ABSTRACT

India, one of the dominant emerging economies, is witnessing unprecedented boom in the organized retail growth. Consumption of processed and packaged food items has grown tremendously in the recent past. A cross sectional study was conducted in 200 (100 males) from Mumbai city, India. A pre-tested structured and undisguised questionnaire was used to collect information regarding knowledge of food labels, frequency of reading food labels and components of food labels; reasons for not reading food labels and ease of understanding. Analyses were performed using SPSS software for Windows (version 16.0, 2007, SPSS Inc, Chicago, IL). All 200 subjects had knowledge about food labels. 21% adults purchased packaged food more than once a week, 48.5% purchased it once a week, 26% purchased it once in 2 weeks and 4.5% purchased it once in a month. 2% read food labels every time, 38.5% read it often and 59.5% read it sometime. Gender was significantly associated with the frequency of buying packaged foods ($\chi^2 = 33.787$) and reading food labels ($\chi^2 = 19.998$) with higher percentage of males purchasing packaged food more than once a week and reading food labels always ($p<0.05$). Significantly higher percentage of males reported that they do not read food labels as its time consuming, do not understand the meaning of the information printed and labels are too small as compared to females ($p<0.05$). A positive significant association of gender with frequency of reading brand name, ingredients, expiry date, health claim, nutritional information, preservatives used, storage information and cooking instructions was observed ($p<0.05$). The usage of the information printed on packaged food is relatively low amongst the consumers while buying packaged food products. Despite a high frequency of purchasing packaged foods, the percentage of males and females reading food labels and components of food labels on a regular basis is very small.

Keywords: Packaged Food; Food Labels; Health Claims; Nutritional Information; Consumers

INTRODUCTION

Over the past few years there has been a considerable amount of change in the food consumption pattern of the Indian population. Demand for healthy and wellness food is also on rise. With the change in lifestyle and consumption pattern, food safety standards are becoming important from public policy perspective (Wang et al, 2008). Food product labeling, as a policy tool for ensuring provision of nutrition and health information to consumers and as product differentiation strategy by food companies, has gained importance in the recent past across the globe (Kim, Nayga and Capps, 2001).
Many studies found that, in general, consumers were confused with nutrition label information, especially with the use of some technical and numerical information (Unusan, 2004; Feunekes et al., 2008; Kelly et al., 2009). One of the important information which is found on the packaged food these days includes Health Claims. The presence of a combination of both, shorter health claims on the front of the package and a more complete valid information on the back, leads the consumer to give more attribute specific thought regarding the product. (Wansink et al, 2003). Longer claims may lead to general evaluated thought. Shorter claims may lead to more favorable beliefs about the product and thereby a more positive image of the product (Health Canada, 2000).

New forms of food labeling and ‘front-of-pack’ nutrient signposting in particular, are viewed as potential tools for improving the nutrition of the population (Nestle and Jacobson, 2000). A number of different front-of-pack nutrient signposting have been developed (Grunert and Wills, 2007) and the most effective format has been vigorously debated (Lobstein et al., 2007). In 2006, the UK Food Standards Agency (FSA) recommended that food retailers and manufacturers in the UK place front-of-pack traffic-light labels on products in a range of categories. The FSA states that a key objective of this traffic-light labeling is to help people make healthier food choices (Food Standards Agency, 2008). It is proposed that the focus with food label research should divert to consumer education (Macanda, 2005), and should therefore explore ways to educate consumers of all walks of life to use food labels more purposefully during the various stages of the consumer decision-making process, in order to empower consumers to use food label information to their best advantage.

**OBJECTIVE**

1. To assess how frequently the consumers read food labels.
2. To study the knowledge, attitude and perception of males and females towards food labeling.
3. To assess consumer preference towards most commonly used Health Claims.

**REVIEW OF LITERATURE**

There are many important diet related -public health problems and diseases such as poor nutrition; obesity high blood pressure; cancers, diabetes; osteoporosis and cardiovascular diseases. The World Health Organization reported that dietary factors accounted for approximately 30% of cancers in industrialized countries. Therefore, nutrients are vital to humans for growth and maintenance of good health (WHO/FAO, 2003). Most of the pre-packaged food products; imported and locally manufactured; are now provided with nutrition information on their food labels. Overseas experience has shown that nutrition labeling can have positive impact on food consumption patterns; save healthcare costs and the increasing diseases each year. With the introduction of mandatory nutrition labeling many lives could be saved each year (Hawkes, 2004). When asked about their use of nutrition labels on food products, most consumers claim looking at nutrition labels “usually”, “often”, or “at least sometimes”, when making food purchases (Bredbenner B. et al., 2000; Cowburn and Stockley, 2005; Satia et al., 2005; Mhurchu and Gorton, 2007).

In some studies, one fifth to one third of respondents have replied as “always” checking nutrition labels (Nielsen M., 2005), whereas in a Turkish study, about 46% of males and 40% of females were found not to read nutrition labels, at all (Bozkır, 2009). Nevertheless, the results of such surveys are known to vary considerably with country, time, categories of consumers and the pattern of questions asked (Cheftel, 2005). Through product exposure (such as products on display in a store) and continuous learning (such as messages conveyed in media), consumers assess new product information within their existing knowledge frameworks. This may cause changes in attitudes and behaviour, i.e. product-related consumer socialization. Product labels are therefore ideal tools to facilitate consumers’ decisions and to educate consumers, provided that consumers know how to interpret these labels, such as understanding that food contents are indicated in descending order.

It is, unfortunately, difficult to teach or assist less educated consumers to make use of food label information. In this regard, initiatives such as front-of-pack labeling (including traffic light labeling)
may help to explain nutritional information and to quickly identify healthier food alternatives (Kelly et al., 2009). Traffic light labels reduce the cognitive activity required to analyze and interpret food label information and can reduce the intricacy of food purchase decisions considerably (Hieke and Wilczynski, 2011). It is proposed that the focus with food label research should divert to consumer education (Macanda, 2005), and should therefore explore ways to educate consumers of all walks of life to use food labels more purposefully during the various stages of the consumer decision-making process, in order to empower consumers to use food label information to their best advantage.

**METHODOLOGY**

A cross sectional study was conducted in 200 (100 males) from Mumbai city, India. A pre-tested structured and undisguised questionnaire was used to collect information regarding knowledge of food labels, frequency of reading food labels and components of food labels; reasons for not reading food labels and ease of understanding. It focused on the attitude of consumers towards food labelling and their understanding towards the nutrition information given on food labels. The study attempted to determine whether consumers actually grasp and understand the nutritional information written on food labels and how far do they follow it and get influenced by the health claims given on the food product.

**Statistical Methods**

Analyses were performed using SPSS software for Windows (version 16.0, 2007, SPSS Inc, Chicago, IL). Data are presented as frequency (percentage). The frequency distributions were tabulated for various parameters by gender and were compared using cross tabulations and chi-square test. P-value < 0.05 was considered to be statistically significant.

**RESULTS**

Many consumers feel confident that they understand how to read labels and prefer using a food label than relying on their own knowledge (Godwin et al., 2006). Most of the shoppers look at food labels for information about content and preparation, reflecting both the growing interest in healthy eating, as well as concern about what ingredients are there in the foods they eat (Cragg Ross Dawson, 2004). In the present study knowledge regarding food labels on 200 (100 males) is presented. All 200 subjects in the current study knew about food labels and reported that food labels are present on canned, frozen and packaged foods. The knowledge and purchasing patterns of packaged food were compared according to the gender.

Off the 200 subjects, 42 (21%) purchased packaged food more than once in a week, 97 (48.5%) purchased it once a week, 52 (26%) purchased it once in 2 weeks and 9 (4.5%) purchased in once in a month. There was a significant association between gender and frequency of buying packaged food with higher percentage of females purchasing packaged food more than once a week ($\chi^2 = 33.787$, p<0.05)

![Figure 1. Frequency of purchasing packaged food according to gender](image-url)
A number of studies from the UK, US and Australia, as well as one from Sri Lanka, have found that women are more likely to consult nutrition labels when purchasing products than men. This may be attributed to the fact that men are less likely to agree that nutrition information on labels is useful and are generally less interested in nutrition and health than women.

In the present study, however, of the 200 subjects, 4 (2%) read food labels every time, 77 (38.5%) read it often and 119 (59.5%) read it sometime. There was a significant association between gender and frequency of reading food labels with higher percentage of females reading food labels every time or often as compared to males ($\chi^2 = 19.998, p<0.05$) (Figure 2).

![Figure 2. Frequency of reading food label according to gender](image)

A number of studies indicate that many, if not most, consumers do not have the time to read and absorb the messages on food labels outside of experimental conditions. Feunekes, et al found that “in a supermarket environment, consumers generally have limited opportunity to process information, and their motivation to do this is likely to be low when shopping for groceries, resulting in relatively superficial processing of information” (Feunekes, et al, 2008). Peters-Texeira and Badrie (2005) found that 36.6% of consumers found food labels too confusing or too time-consuming to read, and that most respondents spent only 30 seconds reading the food label. Similarly in the present study, reasons for not reading food labels every time while purchasing packaged foods were analysed. 149 (74.5%) reported that its time consuming, 10 (5%) reported that they don’t understand the meaning of the information printed, 146 (73%) reported labels are too small, matter is not readable, 15 (7.5%) reported that as they don’t have health problem and don’t need to read labels and 12 (6%) reported that their choices are healthy and don’t need read food label. All 200 subjects reported that the language of food label was easy to understand. Significantly higher percentage of males reported most reasons of not reading food label as compared to women ($p<0.05$)

<table>
<thead>
<tr>
<th>Reasons</th>
<th>Males</th>
<th>Female</th>
<th>Chi-square</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>It’s time consuming</td>
<td>62</td>
<td>87</td>
<td>16.45</td>
<td>0.001</td>
</tr>
<tr>
<td>Don’t understand the meaning of the information printed</td>
<td>8</td>
<td>2</td>
<td>3.789</td>
<td>0.052</td>
</tr>
<tr>
<td>Labels are too small, matter not readable</td>
<td>80</td>
<td>66</td>
<td>4.972</td>
<td>0.026</td>
</tr>
<tr>
<td>Don’t have health problem and don’t need to read labels</td>
<td>9</td>
<td>6</td>
<td>0.649</td>
<td>0.421</td>
</tr>
<tr>
<td>My choices are healthy and don’t need to read food label</td>
<td>10</td>
<td>2</td>
<td>5.674</td>
<td>0.017</td>
</tr>
</tbody>
</table>

One hundred and ninety five (97.5%) subjects spent 1-5 minutes reading labels whereas 5 (2.5%) spent 5-10 minutes. There was no significant association between gender [males: 96 spent 1-5 minutes, 4 spent 5-10 minutes; females: 99 spent 1-5 minutes, 1 spent 5-10 minutes] and time spent reading food labels ($\chi^2=1.846, p=0.174$).
One hundred and twenty nine subjects reported that they read food labels at the store, 9 read it at home, 64 read it both at store and home and none of the subjects read food labels online. Significantly higher percentage of females (85) read labels at store as compared to males (44) ($\chi^2=36.707$, p<0.05). On the other hand number of males reading label at home (9) ($\chi^2=9.424$) and at both places (50) ($\chi^2=29.779$) was significantly higher than females [home (0), both places(14)] (p<0.05).

Labels of food products can be used to shape consumers’ beliefs and/or feelings about a product, for example claiming that a particular food product is “fat free” or “nutritious”. In essence, food choices are significantly prejudiced if consumers are unable to understand label information (Jacobs et al, 2010), because consumers then typically ignore the information or might even reject the product in favour of another of which the label information seems more clear and useful (Silayoi and Speece, 2004).

In a pan-country study (AC Nielson, 2005, cited in Ni Mhurchu, 2006) almost half (49%) of respondents stated that fat was the nutrient that they most often checked labels for, while 43% said calories (energy) and 42% sugar. Similar findings were reported in a 2005 UK consumer survey where the most commonly checked nutrients on food labels were fat (56%), salt (44%) and sugar (44%) (TNS Research, 2005). Calories especially are seen as important for many women (often slightly older women) due to the link historically with ‘calorie controlled diets’ and current link with organizations which aim to help people to lose weight (Synovate, 2005). The least accessed nutritional information related to protein, carbohydrates and vitamins (TNS Research, 2007). In the present study frequency of reading various components of food labels was assessed. Off the 200 subjects, 175 (87.5%) read brand names, 77 (38.5%) read ingredients, 87 (43.5%) read expiry date, 12 (6%) read health claims, 7 (3.5%) read storage information, 21 (10.5%) read cooking instruction always. None of the subjects read nutritional information, preservatives used, serving size, country of origin and allergens always. There was a significant association of gender with frequency of reading brand name, ingredients, expiry date, health claim, nutritional information, preservatives used, storage information and cooking instructions (p<0.05) (Table 2). There was no significant association of gender with serving size, country of origin and allergens (P>0.05) (Table 2).

<p>| Table 2. Frequency of reading various components of food label according to gender |
|-----------------------------------------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|</p>
<table>
<thead>
<tr>
<th></th>
<th>Always</th>
<th>Often</th>
<th>Occasionally</th>
<th>Rarely</th>
<th>Never</th>
<th>Always</th>
<th>Often</th>
<th>Occasionally</th>
<th>Rarely</th>
<th>Never</th>
<th>X²</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Brand name</strong></td>
<td>93</td>
<td>6</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>82</td>
<td>18</td>
<td>0</td>
<td>0</td>
<td>p=0.001</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Ingredients</strong></td>
<td>65</td>
<td>22</td>
<td>5</td>
<td>0</td>
<td>3</td>
<td>24</td>
<td>15</td>
<td>2</td>
<td>0</td>
<td>X²</td>
<td>p&lt;0.001</td>
<td></td>
</tr>
<tr>
<td><strong>Expiry Date</strong></td>
<td>60</td>
<td>22</td>
<td>5</td>
<td>0</td>
<td>3</td>
<td>24</td>
<td>15</td>
<td>2</td>
<td>0</td>
<td>10.489</td>
<td>p=0.001</td>
<td></td>
</tr>
<tr>
<td><strong>Health claims</strong></td>
<td>9</td>
<td>14</td>
<td>34</td>
<td>3</td>
<td>0</td>
<td>24</td>
<td>15</td>
<td>2</td>
<td>0</td>
<td>15.894</td>
<td>p&lt;0.001</td>
<td></td>
</tr>
<tr>
<td><strong>Nutritional Information</strong></td>
<td>9</td>
<td>4</td>
<td>45</td>
<td>45</td>
<td>2</td>
<td>24</td>
<td>15</td>
<td>2</td>
<td>0</td>
<td>5.553</td>
<td>p=0.008</td>
<td></td>
</tr>
<tr>
<td><strong>Preservatives used</strong></td>
<td>8</td>
<td>0</td>
<td>2</td>
<td>40</td>
<td>2</td>
<td>24</td>
<td>15</td>
<td>2</td>
<td>0</td>
<td>9.857</td>
<td>p&lt;0.001</td>
<td></td>
</tr>
<tr>
<td><strong>Storage information</strong></td>
<td>7</td>
<td>0</td>
<td>6</td>
<td>53</td>
<td>0</td>
<td>24</td>
<td>15</td>
<td>2</td>
<td>0</td>
<td>3.996</td>
<td>p=0.046</td>
<td></td>
</tr>
<tr>
<td><strong>Cooking instructions</strong></td>
<td>21</td>
<td>0</td>
<td>36</td>
<td>12</td>
<td>0</td>
<td>24</td>
<td>15</td>
<td>2</td>
<td>0</td>
<td>7.651</td>
<td>p&lt;0.001</td>
<td></td>
</tr>
<tr>
<td><strong>Serving size information</strong></td>
<td>0</td>
<td>2</td>
<td>7</td>
<td>7</td>
<td>0</td>
<td>24</td>
<td>15</td>
<td>2</td>
<td>0</td>
<td>0.873</td>
<td>p=0.350</td>
<td></td>
</tr>
<tr>
<td><strong>Country of origin</strong></td>
<td>0</td>
<td>2</td>
<td>7</td>
<td>17</td>
<td>0</td>
<td>24</td>
<td>15</td>
<td>2</td>
<td>0</td>
<td>0.302</td>
<td>p=0.586</td>
<td></td>
</tr>
<tr>
<td><strong>Allergens Present</strong></td>
<td>0</td>
<td>0</td>
<td>4</td>
<td>7</td>
<td>0</td>
<td>24</td>
<td>15</td>
<td>2</td>
<td>0</td>
<td>0.206</td>
<td>p=0.653</td>
<td></td>
</tr>
</tbody>
</table>

Off the total sample size of 200, 199 (99.5%) said that they found low fat/cholesterol free as the most attractive health claim while buying packaged food, 112 (56%) said that they found low calorie as the most attractive health claim while buying packaged food, 81 (40.5%) said that they found sugar free as the most attractive health claim while buying packaged food, 73 (36.5%) said that they found high fibre/whole grain as the most attractive health claim while buying packaged food, 39 (19.5%) said that they found 100% natural as the most attractive health claim while buying packaged food, 19% said that they found no preservatives as the most attractive health claim while buying packaged food, 15 (7.5%) said that they found fortified with extra vitamins and minerals as the most attractive health claim while buying packaged food, 14 (7%) said that they found diet food as the most attractive health claim while buying packaged food, 5 (2.5%) said that they found organic food as the most attractive health claim while buying packaged food and 4 (2%) said that they found low sodium as the most attractive health claim while buying packaged food.
Majority of the females found low fat/cholesterol (100%), low calorie (77%) and high fibre/whole grain (42%) as the top three attractive health claims while buying packaged food whereas majority of the males found low fat/cholesterol free (99%), sugar free (47%) and low calorie (35%) as the top three attractive health claims while buying packaged food. (Figure 3)

![Figure 3. Most attractive health claim](image)

No significant association of amount of information and gender was found ($\chi^2=4.222$, $p>0.005$) whereas a significant association of ease of information and gender was found ($\chi^2=16.667$, $p<0.001$). There was no significant association of gender with ease of understanding ingredient list ($\chi^2=0.5646$), understanding health claim ($\chi^2=1.684$) and understanding nutritional information ($\chi^2=3.046$) ($p>0.05$) (data not shown)

**CONCLUSION**

The usage of the information printed on packaged food is relatively low amongst the consumers while buying packaged food products. Despite a high frequency of purchasing packaged foods, the percentage of males and females reading food labels and components of food labels on a regular basis is very small. Information overload of food labels makes it too time consuming for consumers as it is difficult for them to remove time from their busy schedule and read in detail labels of all the packaged food products that they buy. Another important reason for not reading food labels highlighted here is that labels are too compact and small and it is quite difficult for consumers to read the label without straining their eyes, hence, it becomes impossible for elderly consumers or consumers having difficulty in reading to go through the information printed on labels. Use of Front of Pack (FOP) labelling like the traffic signal format for displaying the nutritional information will be of great help as it is easily understood by a person who is not highly educated and thus will be able to make a healthy choice. Also, it will be less time consuming for the consumers as they will have to just glance on the front side of the pack to know the nutritional value of the product and to judge whether what they are eating is healthy or not. General awareness and education programme regarding food labels need to be planned to increase awareness especially in males.

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