 2010 – May 2011
Methods

Product Selection Task

• Choice between 2 “free” boxes of crackers:
  low vs. high sodium

• Participants randomly assigned to 1 of 5 experimental conditions
**Low Sodium**

<table>
<thead>
<tr>
<th>Amount</th>
<th>% Daily Value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Calories</strong></td>
<td>91</td>
</tr>
<tr>
<td>Fat</td>
<td>3 g</td>
</tr>
<tr>
<td>Saturated</td>
<td>1 g</td>
</tr>
<tr>
<td>+ Trans</td>
<td>0 g</td>
</tr>
<tr>
<td><strong>Cholesterol</strong></td>
<td>0 mg</td>
</tr>
<tr>
<td><strong>Sodium</strong></td>
<td>20 mg</td>
</tr>
<tr>
<td>Carbohydrate</td>
<td>13 g</td>
</tr>
<tr>
<td>Fibre</td>
<td>0 g</td>
</tr>
<tr>
<td>Sugars</td>
<td>3 g</td>
</tr>
<tr>
<td><strong>Protein</strong></td>
<td>3 g</td>
</tr>
<tr>
<td>Vitamin A</td>
<td>0 %</td>
</tr>
<tr>
<td>Vitamin C</td>
<td>0 %</td>
</tr>
<tr>
<td>Calcium</td>
<td>0 %</td>
</tr>
<tr>
<td>Iron</td>
<td>6 %</td>
</tr>
</tbody>
</table>

**High Sodium**

<table>
<thead>
<tr>
<th>Amount</th>
<th>% Daily Value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Calories</strong></td>
<td>88</td>
</tr>
<tr>
<td>Fat</td>
<td>4 g</td>
</tr>
<tr>
<td>Saturated</td>
<td>2 g</td>
</tr>
<tr>
<td>+ Trans</td>
<td>0 g</td>
</tr>
<tr>
<td><strong>Cholesterol</strong></td>
<td>0 mg</td>
</tr>
<tr>
<td><strong>Sodium</strong></td>
<td>375 mg</td>
</tr>
<tr>
<td>Carbohydrate</td>
<td>11 g</td>
</tr>
<tr>
<td>Fibre</td>
<td>4 g</td>
</tr>
<tr>
<td>Sugars</td>
<td>2 g</td>
</tr>
<tr>
<td><strong>Protein</strong></td>
<td>2 g</td>
</tr>
<tr>
<td>Vitamin A</td>
<td>0 %</td>
</tr>
<tr>
<td>Vitamin C</td>
<td>0 %</td>
</tr>
<tr>
<td>Calcium</td>
<td>0 %</td>
</tr>
<tr>
<td>Iron</td>
<td>6 %</td>
</tr>
</tbody>
</table>
Experimental Conditions
Conditions

#1: Control (no FOP label)
Conditions

#2: Basic FOP Label
Conditions

#3: Descriptive FOP Label

[Image of two boxes of crackers showing high and low sodium options]
Conditions

#4: Detailed Traffic Light
Conditions

#5: Simple Traffic Light
Methods

Measures

• Product selection task

• Consumer ratings and rankings of labels

• Socio-demographic predictors
Results
Results

Sample Characteristics

• 336 adults (18-88 years) from Waterloo Region
• 53% female
• >80% with college, university or professional school
Results

Product Selection Task:
Proportion choosing low sodium option

- Caucasians significantly more likely to choose low sodium than all other ethnicities (OR = 2.45, p < 0.01)
- No other socio-demographic factors were significant predictors

<table>
<thead>
<tr>
<th>Control (No FOP label)</th>
<th>LOW SODIUM 20 mg per serving 1% Daily Value</th>
<th>91%*</th>
<th>LOW SODIUM 20 mg per serving 1% Daily Value</th>
<th>n.s.</th>
<th>LOW SODIUM 20 mg per serving 1% Daily Value</th>
<th>n.s.</th>
</tr>
</thead>
<tbody>
<tr>
<td>67%</td>
<td>88%* OR=3.52, p=0.01</td>
<td></td>
<td>91%* OR=5.88, p&lt;0.05</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
## Results

### Product Selection Task

**Proportion who picked up the box**

<table>
<thead>
<tr>
<th>Control (No FOP label)</th>
<th>LOW SODIUM 20 mg per serving 1% Daily Value</th>
<th>LOW SODIUM 20 mg per serving 1% Daily Value</th>
<th>SODIUM 20 mg per serving 1% Daily Value</th>
<th>LOW SODIUM 20 mg per serving 1% Daily Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>79%</td>
<td>58%* *OR=0.33, p&lt;0.01</td>
<td>63%* *OR=0.43, p&lt;0.05</td>
<td>63%* *OR=0.46, p&lt;0.05</td>
<td>n.s.</td>
</tr>
</tbody>
</table>

- Females significantly **more** likely to pick up the box vs. males (OR=2.03, p<0.01)
Results

Ratings of Labelling Formats

• 4 rating scales: liking, effectiveness at choosing a low sodium product, understanding, believability

• No significant differences between label conditions for liking, effectiveness, or understanding

• Simple Traffic Light rated significantly less believable compared to all other conditions ($\beta_{\text{stand}} = -0.20, p<0.01$)*

• Adults 35-64 and 65+ liked the labels significantly more ($\beta_{\text{stand}} = 0.32, p<0.001$) and rated the labels significantly more effective ($\beta_{\text{stand}} = 0.21, p<0.01; \beta_{\text{stand}} = 0.25, p<0.001$)*
Results

Label Ranking Task

Mean Rank*  

1.4  2.4  2.9  3.3

*All differences between rankings were significant at $p<0.001$
Results
Support for Labelling Policy

“Should the government require food companies to put nutrition information on the front of food packages?”

• “Yes”: 42%

• “Maybe”: 24%

• “No”: 34%
Results
Frequency of Reading Nutrition Labels

“Thinking specifically about nutrition labels on the various food products you buy (other than brand name or flavour), how often do you read the labels?”
Conclusions
Strengths & Implications

• Behavioural outcome fills gap in literature

• Policy implications
  ➢ Canadian sodium reduction strategy
  ➢ FOP nutritional labelling

• Manufacturers might reduce sodium levels of products in response to mandatory FOP labels

• May inform international initiatives
  ➢ Sodium reduction
  ➢ International labelling polices
Conclusions

Acknowledgments

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Conclusions

Study Limitations

• Single grocery product

• Only sodium information shown

• Not a “real world” setting - taste & price are important factors

• Limited to adults from Waterloo Region