Knowledge and practices of using food label information among adolescents attending schools in Kolkata, India

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• 7th largest country in the world
• About 2 billion population
• About 20% of world population
• Second most populous

• ~1/3rd of world’s undernourished population are from India
• <214 million undernourished
• At least 10% are overweight and obese
• 5-15% children and adolescents are overweight and obese!!
Growing Obesity – A concern

- Consumption of processed foods is on the rise
- Consumption of pre-packaged processed foods is also on the rise
- Prevalence of overweight, obesity and resultant non-communicable diseases are on the rise (Laxmaiah et al, 2009; NFI, 2008; Ramachandran, 2007 etc.)
- Food labels can be powerful tools to discourage consumption of unhealthy packed foods (Goldberg 1992)
- Education about food labels can influence the purchasing habits and promote purchase of healthy foods
Food Labels

- Essential source of Information for consumer
- Effective control and choice on what they eat for
  - Health
  - Safety
  - Religious
  - Ethical
- Potentially powerful tools of communication to discourage consumption of unhealthy packed foods
Labeling is important for all stakeholders

For Public Policy
- Reduce information asymmetry
- Provide consumers with info.
- Help public make informed choices
- Stimulate healthier eating.

Consumers
- Easy to use information for healthy food choices

Consumer Associations
- Ensure their right to be properly and correctly informed about food

Food industry
- Help position & differentiate from competitors
- Demonstrate good corp. social responsibility
Elaboration Likelihood Model

We process information through two routes depending on the situation.

Key Situational Factors:
- Motivation [Involvement]
- Ability [Knowledge]

Central Route [careful thought]
most likely with:
- High Involvement
- More Knowledge

Peripheral Route [quick thought]
most likely with:
- Low Involvement
- Less Knowledge
Elaboration Likelihood Model

Central route
Information gained through experience and knowledge

peripheral route
Information processed through simple inference

Food label can display nutrition information in text and symbols, which serve as central and peripheral cues respectively, so can be a powerful tool to make healthy food choices.
Pre-requisites for using food labels to promote public health nutrition

Regulations

Implementation

Compliance by Industry

• Buying pre-packaged foods
• Reading Label
• Education
• Nutrition literacy
• User friendliness
Usual reasons for non-use of labels †

• Lack of time
• Presentation style of information
• Lack of understanding of terms
• Lack of understanding of role of nutrients in health
• Concerns about accuracy of information

†As reported in a review of over 103 consumer studies by Cowburn et al (2005), Public Health Nutrition, 8(1): 21-28
What is the current scenario in India?

- Consumption of non-traditional fast foods, processed foods and packaged foods has been increasing in India at a rapid pace.

- This trend is more among adolescents and children in urban areas.

- Over the past 20 years, there was an almost 300% rise in consumption of packaged foods.

- In the current scenario, when there are shifts from homemade to pre-packaged foods, food labeling could serve as a population-based approach to help consumers make healthy choices.
Regulations in India make it mandatory for food labels to display nutrition information along with the manufacturing, expiration, ‘best-by’ and ‘use-before dates’, as well as ingredients.
Symbols on Packed foods
Why adolescents for this study?

- Overweight and obesity are on the rise in India – more so among adolescents (Laxmaiah et al, 2009; NFI, 2008; Ramachandran, 2007 etc.)
- Education about food labels at young age can influence/enhance their knowledge and food label reading skills.
- Research indicates that through adolescents their younger siblings, families, and community members can be reached
Use of food labels by adolescents

- Although some school-going adolescent girls know ISI but not AGMARK and FPO. Many of them do not read labels (SubbaRao et al, 2009)

- More than 66% of school going adolescents find food labels too complex to understand (Unpublished)
Hypothesis & Objectives

Hypothesis

- Knowledge of food label is low among school going adolescents.

General Objective

- To understand current knowledge and practice of using food label information among school children.

Specific Objectives

- To assess the current knowledge of food labels
- To assess practices of using food labels for making food choices.
- To come up with recommendations for appropriate educational interventions on reading food labels.
Materials and methods

Study location
Kolkata, A metro city in Eastern India.

Study design
Cluster randomized school survey

Sampling
- Kolkata was divided into 3 natural regions - North, Central & South Kolkata.
- From the list of schools in each region, two schools (1 Government + 1 private school) were randomly selected.
- Every selected school served as a cluster and all the 8th class students of the school were part of this study.
- Total number of students (n) was 316.
A closed-ended pre-coded questionnaire was developed and pre-tested. The questionnaire was finalized after pre-testing on 10 students. It contained 23 questions in 5 major segments:

- Socio-demographic details of the participants (10 questions)
- Purchase of packaged foods and frequently consumed ones (2 questions)
- How food label information was read (3 questions)
- Knowledge about symbols on food labels (3 questions)
- Opinions on the usefulness of food labels (5 questions)
Data Collection

- The questionnaire was a self-administered
- To be filled up by the subjects in their respective classrooms under supervised conditions.
- Only those children who were willing to take part in the study were requested to answer the questionnaire.
RESULTS
<table>
<thead>
<tr>
<th>Respondent Characteristics</th>
<th>n (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Gender</strong></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>148 (47)</td>
</tr>
<tr>
<td>Female</td>
<td>168 (53)</td>
</tr>
<tr>
<td><strong>Type of school</strong></td>
<td></td>
</tr>
<tr>
<td>Government</td>
<td>205 (65)</td>
</tr>
<tr>
<td>Private</td>
<td>111 (35)</td>
</tr>
<tr>
<td><strong>Father’s literacy</strong></td>
<td></td>
</tr>
<tr>
<td>Illiterate</td>
<td>24 (8)</td>
</tr>
<tr>
<td>Can read and write</td>
<td>21 (7)</td>
</tr>
<tr>
<td>Primary education</td>
<td>21 (7)</td>
</tr>
<tr>
<td>Grade 5–9</td>
<td>64 (20)</td>
</tr>
<tr>
<td>Grade 10–12</td>
<td>72 (23)</td>
</tr>
<tr>
<td>College and above</td>
<td>104 (33)</td>
</tr>
<tr>
<td><strong>Mother’s literacy</strong></td>
<td></td>
</tr>
<tr>
<td>Illiterate</td>
<td>62 (20)</td>
</tr>
<tr>
<td>Can read and write</td>
<td>39 (12)</td>
</tr>
<tr>
<td>Primary education</td>
<td>21 (7)</td>
</tr>
<tr>
<td>Grade 5–9</td>
<td>63 (20)</td>
</tr>
<tr>
<td>Grade 10–12</td>
<td>57 (18)</td>
</tr>
<tr>
<td>College and above</td>
<td>73 (23)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Father’s occupation</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Laborer</td>
<td>40 (13)</td>
</tr>
<tr>
<td>Farmer</td>
<td>18 (6)</td>
</tr>
<tr>
<td>Service</td>
<td>104 (33)</td>
</tr>
<tr>
<td>Business</td>
<td>142 (45)</td>
</tr>
<tr>
<td>Artisan</td>
<td>1 (0.3)</td>
</tr>
<tr>
<td><strong>Mother’s occupation</strong></td>
<td></td>
</tr>
<tr>
<td>Laborer</td>
<td>19 (6)</td>
</tr>
<tr>
<td>Farmer</td>
<td>5 (2)</td>
</tr>
<tr>
<td>Service</td>
<td>27 (9)</td>
</tr>
<tr>
<td>Business</td>
<td>6 (2)</td>
</tr>
<tr>
<td>Housewife</td>
<td>256 (81)</td>
</tr>
<tr>
<td>Other</td>
<td>1 (0.3%)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Type of house</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Kachcha\textsuperscript{a}</td>
<td>26 (8)</td>
</tr>
<tr>
<td>Pucca\textsuperscript{b}</td>
<td>290 (92)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Bedrooms in house, n</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>108 (34)</td>
</tr>
<tr>
<td>2</td>
<td>122 (39)</td>
</tr>
<tr>
<td>≥ 3</td>
<td>86 (27)</td>
</tr>
</tbody>
</table>

\textsuperscript{a}Kachcha is a house made from mud, thatch, and other low-quality materials; \textsuperscript{b}Pucca is a house made from high-quality materials throughout, including the roof, walls, and floor.

Note: Percentages are rounded to the nearest whole number.
Percentage of adolescents (N=297) buying different kinds of packaged foods

- Noodles: 87%
- Pasta: 78.2%
- Biscuits: 94.6%
- Bakery Items: 85.1%
- Jams & Jellies: 85.4%
- Snacks: 88.6%
- Beverages: 89.9%
- Fruit Juices: 83.9%
- Health Drinks: 86.7%
Proportion of Adolescents (N=297) who read various aspects of labels

<table>
<thead>
<tr>
<th>Aspects of label</th>
<th>Always n (%)</th>
<th>Sometimes n (%)</th>
<th>Rarely n (%)</th>
<th>Never n (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reading Label Information</td>
<td>149 (50)</td>
<td>93 (31)</td>
<td>19 (7)</td>
<td>36 (12)</td>
</tr>
<tr>
<td>Date of Manufacture</td>
<td>137 (46)</td>
<td>128 (43)</td>
<td>18 (6)</td>
<td>14 (5)</td>
</tr>
<tr>
<td>Date of Expiration</td>
<td>178 (60)</td>
<td>68 (23)</td>
<td>24 (8)</td>
<td>27 (9)</td>
</tr>
<tr>
<td>Best-before Date</td>
<td>103 (35)</td>
<td>92 (31)</td>
<td>25 (8)</td>
<td>77 (26)</td>
</tr>
</tbody>
</table>
Percentage of adolescents (N=297) who read nutrient contents & ingredient information

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Allergen</td>
<td>9.8</td>
</tr>
<tr>
<td>Veg./Non-veg.</td>
<td>25.3</td>
</tr>
<tr>
<td>Ingredients</td>
<td>19</td>
</tr>
<tr>
<td>Cholestrol</td>
<td>17.4</td>
</tr>
<tr>
<td>Fibre</td>
<td>12.3</td>
</tr>
<tr>
<td>Salt</td>
<td>18.4</td>
</tr>
<tr>
<td>Sugar</td>
<td>20.3</td>
</tr>
<tr>
<td>Fat</td>
<td>19</td>
</tr>
</tbody>
</table>

0 20 40 60 80

Percentage
Percentage of participants who recognise various symbols in food labels

- ISI: 86.7% Recognize, 21.5% Know what it indicates
- FPO: 80% Recognize, 26.9% Know what it indicates
- AGMARK: 78% Recognize, 50% Know what it indicates
- Vegetarian: 72% Recognize, 40% Know what it indicates
- Non-Veg.: 50% Recognize, 26.9% Know what it indicates
RELATION BETWEEN PARENTS EDUCATION AND READING LABEL

* - Significant (P<0.001)

Father's Education  Mother's Education
Opinion about usefulness of Food Labels

- Almost 80% students think food label is useful for making food choices
- Nearly half of them found food label either confusing or too much on packet to read
- In view of safety question still 24% students think it is safe to consume food after expiry date
- In case of changing text labeling with symbols 71% students prefer it
Discussion & conclusions
Although reading food labels was reported to be common, many of them seemed to be concerned only about the shelf life or safety of the product.

Fewer adolescents read ingredients and nutrition information on the labels.

Earlier studies in India reported a direct association between consumers’ education level and their practices of reading food labels.

Respondents in the current study were students who had a certain level of education therefore label reading is high.

Findings of the current study are contrary to the views that parental education could be an important mediating factor in influencing adolescents' food shopping and use of food labels.
Many respondents recognized symbols on the label

Applying the ELM of persuasion, it can be argued that the display of ingredients or nutrition information acts as a central cue and the consumers need basic nutrition literacy to invoke reasoning and assess the health effects.

Many respondents felt, symbol-based labeling could be tried.

There is a need to revisit text-based nutrition labeling.

Creating awareness about various components of food labels to promote the use of labels.

Qualitative studies are needed to triangulate the findings as the study relies only on closed-ended questions.
Limitations & Implications

- The label reading habits of adolescents were self-reported.
- Because the study was conducted in a sample drawn from only one city in India, results cannot be generalized.
- Studies are needed to validate these findings with those of other adolescent groups in different geographical locations and rural communities.
- The results of the current study should be triangulated using qualitative research methods.
The team

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Scientist – Biostatistics
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