

# Review and analysis of current literature on consumer understanding of nutrition and health claims made on food

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# 1. Key Findings

This document reports the findings of a review and analysis of current literature on consumer understanding of nutrition and health claims on food. Claims do not exist in a vacuum, but are part of wider food labelling information, and as such there is little distinct data on claims. So we cast our net wider and looked at more general information on consumer understanding of food labelling and, from this, drew out data relevant to claims.

- The relationship between consumers, products and claims is complex. Reading food labels, the nature of the consumer, their reason for looking and what information they are looking for are all intrinsically linked and therefore it is difficult to generalise about the impact on consumer understanding of the claim itself. However, consistent messages can be found.
- Consumers are sceptical about claims on food labels and see them as part of manufacturers' marketing attempts. Despite this, consumers use, and are influenced by, label claims.
- Generally claims are far more likely to be interpreted accurately if consumers are familiar with the nutrients the claims refer to, such as fat and salt. Also, consumers consistently like and are more likely to understand simple, brief claims. Longer and more complex claims run a greater risk of being ignored or misunderstood.
- There is a great deal of contradiction within the current body of research in terms of which claims are most accurately understood. The intention of some words and phrases used in claims, such as 'may', are endorsed as being clear in some research reports but not in others.
- Health claims cause consumers the most confusion in terms of their interpretation and understanding. The main reasons for this seem to be because it is a broader category than nutrition or disease risk reduction claims and in some countries they are less prevalent than nutrition claims. They can also be more complex and difficult to understand.
- Disease risk reduction claims are not currently allowed on food in the UK. In the US, Australia and New Zealand disease risk reduction claims face stricter regulation than other types of claims, although there is no evidence to suggest they are more likely to be misinterpreted. The familiarity of the diet-disease relationship is crucial to consumer appeal and understanding, as is whether the consumer feels at risk of the disease described.
- Disclaimers are not popular with consumers and do not aid understanding. In fact, they can add to consumer confusion as the disclaimer can appear to contradict the claim rather than qualify it.

However, brands and brand attributes, such as colour and logos, are crucial to understanding, trust and acceptance of health claims.

It is important to note that consumers do not categorise label claims in the same way as regulators, e.g. nutrient, health or disease risk reduction claims. The evidence shows that consumers do not always understand the difference between claims. For example, once consumers are familiar with a nutrient-disease relationship it was found that a nutrient claim could be interpreted as a health claim.

Consumers also bring concerns and knowledge with them to the supermarket and search for information which relates to those specific concerns, such as about reduction of fat if they or a family member is following a particular diet.

## 2. Context and aims

### Context

Many 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 in the foods they eat (Cragg Ross Dawson, 2004). The FSA's Consumer Attitudes Survey (TNS Research, 2001, 2002, 2003, 2004, 2005c, 2006b) found that over half of respondents always or often looked at food labels before purchasing items. Women are much more likely to read labels than men; this is especially true of women with children, who look at labels to see whether a food contains sugar or 'E' numbers (Synovate, 2005a). However some people who check food labels do so simply to check the 'best before' date (TNS Research, 2006b). On the whole, people looking at nutrition labels on food items do so to check either the fat, salt or sugar content of the food. The main reasons for not reading a label are a lack of time and familiarity with a product, but information overload and confusion are also important (Knox et al, 2001).

There is also considerable evidence of scepticism of nutrition claims on packaging. For example, in qualitative research, Knox et al (2001) found that consumers were mistrustful and sceptical of claims about fat levels and additives on food packaging. This is confirmed in quantitative research in the FSA Consumer Attitudes Survey (TNS Research, 2004, 2005c). Just over half of UK respondents stated that they were concerned about the accuracy of the health-related claims made about some foods in both the 2004 and 2005 surveys.

Although significant proportions of people look at labels, understanding amongst certain groups is poor. For example, when asked how many grams of fat were contained in 100 grams of a product that claimed to be '80% fat-free', only 60% responded accurately in the FSA Consumer Attitudes Survey (TNS Research, 2004), and 26% answered "don't know."

A new European Regulation (EC) No. 1924/2006 on nutrition and health claims made on foods has recently been developed, amongst other things to ensure a high level of protection for consumers and to facilitate their choice. The Regulation requires that claims made on food should be well understood by the 'average consumer' and not be ambiguous, false or misleading.

## Aims

A wealth of research has already been conducted into how, and in what way, consumers understand the information on food labels. The FSA commissioned EdComs, a specialist educational consultancy, to bring together findings from a range of primary and secondary English language research reports to provide a base of knowledge on consumer understanding of claims. Gaps in our knowledge of consumer understanding were also identified to inform the development of future research.

This research report provides:

- a review of recommendations made in research in the area of consumer understanding of nutrition, health and disease risk reduction claims, taking into account the balance of evidence and explaining the process for reaching these conclusions;
- analysis of existing information on how consumers understand claims;
- information on differing levels of consumer understanding of claims across the population, in order to address the needs of the 'average consumer';
- information on how consumers understand labelling in general, where inferences can be drawn to inform our knowledge of consumer understanding of claims;
- information on gaps in research on consumer understanding of health and nutrition claims, in order to inform the direction of any future consumer research the FSA conducts.

## Report structure

Section 3 describes the methodology used in this research, including the scoping of the literature and the analysis and reporting.

Section 4 considers research conducted on consumer use and understanding of labelling in general. It investigates demographic factors affecting the use of food labels, reasons for, and barriers to, looking at labels, what information consumers look for and how frequently they do so. It also considers consumer understanding of labelling where findings can be used to draw inferences about consumer understanding of claims.<sup>1</sup>

Section 5 provides analysis of existing information on how consumers understand nutrition, health and disease risk reduction claims. Section 6 draws conclusions from the data and makes recommendations for further research; it also identifies gaps in the research to direct further research.

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<sup>1</sup> It is important to note that the information in this section is purely contextual and is not the main focus of the research. We have only included reports which give information that can be related to consumer use and understanding of claims.

# 3. Methodology

## Scoping

In order to identify the most relevant research, we initially conducted a scoping exercise. We searched for reports written only in English, which meant that we considered research mainly from the UK and English speaking countries. Research from the US and UK predominates, although the review also included data from Australia, New Zealand, Canada, the Netherlands, Sri Lanka, Finland and Sweden.

We identified research in two ways:

1. Searches of journal articles, books and conference proceedings, both UK and internationally focused, using specialist online databases
2. Website searches and enquiries with relevant NGOs and governmental organisations, both in the UK and internationally

As relevant reports were identified through these avenues, the references within these reports were followed as a way of identifying further relevant research reports.

### **Searches of journal articles, books and conference proceedings**

We searched a selection of general and specialist databases in order to locate relevant research conducted in the UK and internationally. The databases which were most successful at identifying relevant reports are listed below. Further details about the databases are provided in Appendix 1.

#### University/academic/public:

- National Library of Medicine: PubMed
- ERIC
- British Library Catalogue

#### Commercial specialist providers:

- IngentaConnect
- Infotrieve
- HighBeam

#### Journal publishers:

- Blackwell

### **Searches and enquiries with relevant NGOs and governmental organisations**

We searched the websites of relevant NGOs and government organisations in order to locate research. In the UK we found that the following organisations were useful:

Governmental:

- FSA
- COI

Market research organisations:

- Synovate (via COI)
- Cragg Ross Dawson (via COI)
- Ipsos MORI

NGOs:

- British Nutrition Foundation
- British Dietetic Association
- The Food Commission
- National Consumer Council
- Which?

Industry:

- Food and Drink Federation
- Institute of Grocery Distribution

Internationally, we searched the following organisations:

US:

- Department of Health and Human Services
- Office of Nutritional Products, Labeling, and Dietary Supplements
- Centre for Food Safety and Applied Nutrition
- US Food and Drug Administration
- Food Safety and Inspection Service
- International Food Information Council Foundation

Australia:

- Health departments in each of the State or Territory governments
- Food Standards Australia New Zealand
- National Heart Foundation

Canada:

- Health Canada
- Canadian Food Inspection Agency
- Canadian Council of Food and Nutrition

New Zealand:

- Ministry of Health
- Food Standards Australia New Zealand
- New Zealand Food Safety Authority

South Africa:

- South Africa Bureau of Standards
- Department of Health
- The South African Association for Food Science and Technology

## Decisions on including or excluding reports

Through our searches of the above databases and organisations a wealth of research was identified. However not all of these reports were relevant. Any reports which considered consumer use or understanding of nutrition, health and/or disease risk reduction claims were automatically included, as this was the main focus of this research. Also reports which focused on consumer understanding and/or use of food labels more generally were included, where we felt the information would provide more contextual data which could be

related to consumer understanding of claims, or information about which consumers use food labels.

A number of reports were identified which focused on the following areas:

- terms used in labelling to identify allergens in food, e.g. 'may contain nuts';
- information on the quality of fruit and vegetables in supermarkets;
- use of marketing terms, such as 'homemade', 'fresh'.

It was decided that reports which focused only on these issues were not relevant to this research because they did not offer any insight into consumer use and/or understanding of nutrition or health claims, nor did they provide any contextual information. Any reports, however, which focused on these areas but also considered nutrition, health and/or disease risk reduction claims, were included.

### Quality of evidence

Each report was assessed for the quality of its methodology and hence its findings. From this assessment, a judgement was made on its suitability for inclusion in the analysis exercise that preceded the writing of the report. As the research gathered was of mixed methodologies, it would not have been appropriate to apply mathematical tests for correlations. Rather, each methodology was judged for its reliability and validity according to the researcher's judgement informed by ideas of perfect studies of its type.

Judgements on reliability were made based on to what extent the research would produce the same results if repeated. In the case of quantitative studies, judgements on the size and representativeness of the sample, external observers' views on robustness, and quality of questioning were taken. For example, where a quantitative study demonstrated a large sample representative of the audience in question, showed positive observations from outside observers, and used a questioning structure likely to be interpreted in the same way across the sample, a study was judged to be wholly reliable.

Judgements on validity were made based on to what extent each study measured what it purported to measure. In the case of qualitative studies, judgements were made on the extent to which the methodology tested the hypotheses, how far the methodology drew causal relationships between variables, and the degree to which the findings could be generalised. For example, where a qualitative study demonstrated the negation of bias, chance and inaccurate interpretation and, as a result, demonstrated causal relationship between the identified factors, it would be judged as wholly valid.

For every degree that each assessed study deviated from the perfect methodological model for its type, it was judged as less reliable. Where it was considered that the methodology had a sufficient number of weaknesses to render the findings worthless, the study was judged to be unreliable and, as a result, excluded from the analysis. Where a study was identified as having

weaknesses that were not fundamental to the study's overall reliability then it has been referred to as 'indicative research'.

## 4. Reading food labels

This section considers consumer use and understanding of food labelling more generally. The term food label refers to all information on food packaging, including claims, nutritional information, ingredient lists, 'best before' and 'use by' dates. The focus here is on all of these, except information on claims. Although this section does not look at information specifically on claims, findings from research into other forms of labelling can be used to draw inferences and parallels to consumer use and understanding of claims.

This section investigates which types of people are most likely to read labels, their reasons for reading labels or not and the types of information they are looking for. After considering all of this information we will discuss consumers' understanding of the information they read on labels.

The information in this section is purely contextual and is not the main focus of the research. By including reports which give information on consumer use or understanding of food labels, we can look at how this might be related to consumer use or understanding of claims.

### 4.1 Summary

*Overall, women, especially mothers, with higher levels of education and with higher incomes are most likely to read food labels. The main reasons for considering food labels are because: consumers are interested in nutrition and health, someone in the household has a food allergy, consumers' religious beliefs prohibit them from eating certain ingredients and/or there are children in the household.*

*The main barrier to reading labels is lack of time. Other barriers include: lack of understanding, familiarity with the product, lack of consistency in the format of labels, lack of agreement over what constitutes a healthy diet and problems with the style and format of the labels, e.g. the text is too small for older consumers to read.*

*The main reason people are looking at food labels is to locate information about nutrients they are either looking to avoid or consume more of, such as fat or fibre respectively. Aside from this, consumers also look at ingredient lists.*

*Although consumers are reading food labels more frequently than in the past, levels of understanding do not appear to be growing. Consumers have problems understanding some of the terminology used and often find it difficult to make calculations to check they are eating a balanced diet.*

## 4.2 Terminology

The terminology used in the area of food labelling can be confusing and is not consistent across the reviewed reports. For clarification in this research we have defined the following terms:

- Food label: refers to all information on the packaging
- Nutrition label: refers to information on the back of the product detailing nutritional information about the product, such as number of calories and levels of fat
- Ingredient list: refers to the ingredients used to make the product

## 4.3 Demographic factors

The majority of consumers actively look for some information about products they buy when food shopping. Only 5% claim not to look for any information (Institute of Grocery Distribution, 2004).

Research has identified three typologies of consumers who look at food labels: those who are already motivated to use a food label, those who are not, and those who would use the label if it were made easy (Levy et al, 1991). Levy et al suggest that motivated consumers will read all types of food label, regardless of what the information is and how difficult it might be to understand. On the other hand, the 'not motivated' are unlikely to ever use food labels, regardless of how they are designed. 60% of consumers fall between these two groups and are likely to read well designed labels.

The likelihood of reading nutrition labels<sup>2</sup> on foods is linked to the following:

- gender
- age
- ethnicity
- level of education
- employment status
- income level
- household type

It is likely that people who read food labels on food packaging will be the same types of people who read claims and therefore it is interesting to discuss each of these factors in turn below.

### *Gender*

A number of studies<sup>3</sup> 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

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<sup>2</sup> See Section 4.2, Terminology, for a definition of nutrition label.

<sup>3</sup> Prathiraja and Ariyawardana, 2003; Hawkes, 2004; Nayga, 1999 and 1997; Cowburn and Stockley, 2003; Neuhouser et al, 1999; Scott and Worsley, 1994; Ipsos RSL, 2000.

less likely to agree that nutrition information on labels is useful and are generally less interested in nutrition and health than women (Nayga, 1999).

Moreover, US research has found that on the whole men tend to focus on ingredient lists<sup>4</sup>, rather than nutrition labels (Bender and Derby, 1992). However if they were to look for specific information on the nutrition label, it would be in relation to cholesterol (Neuhouser et al, 1999). Women on the other hand tend to pay attention to information about fat, calories, vitamins, and minerals (Drichoutis et al 2005, cited in Drichoutis et al, 2006; Neuhouser et al, 1999) and they tend to use both nutrition labels and ingredient lists (Bender and Derby, 1992).

### *Age*

The data on age and how it impacts upon the likelihood of a person to read a food label is inconclusive. Some UK and US research<sup>5</sup> has shown that younger people are more likely to read nutrition labels before making purchases than older people. However, other UK and European-wide research studies concluded that older people were more likely than younger people<sup>6</sup> to check nutrition labels (Wills and Grunert, 2003-2006; Synovate, 2003). Specifically, US studies found that as age increases so does the likelihood of using information about fat content, cholesterol content and health benefits (Nayga, 1996).

It should be noted that some of these findings may be country specific, e.g. interest in cholesterol content tends to be associated with the US.

A review of five US Health and Diet surveys found that older people are more likely to check ingredient lists (Bender and Derby, 1992), whilst younger people are more likely to consult both the ingredient list and the nutrition label (Bender and Derby, 1992). In particular a UK survey found that younger people are more likely to look at the calorie and fat content (Synovate, 2003).

### *Ethnicity*

A UK tracking study (TNS Research, 2007), found that non-white respondents consulted food labelling more than white respondents. However, the same study also found that a higher proportion of non-white people were vegetarian so it is likely they were looking at the ingredients list to avoid non-vegetarian ingredients. A further study found that Black Caribbean respondents were the most likely minority group to consider labels (Ipsos RSL, 2000). Data from the US Nationwide Food Consumption Survey (cited in Ni Mhurchu, 2006) concluded that white households seem more likely to obtain nutrition information from labels than households of other ethnic groups.

### *Education level*

In a US study, Bender and Derby (1992) found that people with a higher level of education are more likely to read food labels than people with lower levels

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<sup>4</sup> See Section 4.2, Terminology, for a definition of ingredient lists.

<sup>5</sup> Cole and Balasubramanian, 1993; Nayga, 1997; Neuhouser et al, 1999; Ipsos RSL, 2000.

<sup>6</sup> Unless stated studies do not give specific ages for people they classify as 'younger' or 'older'.

of education. However, this does not automatically mean that less educated people do not engage in any information searching on labels, rather they focus just on the nutrition label, whereas higher educated people consult both the nutrition label and ingredient list.<sup>7</sup>

#### *Employment status*

No conclusion can be drawn about label use pertaining to work status. Some research in the US found that unemployed consumers (Nayga, 2000; Nayga et al, 1998) or retired household heads (Schupp et al, 1998) were more likely to use nutrition labels. However, research by Drichoutis et al (2005, cited in Drichoutis et al, 2006) and Nayga (1997) found that it is working people who are more likely to use the nutrient information.

#### *Income level*

Research<sup>8</sup> from the US and Canada shows that people who have a higher income level are more likely to read labels than people with lower income levels; specifically they are more likely to read information on calories, sodium, fibre and fat (Nayga, 1996).

Research involving 181 low-income shoppers in the US found that overall 35-45% seldom/never read labels while shopping (McArthur et al 2001, cited in Ni Mhurchu, 2006). McArthur et al hypothesise that this was due to lack of perceived benefit in using the label since, when tested, study participants generally appeared competent in performing tasks using the label.

Linked to consumers' income level, is the finding that consumers who attach importance to price – perhaps because they are on a lower income – are usually less likely to use labels (Drichoutis et al, 2006). This has been attributed to two main factors: that income constraints limit the amount of choice consumers have over products and/or the fact that consumers are actively looking for price information, which impacts upon their examination of nutritional information, either because of a lack of time or to avoid information overload (Drichoutis et al 2005, cited in Drichoutis et al, 2006; Nayga, 1996). However, those who attach importance to nutrition are more likely to search for nutrition information regardless of their income level (Drichoutis et al, 2006).

#### *Household type*

Consumers who live in smaller households, but with at least two people living there, are more likely to report reading labels than consumers from larger households (Guthrie et al, 1995). Research in the US by Govindasamy and Italia (1999) found that households with four or more members were 17% less likely to read labels. However, research by Wills and Grunert (2003-2006) found that being a parent increased a person's likelihood of reading labels and therefore would suggest that households with at least three people would be more likely to read labels.

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<sup>7</sup> Hawkes, 2004; Guthrie et al., 1995; Cowburn and Stockley, 2003; Neuhouser et al, 1999; Nayga, 1997, 2003; Nayga et al, 1998.

<sup>8</sup> Hawkes, 2004; Nayga et al, 1998; Nayga, 1999.

Households in non-city or rural areas are more likely to use nutrition labels than urban households (Drichoutis et al, 2006).

Within households, grocery shoppers but not meal planners<sup>9</sup> are also more likely to engage in nutrition information searches (Drichoutis et al, 2006), although Guthrie et al (1995) found that 71% of meal planners claimed to look at nutrition labels at least sometimes.

#### 4.4 Reasons for reading labels

Data on the reasons why people read labels on food products is relatively sparse. What data there are suggests that people who have specific diet related beliefs or health concerns are more likely to read labels. For example, people who want to eat a healthy balanced diet<sup>10</sup>, people with religious beliefs, food allergies in the household or those seeking to avoid non-vegetarian ingredients (TNS Research, 2007), or those who are buying products for children and want to limit the amount of sugar and/or additives the child consumes.<sup>11</sup>

#### 4.5 Information looked at on food labels

The main reason that consumers look for labelling information is to check levels of nutrients contained in the product, such as fat or calories – the most popular nutrients looked for. Aside from this, some consumers are also looking for information on what ingredients are contained in a product and, to a lesser extent, the 'best before' or 'use-by' date.

#### **Searching for nutrients**

The overriding reason why people check nutrition labels is to search for information on nutrients contained in the product they are trying either to avoid, such as fat, or that they are trying to consume more of, such as fibre. A Canadian study found that the same proportion of people looked at labels to see whether the product was rich in nutrients or in ingredients they were trying to eat more of and for information on certain nutrients or ingredients they were trying to eat less of or avoid (National Institute of Nutrition, 1999).

In terms of nutrients people are looking for, fat and/or calories are mentioned most frequently.<sup>12</sup> In a pan-country study (ACNielsen, 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

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<sup>9</sup> Grocery shoppers as the name suggests are people within the household who go to the shop and purchase groceries for the household to eat. Meal planners are people within the household who decide on the meals the household will eat. In some families these two roles will be carried out by the same person, whilst in other households these tasks will be carried out by separate individuals.

<sup>10</sup> Drichoutis et al, 2006; Cowburn and Stockley, 2003; Neuhouser et al, 1999.

<sup>11</sup> Wills and Grunert, 2003-2006; Paterson et al, 2001, cited in Cowburn and Stockley, 2003; Synovate, 2005a.

<sup>12</sup> Abbott, 1997; Cowburn and Stockley, 2003; Hawkes, 2004; Black and Rayner, 1992; Navigator, 2005; Ipsos RSL, 2000; Synovate, 2003.

consumer survey where the most commonly checked nutrients on food labels were fat (56%), salt (44%) and sugar (44%) (TNS Research, 2005c). 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 organisations which aim to help people to lose weight (Synovate, 2005a). The findings above reinforce the findings of Levy et al (1992), who found that the most important factor in consumer understanding of nutrition claims was familiarity with the nutrient referred to. See Section 5.1.1 for more information.

Although sugar was not mentioned as frequently as fat and calories as something to check labels for (Black and Rayner, 1992), 'added sugar' was often seen as something to be avoided. Additionally, parents shopping for products for their children saw sugar as an important nutrient to check for (Synovate, 2005a).

As with sugar, salt information was sometimes looked for, but to a lesser extent than fat and/or calories (Black and Rayner, 1992). People who had health problems, such as high blood pressure or heart concerns, were most likely to check for this information (Navigator, 2004). One study reviewed, although not identified, by Cowburn and Stockley (2003) in the US focused on women aged 65 and over with type II diabetes. It found that respondents looked for sodium content in foods, along with sugar and cholesterol, as these were the nutrients they felt it was most important to monitor with their diabetes. They were not at all interested in foods' calorie or fat content. These findings suggest that consumers bring information with them to the supermarket and search for information which relates to their specific concerns. Similar findings were found when considering claims made on packaging, see Section 5.2.1.

The least accessed nutritional information related to protein, carbohydrates and vitamins (TNS Research, 2007). These were different findings from the indicative research from Higginson et al (2002) who found that trans fats, polyunsaturated and monounsaturated fats and sodium were looked for least. These different findings may be the result of the different methodologies used in each of the studies, differences in terminology used when questioning consumers or changes in consumer knowledge over time, as the studies took place five years apart.

### **Searching for ingredients**

Along with nutritional information, some consumers check ingredient lists on product labels – in UK research almost half of respondents (46%) looked at ingredients lists (TNS Research, 2007). This is especially true of people with specific concerns, for example, particular 'E' numbers or a wheat allergy (Navigator, 2004). These findings build on the ones identified above, that consumers bring information with them to the supermarket.

#### 4.6 Barriers to reading labels

On the whole, people who face barriers to label reading are most likely to be older, from lower socio-economic groups and people with lower educational and income levels (National Institute of Nutrition, 1999).

Some people who do not read labels will simply not be interested in doing so and this will be the main barrier to seeking such information. However, other people may understand the importance of reading labels but other barriers will stop them from doing so, such as time, lack of understanding and the general style and format of the labels.

##### **Lack of understanding**

Many consumers report being unsure about what information on nutrition labels is the most important and therefore what they should pay most attention to. Moreover, some consumers are unsure how certain nutrients such as sugar, salt and fat impact upon their health and therefore why they should avoid them. Likewise, research in the UK by Synovate (2005a) found that several respondents were unfamiliar with some of the terms used on packaging regarding nutritional information, such as sodium. One could conclude, therefore, that any claims about unfamiliar nutrients may have limited impact on consumers if they do not understand the impact of consuming the nutrient.

##### **Time**

The most commonly cited barrier to reading labels is time (Wills and Grunert, 2003-2006; Beatty and Smith, 1987). Studies with women shoppers in the UK found that respondents described shopping as hard work and time consuming. Therefore, to stop and read labels on products purchased would only make the task even more time consuming (Black and Rayner, 1992). Similarly, a study in Canada found that almost a quarter of respondents (23%) said that it was too time consuming to check labels of products they purchased (National Institute of Nutrition, 1999).

Further evidence from the US says that people with low levels of time pressure, as approximated by high levels of time spent in grocery shopping, are more likely to use nutrition labels (Nayga et al, 1998). More specifically, low levels of time pressure are positively correlated with the use of cholesterol information and negatively with the use of vitamins/minerals information (Drichoutis et al, 2005, cited in Drichoutis et al, 2006).

The findings could be interpreted in two ways when considering the effect time could have on the likelihood of consumers reading claims. Firstly, they could imply that consumers would be too busy to read claims made on packaging, or secondly that consumers would be more likely to read claims because they are shorter and would take less time to read than nutrition labels.

## Font, layout and style

For many consumers the barriers to reading labels actually stem from the labels themselves. For some people, often in the older age range, the text is too small for them to comfortably read and as a result they do not even try to read labels.<sup>13</sup> Some other consumers feel there is simply too much information contained on food packaging and they find it difficult to know what they are supposed to be looking for (Klopp and MacDonald, 1981). Similarly some consumers describe a feeling of 'information overload' on labels and this discourages them from using any of the information available to them (Synovate, 2005a).

One study (EUFIC, 2005) found that consumers fully appreciate the benefits of nutritious, healthy eating but feel that the language used on food labels is complex and technical and somehow removed from eating which is, by contrast, simple and immediate.

As a result, one could deduce that in order to make claims user-friendly, they should be written in a font size big enough for people to comfortably read. It is also important for there not to be too much other information surrounding the claim. Colour coding can also help. Studies from the UK and Europe have shown that use of colours in food labelling to indicate 'high' or 'low' levels of nutrients is well understood by consumers (Synovate, 2005b).

## 4.7 Frequency

A number of studies have found that consumers report that they frequently read nutrition labels on products. For example, a pan-country study by ACNielsen (2005, cited in Ni Mhurchu, 2006) found that only 8% of respondents never look at labels, and a Sri Lankan study carried out by Prathiraja and Ariyawardana (2003) found that only 2% of respondents said that they never look at the label. Similar findings were reported by Wills and Grunert (2003-2006) who found that self-reported perception of label checking was high with 20% of respondents reporting they always check labels and 50% at least occasionally.

Yet indicative research from Higginson et al (2002) found that people claim to read food labels far more than they actually do with observational studies, such as accompanied shopping trips, suggesting lower percentages. In the UK, research by Wyn Thomas et al (1997, cited in Cowburn and Stockley, 2003) found that shoppers actually used nutrition labels on products for less than 1% of purchases, although this increased when shoppers were prompted to shop for healthier products.

Similar findings to those above would be expected when consumers are asked how frequently they read claims on food packaging.

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<sup>13</sup> EUFIC, 2005; Cowburn and Stockley, 2003; Black and Rayner, 1992; Ipsos RSL, 2000.

#### 4.8 Understanding of food labels

Use of nutrition labels does appear to be increasing over time in countries such as the US and Canada, but a corresponding increase in understanding is not apparent (Ni Mhurchu, 2006). Older people and those with lower levels of education or income are least likely to understand the label (Hawkes, 2004). Research by TNS Research (2007) undertaken in the UK found that around two thirds of respondents (63%) felt that labels were at least quite easy to understand. However, around a quarter (23%) felt that labels were very hard to understand. It is important to keep in mind that self-reported levels of understanding are not the same as actual levels of understanding; self-reported levels are likely to be inflated.

American research found that on the whole, consumers want labels to be in a short, easy-to-read, easily interpreted format (Levy et al, 1991). For the majority of consumers this means less numerical information on the label and simpler terminology (Abbott, 1997).

##### *Confusion over terminology*

When it comes to looking at the nutrition labels the majority of people will have an understanding of what most terms mean, for example, calorie, salt, sugar, fat and fibre, although this will vary between countries. However it is unlikely that consumers will understand all the information (EUFIC, 2005).

Research in Canada (National Institute of Nutrition, 1999) found that 83% of respondents understand some of the information on nutrition labels, with 43% stating that they understood it very well. However, there were some aspects of the label that were confusing to consumers, or prone to being misunderstood. There was a lack of understanding about the different terms used to refer to the same nutrient – described by some consumers as the difference between ‘kitchen’ terms and ‘technical’ terms (EUFIC, 2005) – such as calories and kilojoules (Hawkes, 2004).

Other difficulties arise when there is more than one ‘type’ of a nutrient. For example consumers have a general grasp of what fat is, but very few understand the difference between polyunsaturated fats and saturated fats (Synovate, 2005a). The distinction between salt and sodium also caused a problem for many consumers who did not understand that they are not the same.<sup>14</sup> The relationships between calories and energy, and sugar and carbohydrate, as well as the terms cholesterol and fatty acid were also not understood by consumers (Cowburn and Stockley, 2003).

The key learning to take from the findings above is that claims need to be in simple, familiar, non-technical language in order for the majority of consumers to understand what they mean.

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<sup>14</sup> Synovate, 2005a; Cowburn and Stockley, 2003; EUFIC, 2005; Black and Rayner, 1992.

### *Numerical information*

Most studies show that consumers prefer, and are better at, using adjectival or visual information than numerical information.<sup>15</sup> There are numerous studies that 'test' consumers on numerical information and find that a large proportion fail to interpret the information correctly. Research in the US into consumer understanding of nutrition labels found that consumers faced difficulties when trying to make diet-planning calculations, that is consider all the food they are to eat in one day and check that they do not exceed their Daily Values (American equivalent to Guideline Daily Amounts) of each nutrient.<sup>16</sup>

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<sup>15</sup> Synovate, 2005b; BEUC, 2006; Navigator, 2005.

<sup>16</sup> Levy and Fein, 1998; Shine et al, 1997a, 1997b.

## 5. Consumer understanding of nutrition, health and disease risk reduction claims

The new Regulation differentiates between claims on the basis of three broad categories: nutrition claims, health claims and disease risk reduction claims. The research literature agrees that consumers do not differentiate on this basis (National Consumer Council, 1997b). A study from Finland demonstrated that the strength of a claim (from a claim that a food contains a component through to a claim that the component can cure a disease) does not automatically increase the perceived benefit (Urala et al, 2003).

There is much confusion and inconsistency in the literature on how consumers differentiate between claims. A US study found that structure function (health) claims can lead to equivalent beliefs as disease risk reduction claims (Russo France and Fitzgerald Bone, 2005). The authors also state that once consumers are familiar with a nutrient-function relationship, such as calcium and bone health, a mere nutrient content claim can be interpreted as a health claim.

A common finding from pan-country studies is that health claims on foods are seen by consumers as useful. When a product features a health claim, consumers view it as healthier and say they are more likely to purchase it.<sup>17</sup>

There is ongoing debate about the potential for health claims to improve diet. A large-scale study correlating the use of nutrition labels with diet quality found that the use of health claims had a positive influence on diet quality, suggesting that people took note of, and understood, such claims (Nayga, 2003). However, although some consumers may understand health claims other researchers argue that health claims on food alone cannot address the need for consumer education in this area. Claims are better thought of as a means to identify nutrients once consumers have been informed of their existence and the reasons for consuming them (Williams, 2005b).

It does seem to be the case that claims only have a limited capacity to communicate because perceptions of health benefits seem largely based on prior beliefs about the product rather than specific information provided by the claims and also consumers are often sceptical about claims. One study in the US found that more than 20% of respondents did not acknowledge that a product had any health benefits, even when carrying an explicit claim (Williams, 2006a).

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<sup>17</sup> Williams, 2006b; Bech-Larsen and Grunert, 2003; TNS Research, 2005a.

The wording of claims can significantly alter perception and appeal. For example Bruhn found that consumers in focus groups rejected the health claim 'improves gastrointestinal health' because people did not like the term 'gastrointestinal' (Bruhn et al, 2002).

In the absence of a coherent organising system arising from consumer research, we have structured this section according to the standard regulatory classifications – nutrition claims, health claims and disease risk reduction claims – with the caveat that this is only one of the possible ways to differentiate between claim types.

While regulatory authorities would not consider information about additives, colours or flavours (such as highlighting their absence) to be claims, consumers see them as an indication of healthiness.

## 5.1 Nutrition claims

### Summary

*Consumers like the use of short adjectival descriptors (such as 'low', 'free', 'no added', 'a good source of X') in nutrition claims as they are readily understandable and they allow them to make quick comparisons between products. However, although consumers find it easy to gather general impressions from adjectival information, awareness about correct definitions is low.*

*There is also some evidence that consumers can be misled by some types of simple adjectival information. For example:*

- *Consumers fail to distinguish between fixed-criteria claims such as 'low' and relative claims such as 'reduced'.*
- *There is some contradiction between different research reports about whether consumers understand that 'no added sugar' could mean that the product has high levels of naturally occurring sugar.*

*Research shows that information about familiar nutrients, such as fat and salt, are more likely to be interpreted accurately than information about less familiar nutrients.*

### 5.1.1 Nutrition claim discussion

European Regulation No. 1924/2006 on nutrition and health claims made on food defines a 'nutrition claim' as any claim which states, suggests or implies that a food has particular beneficial nutritional properties. Examples of nutrition claims in common international use include:

- High in fibre
- Low fat
- A good source of X (where X is a nutrient)
- Fat free

In the US, New Zealand and Australia, nutrition claims are the most common type of claim, with around 50% of products carrying them (Ni Mhurchu, 2006). Guidance on these types of claims has been available in many countries for several years, even where there has not been any legislation relating to them.

The literature generally agrees that nutrition claims are liked by consumers and influence purchase (Williams, 2006a). There is less controversy over whether consumers understand nutrition claims than whether they understand health claims and disease risk reduction claims. There also seems to be less research conducted about nutrition claims than disease risk reduction claims.

The familiarity of the nutrient referred to in the claim appears to be the most important factor in consumer interpretation. Consumers are more likely to interpret information about familiar nutrients more accurately than other less familiar nutrients. In a mock label test, which included some false information, US consumers interpreted information about familiar nutrients more accurately than other less familiar nutrients (Levy et al, 1992). A similar study in the US found that consumers were more likely to correctly interpret information about fat than fibre (Garretson and Burton, 2000). A 1997 qualitative study (National Consumer Council, 1997a) in the UK found that nutrients and other substances which were unfamiliar, such as taurine and omega 3, are more likely to be questioned by consumers, though it may be that those nutrients have become more accepted in 2007.

The use of specific words and phrases is important in how accurately consumers interpret nutrition claims and how appealing the product is to them. Some of the more common words and phrases used in nutrition claims are discussed in more detail below.

### *Low*

Most research indicates that consumers prefer adjectival markers such as 'low', 'medium' and 'high' to numerical markers (Levy et al, 1992). The reason for this appears to be that consumers are able to make a rapid judgement about the healthiness of a product without having to do calculations (FSA, 2001).

However, there are some problems with the use of 'low' as certain consumers are not sure exactly what this term means (Knox et al, 2001).

There is ambiguity in the literature as to how beneficial claims such as 'low' are to health. Some authors have suggested that consumers act as if they hold nutrient or health 'budgets' (Teisl and Levy, 1997) and that low fat claims can lead consumers, particularly those who are overweight, to overeat snack foods (Wansink and Chandon, 2006) as a result of believing that products with claims that they are 'low fat' also means that they are low in other nutrients such as salt, sugar and calories, which is not always the case.

### *Comparative claims*

The use of comparative claims such as 'reduced', 'increased' and 'less than' are very familiar to consumers, though they are likely to express scepticism about them in focus group discussions. An Australian qualitative study (Donovan Research, 2003b) discussed comparative claims with consumers in some detail and found that they:

- believed that comparative claims needed verification using the nutrition label;
- interpreted 'reduced' as meaning less of the indicated nutrient than the regular brand;
- were more sceptical about 'reduced' than 'low', but found it difficult to distinguish between them;
- saw the term 'increased' as less familiar and less relevant.

Consumers appear very likely to misinterpret comparative claims. A common finding is that consumers are not distinguishing between claims such as 'low' and 'lower' (Murphy et al, 1998). Also, some consumers are not sure what terms such as 'light' and 'diet' mean (Knox et al, 2001) and specifically whether they refer to fat, sugar or other attributes, such as energy and colour (Donovan Research, 2003a). One Australian survey found that only 11% of people knew that a product labelled 'reduced in salt' meant that the product may contain more salt compared to similar food labelled 'low salt' (Donovan Research, 2001). Another study found that the phrase 'less than ½ the sodium of other leading brands' misled some consumers into thinking that the product was low in sodium (Murphy et al, 1998).

### *Free and % fat free*

The term 'free' is liked on the basis of being easy to understand (Donovan Research, 2003a; Williams, 2006b). Whilst indicative research shows that the term '% fat free' is also liked (Chan et al, 2005) there appears to be a growing scepticism about it among consumers, possibly arising from media attention (Donovan Research, 2001).

Consumers appear very likely to misinterpret '% fat free' claims. A UK study found that over half of respondents incorrectly thought that a product claiming to be '90% fat free' would be lower in fat than one claiming to be 'low fat' (Consumers' Association, 2005). Likewise, in a UK consumer study (TNS Research, 2004), only half the sample (51%) could give the correct answer when asked how many grams of fat per 100g were contained in a product that claimed to be '80% fat free'. This is a clear indication that people do not fully understand these types of claims when presented to them on food packaging. Certain subgroups are particularly likely to misinterpret '% fat free' claims, namely older (66+) and younger (16-25) groups and people from lower socio-economic groups (TNS Research, 2006b).

### *No added*

The term 'no added' is familiar to consumers in reference to a range of nutrients such as sugar and salt, as well as additives and colourings. An Australian study found that although regulatory authorities would not consider

claims about additives, colours or flavours to be nutrition claims, consumers do because they are seen to indicate healthiness (Donovan Research, 2001).

This survey found that the majority of consumers widely understood that the term 'no added sugar' did not mean there was no sugar in the product (Donovan Research, 2001). However, some consumers did believe that the term meant the product was sugar free.

#### *High in X/A good source of X*

Consumers are relatively aware of the use of 'high in X/a good source of X' (where X is a nutrient). An Australian survey (Donovan Research, 2003c) found that, when prompted, 70% of respondents were aware of these claims and 37% claimed to use them when shopping for food. Like many nutrition claims they are associated most commonly with breakfast cereals.

Consumers typically express scepticism about nutrition claims in surveys but these claims enjoy reasonable consumer confidence, with 57% saying they were 'pretty sure they could trust what it says'.

However, actual understanding of what 'a good source of X' means in terms of Recommended Daily Allowances is very low. An Australian survey tested responses to the terms 'source of', 'good source of' and a potential new claim 'excellent source of'. It found that consumers understand that all three terms were relative and 'a good source of' inferred larger amounts of the nutrient than 'a source of'. However, there was no awareness that these terms have a regulated definition based on percentage Recommended Daily Allowances (Donovan Research, 2003b).

As discussed earlier, there is a large difference in consumer interpretation of terms such as 'high in X/a good source of X' depending on whether they refer to familiar or unfamiliar nutrients. More familiar nutrients are more accurately interpreted and more positively perceived.

## 5.2 Health claims

### **Summary**

*The most important factor in how health claims are perceived is whether the consumer is familiar with them, and this can grow over time.*

*Overall, consumers prefer simple, non-technical claims. They also express a preference for positively phrased claims, rather than those using negative terms and references to disease. There is a lot of variation in the plausibility of the claim depending on the product type. Certain product types, such as cereal, spreads and yoghurt, appear to be more established in the health claim market and consumers expect to see claims on them.*

### **5.2.1 Health claims discussion**

The European Regulation No. 1924/2006 defines a 'health claim' as any claim that states, suggests or implies that a relationship exists between a food

category, a food or one of its constituents and health. The following examples are health claims found on UK products (Consumers' Association, 2003):

- Can help keep digestive system in balance
- Bone friendly
- Helps with healthy bones, concentration, energy and heart health
- Rich in soluble fibre which...can help maintain a healthy heart

In the US, New Zealand and Australia health claims are less common on products than nutrition claims, with around 6% of products carrying health claims (Ni Mhurchu, 2006). Some literature suggests that consumers actually prefer health claims to nutrition claims because of general difficulties in interpreting nutritional information (Williams, 2006a; National Institute of Nutrition, 2000). Yet health claims are the claim category most likely to confuse consumers and be misinterpreted. The main reasons for this appear to be that:

- Health claims are a broader category than nutrition claims and disease risk reduction claims. Health includes notions of energy, wellbeing and happiness, as well as concepts of illness and disease.
- Health claims in the US (but not in the UK or Europe) include a spectrum of claim strength within the category. They are often split into subsections such as 'structure function' (e.g. nutrient X supports/maintains a certain bodily function) and 'enhanced health' (e.g. nutrient X improves a certain bodily function).
- Some research studies and regulatory definitions differentiate between major and minor health complaints as well as certain 'biomarkers', in terms of how/whether they are classified as health claims or disease risk reduction claims.
- In the reviewed literature, health claims are less prevalent than nutrition claims, with fewer products displaying this type of claim. Consequently, consumer awareness is lower and they present more challenges for research than nutrition claims.

As with nutrition claims, a key factor in consumer understanding of health claims appears to be the familiarity of the claim to consumers. However, in this case, claims that provide new and unfamiliar information have a more positive influence on consumer attitudes to a product than claims that provide no new information, according to a US and Finnish study (Levy et al, 1997; Urala et al, 2003), perhaps because they have a stronger 'novelty value'.

The food carrier for the claim is also important. Certain types of claim seem to appear more plausible on certain types of product. For example, general wellbeing claims emerge as most credible on drinks and cereals in a UK study (National Consumer Council, 1997b).

We have structured the remainder of this section according to specific health claim case studies because links between the product and the health claim are specific and therefore cannot be generalised. Studies in this area also consider health claims on a case by case basis.

### **5.2.2 Case study – Heart health and plant sterols**

Findings from studies about claims linking heart health and plant sterols vary depending on when the study was carried out, because unfamiliar nutrients such as plant sterols become more familiar and accepted over time, particularly when they are extensively advertised on television.

The findings from the main research studies on this subject are discussed below.

Four studies have considered products with added plant sterols. However, only the most recent study (TNS Research, 2006a) indicates a consumer desire for these products; earlier studies showed that consumers were sceptical of them.<sup>18</sup>

Indicative research from Campden and Chorleywood Food Research Association Group (2002) showed that familiarity with claims linking plant sterols to heart health was high, mainly because of television adverts for well known brands of spread which claimed to help reduce cholesterol. However, understanding of these products was low. For some consumers, the subject was too medical and scientific for them to understand (Forum Qualitative, 2002). Linked to this, consumers did not understand how plant sterols worked to reduce their cholesterol; people assumed something (fat) had been removed from the products, rather than something (plant sterols) added (Forum Qualitative, 2002).

### **5.2.3 Case study – Bones and calcium**

A UK qualitative study conducted for the Food Standards Agency (Cragg Ross Dawson, 2002) tested a drink/bones/calcium concept<sup>19</sup> with consumers using a range of health and disease risk reduction claims, including:

- Source of calcium. Bone friendly
- Builds strong bones
- Contains calcium. Calcium is needed to build strong bones
- Strengthens the bone structure
- May help build stronger bones
- May reduce the risk of osteoporosis, as part of a healthy diet
- Reduces the risk of bone fractures in later life

The study found that the link between calcium and bones is a well-known and undisputed health claim. Because of its familiarity, consumers felt it did not need the qualifiers such as ‘may’ to be included in the claims. The claims were strongly associated with older people at risk of osteoporosis, as well as children. Questions were raised about whether the concept was relevant for those outside these perceived target groups.

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<sup>18</sup> Forum Qualitative, 2002; Campden and Chorleywood Food Research Association Group, 2002; McConnon et al, 2004.

<sup>19</sup> Claims made on drink products about levels of calcium and how they can help to keep bones healthy.

Some consumers disliked the phrase 'bone friendly' because it was too child-like, whereas others felt it was good shorthand for a health benefit. However, they consistently preferred simpler, non-technical versions of the claim, for example they rejected 'bone structure' in favour of 'bones' (Forum Qualitative, 2002).

#### **5.2.4 Case study – Yoghurts and pre/pro-biotics**

The main research studies on this subject are summarised below. Again, the literature on this subject contains disparate research findings, possibly due to different methodologies and the different dates when the research took place.

A quantitative survey which collected data in 2001 showed that consumers expressed scepticism about pro-biotics (McConnon et al, 2004).

A qualitative study in 2002 found that consumers did not have prior awareness of the link between live cultures and digestion. The link between digestion and bowel disease was also not known. Consumers expressed confusion and a lack of belief about the apparently very wide range of health benefits attributed to yoghurt. There was a lack of credibility with some of the vaguer claims such as 'in balance' and 'detoxify' (Forum Qualitative, 2002).

An indicative qualitative study conducted in 2002 found that yoghurt was perceived by many to be inherently healthy and good for the digestion, regardless of whether active ingredients such as pre/pro-biotics had been added. Yoghurt had a 'feel good' factor not associated with specific diseases (Campden and Chorleywood Food Research Association Group, 2002).

The most recent study in this area found that the yoghurt and yoghurt drink category had strong associations with digestive advantages, suggesting that health claims about pre/pro-biotics have become far more appealing to consumers over time. The UK study into cholesterol lowering yoghurts found that consumers assumed digestive health benefits even when none were claimed (TNS Research, 2006a), suggesting that awareness of the health benefits of the products were high.

### 5.3 Disease risk reduction claims

#### **Summary**

*Much of the reviewed research focused on whether disease risk reduction claims or health claims have more impact on consumer beliefs about the product and intention to purchase. There is no conclusive evidence on this. However, the research seems to point towards disease risk reduction claims having more influence.*

*The most important factor in how disease risk reduction claims are perceived is whether the consumer feels that they are personally at risk of the disease*

*described. Unfortunately, most of the available research does not take into account respondents' health status, both current and in the past.*

*The familiarity of the diet-disease relationship is crucial to consumer appeal and understanding. Disease risk reduction claims relating to the 'big killers,' such as heart disease and cancer, are rated as more relevant and influential than claims about less serious illnesses.*

*Consumers understand that the causes of disease are complex. Claims which attempt to manage expectations by adding disclaimers (to qualify a claim), or using very cautious language can become longwinded and are often considered unnecessary by consumers. Like health claims, consumers prefer simple, non-technical language and short descriptions to be used – there is also evidence that this is less likely to be misleading for consumers.*

### **5.3.1 Disease risk reduction claims discussion**

As defined by European Regulation No. 1924/2006, 'reduction of disease risk claim' means any health claim that states, suggests or implies that the consumption of a food category, a food or one of its constituents significantly reduces a risk factor in the development of a human disease. However, it is important to note that these types of claims should not appear on foods in the UK, as they are prohibited by current legislation, so all findings discussed below come from international studies.

The disease risk reduction claims listed below are found on products in the US (Hasler et al, 2004):

- Frequent eating of foods high in sugars and starches as between-meal snacks can promote tooth decay. The sugar alcohol [name of product] used to sweeten this food may reduce the risk of dental caries
- Diets low in saturated fat and cholesterol that include soluble fibre from whole oats may reduce the risk of heart disease
- Healthful diets with adequate daily folate may reduce a woman's risk of having a child with a brain or spinal cord birth defect

Disease risk reduction claims are currently subject to stricter regulation than health and nutrition claims and are banned in some countries, including EU Member States. There is a wealth of research in this area, particularly from Australia and New Zealand, where the law has recently been changed to allow more use of disease risk reduction claims, and the US.

Although disease risk reduction claims are more strictly regulated than other types of claim, there is no evidence that they are more likely to be misinterpreted. In fact, an American study found that disease risk reduction claims, such as 'eating a diet low in sodium may reduce the risk of high blood pressure', were likely to be interpreted accurately whereas simple nutrient claims, such as 'a third less salt', had a 'halo effect', that is, the products were

perceived to be more healthy than they necessarily were (Andrews et al, 1996).

Disease risk reduction claims vary a lot in length. Consumers consistently prefer shorter claims. An indicative study commissioned by Quaker Oats (Paul et al, 1999) illustrates that shorter claims do not necessarily mislead consumers, as regulators have feared. A sample of 826 consumers were split into three groups and exposed to three different claims on Quaker Oats packaging:

- Diets high in fruits, vegetables and grains high in fibre, especially soluble fibre, may reduce the risk of heart disease, a disease associated with many factors
- Diets high in oatmeal may reduce the risk of heart disease
- No claim (control)

The shorter claim performed best in terms of impact and understanding. There was no difference between the three groups in terms of whether they developed an exaggerated perception of the health benefits of oatmeal after reading the claim. An American study backs up the view that shorter claims are better at communicating and do not mislead (Wansink, 2003). Adding caveats to claims, such as 'a disease associated with many factors' can confuse consumers rather than help them (Paul et al, 1999).

The evidence above showing that consumers prefer short, simple, non-technical language may not only be relevant for disease risk reduction claims, but also for nutrition and/or health claims. However, as yet no research has specifically considered this.

### **5.3.2 Are disease risk reduction claims more influential than health claims?**

There is a large body of evidence, particularly in quantitative studies, that disease-related claims are influential in terms of attracting attention and affecting intention to purchase.<sup>20</sup> A Dutch study found that this is particularly true for consumers with a specific interest in the disease the claim refers to (van Kleef et al, 2005).

Despite this, manufacturers typically prefer to use nutrition claims or health claims because they are seen as easier to substantiate and more consumer friendly than disease risk reduction claims (Williams, 2005a). A number of qualitative studies indicate that health claims have broader consumer appeal than disease risk reduction claims. People say in group discussions that they do not like to be faced with words like 'cancer' when shopping for food products (Kapsak, 2005). A large UK qualitative study found that positively phrased health claims such as 'proven to reduce cholesterol as part of a

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<sup>20</sup> van Kleef et al, 2005; van Assema et al, 1996; Ni Mhurchu, 2006; TNS Research, 2005a; Williams, 2006b; Bech-Larsen and Grunert, 2003.

healthy diet' were preferred to negative disease risk reduction claims, such as 'reduces the risk of heart disease' (Forum Qualitative, 2002).

Disease risk reduction claims appear to be more influential when they refer to serious diseases. A Dutch study found that cardiovascular disease risk reduction claims were rated higher in terms of understanding and appeal than claims about less serious illnesses (van Kleef et al, 2005). Two related studies have found that disease risk reduction claims relating to heart disease and cancer were rated as more appealing than the more psychological (stress, dementia) and appearance related (youthfulness, skin protection) benefits (van Kleef et al, 2005; van Trijp, 2007).

Again, the familiarity of the diet-disease relationship is crucial to consumer appeal. A Finnish study found that where a diet-disease relationship was familiar, claims mentioning the reduced risk or prevention of a disease did not increase the perceived advantage of consuming the product (Urala et al, 2003). This finding perhaps suggests that consumers were more likely to purchase a product which claimed to reduce a disease, if they did not previously understand the product could help reduce their risk of contracting the disease. This is an interesting finding because other research in this report has found that appeal and the familiarity with the diet-disease link have been viewed as interchangeable.

### 5.3.3 Terminology

#### *May*

The use of the term 'may' is prevalent in disease risk reduction claims in the literature to help manufacturers indicate that diseases have multiple complex causes and that the scientific evidence surrounding claims is not always conclusive. There is a lot of inconsistency in the literature about how consumers respond to this (Williams, 2006a). The evidence ranges between the two positions below:

- 'May' is preferred as realistic and believable because it does not overstate the case.<sup>21</sup>
- 'May' is viewed with some suspicion. The majority interpret it as an indication of lack of confidence that the product will deliver.<sup>22</sup>

In fact the word 'may' might have less influence on perception than some of the authors believe. An American quantitative survey found that removing the word 'may' from the claim 'diets rich in substance X may reduce the risk of disease Y', made very little difference in the scores the claim received from consumers in terms of understanding and appeal (Federal Trade Commission, 2006).

#### *Proven/proof*

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<sup>21</sup> Bruhn et al, 2002; Derby and Levy, 2005; TNS Research, 2005b.

<sup>22</sup> Forum Qualitative, 2002; National Consumer Council, 1997b; TNS Research, 2005b.

The inclusion of the terms 'proven' or 'proof' sounds very confident to consumers and indicates a higher level of scientific certainty than the use of the word 'may'. In cases where the scientific research is conclusive, such as the link between folate and birth defects, using the term 'proof' can help consumers interpret the claim more accurately than if more tempered language is used (Federal Trade Commission, 2006; Forum Qualitative, 2002).

### *Helps/can*

A UK qualitative study, found that consumers interpreted the terms 'can' and 'helps' as qualifications of a claim, though they were felt to be more positive and communicate more certainty than the term 'may'. 'Helps' suggested to consumers that the product would be more effective in conjunction with other actions such as a healthy diet and lifestyle (Forum Qualitative, 2002).

The use of these qualifying terms may have a similar effect on consumer perceptions and understanding of health and nutrition claims, although there has been no specific research looking into this.

## 5.4 Strength of scientific agreement

There is no requirement to include strength of scientific agreement information alongside health claims in the UK and there is no scope for this to be introduced by the new Regulation. However, this subject provides a useful case study into how changes to the strength of language can affect consumer understanding. In the US, marketers are allowed to convey health claims as long as they indicate the level of scientific support for the claim. The system allows four levels of health claim graded A to D, with A level claims having the greatest and D claims having the lowest level of scientific agreement.

The Federal Trade Commission (FTC) commissioned three major research studies to review their use of this grading system. The research studies found that:

- Only 22% of consumers could rank the four levels of scientific agreement in the correct order – this links to the point that too much information leaves consumers feeling overloaded.
- Consumers believed that the highest level A claims were supported by less science than is in fact the case.
- Even a small amount of qualification can alter perceptions considerably (Federal Trade Commission, 2006).

New formats for the concepts were introduced to try and rectify the problems above. The new concepts were: a language only claim, a disclaimer in a box alongside the claim and a card showing a graphic of one of the levels. Research found the new concepts performed better than the existing system at communicating the correct level of scientific certainty. However a proportion of consumers were still confused, especially about the relationship between the boxed disclaimer and the claim. In addition, claims rated at a level D on

the report card experienced some negative perceptions from consumers in terms of product safety, quality and healthfulness (Kapsak, 2005).

The FTC concludes that even claims which communicate the correct level of scientific certainty, on average, may still mislead a substantial number of consumers. Therefore the inclusion of this information does not necessarily aid consumer understanding of claims unless the consumer fully understands the language used.

## 5.5 Disclaimers

Examples of disclaimers in the literature include:

- This product should be consumed in the context of a healthy, balanced diet
- Cancer is a disease associated with many factors

Disclaimers are not popular with consumers and are regarded as obvious, condescending or meaningless (Donovan Research, 2003b; Forum Qualitative, 2002). The evidence suggests that the presence of disclaimers does not lower expectations about health claims (Russo France and Fitzgerald Bone, 2005) and the absence of disclaimers does not lead to exaggerated beliefs about products' health benefits (Williams, 2005b). A number of studies showed that people are well aware that eating foods with health or nutrition claims does not guarantee a reduction in risk of disease.<sup>23</sup> A problem with disclaimers is that they can add to confusion about the label because the disclaimer can appear to contradict the claim rather than qualify it (Federal Trade Commission, 2006).

## 5.6 Endorsements

Examples of endorsement programmes include:

- the Heart Foundation's Pick the Tick logo in Australia and New Zealand - a self-funded, public health programme aimed at helping people to make healthier food choices quickly and easily by allocating ticks to foods the Heart Foundation approved;
- the National Cancer Institute/Kellogg's fibre campaign which ran in the US in the 1980s.

Research indicates that consumers support endorsement programmes and they do influence purchase (Forum Qualitative, 2003). Research about the Pick the Tick logo found that it is interpreted by consumers as having a strong health message and appeared to have a greater impact on intention to purchase than written claims (TNS Research, 2005a; TNS Research, 2005b). However, indicative findings from a joint Australian and UK study which asked consumers to 'think aloud' whilst shopping found that consumers

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<sup>23</sup> Williams, 2006a; Cowburn and Stockley, 2003; TNS Research, 2005b.

claimed to use endorsements more than they did in reality (Rayner et al, 2001).

Cause-related marketing statements such as 'proceeds from this product will go to the Royal Society for Diabetes' also have a strong effect because consumers infer health benefits from products carrying such messages (TNS Research, 2005a). However, support for cause-related marketing depends on the credibility of the relationship. For example a UK qualitative study found that consumers do not like the link between Ribena Toothkind and the British Dental Association because the drink is not seen as healthy enough (National Consumer Council, 2003). However, the study does not take into account that there was a court case and media coverage around this endorsement.

There is little research on the effect of endorsements by regulatory bodies. One indicative Australian study found that the presence of an endorsement from the Food Standards Australia New Zealand (FSANZ) on mock packs had no influence on how consumers responded to the product. The researchers believed this might have been due to low awareness of FSANZ or the small print of the approval statement (Singer et al, 2006). Stockley (2007) cites evidence that the Swedish Keyhole scheme, another Government endorsement scheme, is well received and impacts on behaviour.

Information on consumer understanding of charity endorsements is limited. One study, conducted in 2003, found that there was limited consumer awareness about the use of charity endorsements (Forum Qualitative, 2003). However, consumers were still supportive of such endorsements and felt that they were potentially beneficial to charities. This positive reaction was based on two key assumptions - which are not necessarily true (Forum Qualitative, 2003). Firstly, consumers assume the charity will benefit financially from the partnership, which is not always the case. Secondly, consumers assume the charity has verified or tested the product they are endorsing. These two assumptions could in turn lead to increased propensity to purchase brands which carry an endorsement.

However, as consumers' awareness about such endorsements grows, they do recognise the complexities and potential risks involved, such as the possibility of being misled about the nature of the partnership (Forum Qualitative, 2003). In order to better understand the relationship between manufacturers and charities, consumers wanted greater clarity about the financial agreement between them and information about the nature of the endorsement, as well as the implications the endorsement has for health or the nutrition value of the product itself.

## 5.7 Brands

Brands aid consumer understanding and acceptance of health claims (National Consumer Council, 1997b; Hill et al, 2001). Brand attributes such as colours and images are also able to influence perceptions of healthiness (National Consumer Council, 2003). The results of one Australian study showed that brand or graphics implying health claims were as effective as

written health claims in terms of consumers' intention to buy a product (TNS Research, 2005b).

Some UK brands, such as Benecol and Flora Pro-Activ, have become synonymous with health claims because of heavy television advertising (Forum Qualitative, 2002). There is some indicative research that consumers believe that these brands carry an inflated price tag because of their association with a health benefit (Chambers et al, 2006).

Brand names themselves can imply a health claim. Which? has recently campaigned that legislation should control implied health claims contained in the brand name such as Osteocare.<sup>24</sup>

Despite the apparent influence of brands and brand attributes such as graphics and even the shape of products, there does not seem to be much publicly available research in this area.

## 5.8 Use of visual aids

The use of simple visual aids that imply a nutrition or health claim is discussed in a number of research reports. Visual aids include:

- colour coding;
- food pyramid graphic (used in the US): A picture of a triangle with the six groups divided up inside it. These groups in the pyramid vary in size, depending on how much of that food group one should eat in a day;
- grading, showing the strength of the claim, in a table format (such as A to D);
- distinctive logos e.g. from retailers and charities.

The visual aids listed above generally performed well in terms of being easy to understand and quick to use.<sup>25</sup> There is some evidence that visual aids are particularly important for lower socio-economic groups (Consumers' Association, 2006).

One problem with the use of visual aids appears to be the possible conflict with other coding systems, such as the letter grading for quality in eggs (Federal Trade Commission, 2006).

## 5.9 Relationship between claims and the nutrition label

There are a number of studies that examine consumer understanding of the relationship between the claims on the front of packs and the nutrition label on the back. Some studies are more reliable than others, for example the study

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<sup>24</sup> The literature review did not reveal any research about consumer response to implied health claims in brand names though there is likely to be some company funded research in this area.

<sup>25</sup> Federal Trade Commission, 2006; Consumers' Association, 2006; Scott and Worsley, 1994; Define, 2006.

by Roe et al (1999) has a larger sample size, and is therefore more robust, than the studies by Drichoutis et al (2006) and Ford et al (1996).

The wide range of findings from the research includes some contradictory results:

- Split claims, where part of the claim appears on the front of the pack and part appears on the back, increase the believability and satisfaction with health claims (Wansink and Cheney, 2005; Wansink, 2003).
- Consumers with lower levels of education are more likely to rely on information on the front of packaging (Roe et al, 1999) and therefore not consider the nutrition label on the back.
- Consumers not turning to the back of the packet to read the nutrition label, or where the nutrition label is not available, are more likely to be more positive in their judgements of the product.<sup>26</sup>
- When a health claim is present consumers are likely to truncate their information search and read no further than the front of pack (Roe et al, 1999; Synovate, 2005a).
- Health claims have little influence on how people process the nutrition label (Ford et al, 1996) and when nutrition labels are available health claims tend to be ignored by consumers as 'advertising' (Drichoutis et al, 2006).

Overall, the research indicates that consumers understand that health claims and the nutrition label hold related information. Beyond this there are some inconsistencies in the research findings listed above as to which side of the label consumers are more likely to use, trust and interpret accurately. These may be due to different research methodologies, as consumers may be more likely to study claims in greater depth in some contexts than others. It is also the case that perceptions vary considerably by the type of food the claim refers to and how nutritious it is perceived to be (Mazis and Raymond, 1997).

## 5.10 Impact of reading claims and food labels

### 5.10.1 Purchasing behaviour

Findings from a number of studies indicate that reading nutrition labels can have a positive impact on purchasing behaviour,<sup>27</sup> in terms of choosing healthier products, mainly because it influences valuations and perceptions of the product. However, of these, only that of Levy et al (1985) is based on measured behaviour, in this case sales analysis, rather than self-reported behaviour or intentions.

A literature review by Drichoutis et al (2006) reports that several surveys have considered the effect of claims on personal decisions and concludes that nutrition claims can influence consumer purchasing behaviour. Furthermore,

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<sup>26</sup> Roe et al, 1999; Mazis and Raymond, 1997; Ford et al, 1996.

<sup>27</sup> Byrd-Bredbenner et al, 2000; Derby and Levy, 2001; Drichoutis et al, 2006; Levy et al, 1985; Hawkes, 2004; Abbott, 1997.

literature reviews and some empirical evidence, largely drawn from the US<sup>28</sup>, argue that disease risk reduction claims can attract consumers' attention to products on the shelf, as well as impact intention to purchase.

UK research found that products which carry endorsements on them of some kind have greater impact upon consumers' intention to buy products than products with written claims (Forum Qualitative, 2003). This is not necessarily because they understand the claims better; rather they 'trust' the endorsement more than they do a written claim.

One piece of research, the HealthFocus Global Trend Survey (2005 cited in Unilever, 2006), disagrees with the information above and suggests that, although 50% of consumers claim to look at labels, evidence shows they do not necessarily act on this information. However, there is no further research to back up this statement.

### **5.10.2 Impact on diet**

The greatest impact on diet is seen when people read and act upon health claims, followed by nutrition claims (Nayga, 2002), suggesting that they understand the health benefits of the claims they read. The impact on diet of consulting nutrition labels is considerable. Four studies<sup>29</sup> have found that reading nutrition labels can contribute to a better dietary intake or to reduced consumption of 'unhealthy' foods. Nutrition label use is also associated with diets high in vitamin C, low in cholesterol, and lower percentage of calories from fat (Drichoutis et al, 2006; Nayga, 2002). However, as with the majority of studies concerned with purchasing behaviour, these studies focused on reported behaviour, which is not always reliable as respondents' recollection of events may not be accurate.

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<sup>28</sup> van Kleef et al, 2005; van Assema et al, 1996; Ni Mhurchu, 2006; Williams, 2006b; Bech-Larsen and Grunert, 2003.

<sup>29</sup> Nayga, 2002; Neuhouser et al, 1999; Guthrie et al, 1995; Shine et al, 1997b

## 6. Conclusions and recommendations

Many consumers seek and act upon information and claims on food packaging. Food labelling therefore does have an impact on consumers' purchasing and consumption patterns. However, the relationship between the consumer, the product and the claim or information is complex. Reading food labels, the nature of the consumer, why they are looking for the information and what the label says are intrinsically linked and it is difficult to generalise about the impact of the label claim itself on consumer behaviour.

Furthermore, there is little clear-cut, definitive research. In many areas the evidence is scant or conflicting. In many countries the research has been led by legislative changes. Consequently, much of the literature focuses on the format of the health claim itself, but fails to take into account the full set of factors influencing consumers such as media coverage, prior beliefs about health and supermarket environments.

There are some consistent messages however:

- Some consumers find health claims useful and are influenced by them.
- They also claim to be sceptical about health claims and are well aware that manufacturers will be trying to present their products in a favourable way.
- Consumers prefer, and are more likely to accurately understand, simple claims. The importance of language should not be underestimated.
- Consumer understanding of diet-disease relationships is changing fast, often as a result of media attention.
- Research into consumer attitudes towards specific health claims goes out of date quickly.

### **Research gaps**

There are many gaps in the research literature. One of the most notable is the lack of studies in which actual behaviour, rather than reported or intended behaviour, is studied. Aside from this there is a shortage of studies using both qualitative and quantitative methods and longitudinal studies. The majority of research to date has focused on adults in the general population, rather than children and young people, or vulnerable groups and people who have specific diseases.

Some principles for further research:

**Start with the consumer, not the label.** More research which takes into account prior beliefs about health/disease risks will help us understand in more depth how consumers interpret health claims. In addition, research designed to allow for analysis between different groups, rather than analysis of the general population, will help gather better information about the variety of responses to health claims and why these occur.

**Take a broad perspective.** Claims need to be understood in conjunction with other messages consumers gather about food and health. Research design should have the scope to understand the influence of other sources of information such as the media, supermarkets and health professionals.

**Keep it real.** New research should seek to learn from consumers in real life settings. This approach is likely to be more accurate than abstract laboratory testing where consumers are keen to give the 'correct' answers and where important influences, such as store environment or branding, are missing. Research design could include in situ research locations and the use of real products (not mock labels).

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# Appendix 1: Search engines used to identify relevant reports

**PubMed:** PubMed is a service of the US National Library of Medicine that includes over 16 million citations from MEDLINE and other life science journals for biomedical articles back to the 1950s.

**ERIC:** ERIC - the Education Resources Information Center - is an internet-based digital library of education research and information sponsored by the Institute of Education Sciences (IES) of the US Department of Education. ERIC provides access to bibliographic records of journal and non-journal literature indexed from 1966 to the present.

**IngentaConnect:** IngentaConnect is an online searchable database of articles covering a range of subject areas, from agriculture and food science to social sciences. Users sign up to the website and then pay for each article they order.

**Infotrieve:** Infotrieve is a global provider of content management technology and information services for the life sciences and other R&D-intensive industries. The searchable database gives access to scientific, technical, medical, and other scholarly content. It is possible to search through 26 million citations and 8.5 million abstracts from over 54,000 journals.

**HighBeam:** HighBeam enables individuals to search more than 35 million articles from over 3,000 credible publications, including business and technology publications, health and science publications, news publications and international publications. The database has 22 years of archives.

**Blackwell Publishing:** Blackwell is a leading global publisher of articles and books. It is possible to search for, and buy, articles on their website.

**National Library of Medicine:** The National Library of Medicine (NLM), on the campus of the National Institutes of Health in Bethesda, Maryland, is the world's largest medical library. The Library collects materials and provides information and research services in all areas of biomedicine and health care. It has an online catalogue which can be searched.

## Appendix 2: Glossary of research terms

**Literature review:** A literature review is a form of secondary research which reviews the findings from previous research carried out on a particular topic.

**Qualitative research:** Qualitative research is one of the two main research methods. It allows an in-depth understanding of respondents' attitudes and actions by engaging respondents in a semi-structured discussion. Examples of qualitative methods include discussion groups and depth interviews.

**Quantitative research:** Quantitative research is one of the two main research methods. It is performed on a far larger scale compared with qualitative research (in terms of the sample size) and helps to provide accurate statistical data from which conclusions can be drawn. Questions tend to be closed as opposed to open. Questionnaires are an example of quantitative methods.

**Sales analysis:** Sales analysis involves analysing company sales data to investigate how sales of certain products increase and fall over time.