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Keywords
health claims, consumer, food label, NLEA

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Title: **Consumer Understanding and Use of Health Claims for Foods**

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Abstract

Health claims for foods are permitted in an increasing number of countries but there are very few studies evaluating the effect of such claims on purchase behavior and consumer health. There are significant differences between countries, but in general consumers see health claims as useful, they prefer short succinct wording rather than long and complex claims, and they believe claims should be approved by government. Consumers view a food as healthier if it carries a health claim and this "halo" effect may discourage them seeking further nutrition information. Consumers do not clearly distinguish between nutrient content, structure-function and health claims. There is some evidence that use of health claims improves the quality of dietary choices and knowledge of diet-disease relationships.

Introduction

There are several types of nutrition and health claims found on food labels in addition to the simple listing of the nutrients present in a food product. *Nutrient content claims* highlight specific nutritional features of a food, typically about the presence or level of a nutrient (eg, “low in fat”, “high fibre”, “reduced salt”, “sugar free”), while *health claims* are statements linking food components to a desired state of health. According to the definitions in draft Codex Alimentarius guidelines there are three types of health claims [1]:

- *nutrient function claim*s, that describe the role of a nutrient in normal physiological growth, development and functions of the body (eg, folate is important for red cell formation)
- *other function claims* (previously called enhanced function claims), that make claims that nutrients or other substances may improve or modify the normal functions of the body (eg, calcium may help improve bone density)
- *reduction of disease risk claims* (eg, fruits and vegetables may reduce the risk of some cancers).

Nutrient content and function claims are commonly found on food products throughout the world, however the regulation of health claims that promise health enhancement or reduction in the risk of disease varies widely. In many countries, such claims are forbidden or permitted only after approval by a national regulatory body. A recent World Health Organisation survey of the global regulatory environment for health claims

reported that among 74 countries and areas reviewed, the greatest proportion (35) had no regulation of health claims; 30 disallowed any reference to disease in a claim, 23 allowed nutrient function and other claims and only 7 permitted specified disease risk reduction claims or have a specific framework for approval of such claims [2].

For over fifteen years there has an ongoing debate about the value of health claims as a strategy to help consumers and support the development of a healthier food supply. Among the earliest and most influential commentaries on this policy issue were those of Calfee and Pappalardo, from the Bureau of Economics in the US Federal Trade Commission (FTC) [3]. They reviewed the influence of the 1984 Kellogg All-Bran promotion in the US that provided advice from the National Cancer Institute on the role of dietary fibre in the prevention of cancer, noting that it was this campaign that ultimately lead the US Food and Drug Administration (FDA) to develop a new regulatory regime for health claims in that country and the passing of the "Nutrition Labeling and Education Act of 1990" (NLEA) by the US Congress. They argued that health claims in advertising can transform markets from ones in which foods are promoted purely on matters of taste, convenience and other factors unrelated to health, to markets in which promotion focuses on health. It is claimed that nutrition labels and health claims on food have the potential to contribute to the improvement of public health by assisting consumers to make better informed food choices. Furthermore allowing truthful diet-disease claims by manufacturers may benefit consumers since this increases the competitive pressures on companies to market the nutritional features of foods [4].

Others have supported this viewpoint and agree that health claims can be seen as a legitimate educational tool, which will inform and affect consumer behaviour [5]. The American Dietetic Association, on the basis of the strong scientific underpinning of the NLEA, supports the use on food products of health claims that have been pre-approved by the FDA, but also stresses the importance of health claims on foods being supported by an adequately funded public program of nutrition education and health promotion [6]. Without this, it is claimed, there is the possibility that consumers will receive unbalanced messages, with greater advertising of value-added highly processed products rather than basic foods such as vegetables and fruit, or that health claims could have negative effects such as preoccupation with specific diseases, distortion of dietary habits, oversimplification of dietary guidance and erosion of confidence in information on the food label [7].

The concern that health claims cannot function to help consumers without a supportive educational environment has been voiced by others [8]. In commenting on the Australian trial of a health claim for folate, Bower suggested that folate health claims on food alone cannot adequately address the need for consumer education; they are better thought of as a means of easily identifying foods rich in folate once the target group is informed of their existence and the reasons for consuming them [9].

Many commentators in the US have expressed concern over the initial FDA health claim regulations that prescribed often lengthy and complex health claims to be used in the early days of NLEA. Two years after NLEA there were few health claims used in the

marketplace, mostly because food manufacturers found the labelling requirements onerous – particularly the long mandated wording which was not attractive to consumers [10]. The Keystone report of a two-year dialogue in facilitated workshops with 65 key individuals examining health claims in the US made two key recommendations: (1) to re-examine the regulation of health claims to improve flexibility of wording and evaluate the use of split claims, and (2) that federal resources be provided to help consumers understand, trust and use NLEA-regulated information including nutrient content and health [11].

Nonetheless, despite over ten years experience now of NLEA in the US, there is still ongoing debate over the effectiveness of health claims to support public health. The American Medical Association and the Centre for Science in the Public Interest have claimed that consumers will be misled and confused by allowing claims with lower levels of substantiating evidence [12]. The Public Health Association of Australia has opposed the proposed introduction of health claims in that country arguing the evidence that health claims inform consumers or improve food choices is inconclusive [13]. Some claim that health claims have been shown to increase the sales of more nutritious products that are consistent with healthy dietary patterns [3]; others say there is little evidence that health claims make a positive impact on healthful choices [14] or that the benefits are likely to be restricted to health conscious consumers who are willing to pay for premium products with health claims and added functional benefits [15]. Consumer organisations also are sceptical of their value and have argued that "health claims on processed foods help no-one but the people trying to sell them" [16].

Prohibiting all health claims in some countries, or those that refer to diseases, has not prevented the proliferation of a wide number of potentially confusing or misleading "soft" claims whereon food products that may be interpreted by consumers as implied health claims (eg, "makes you healthy"). According to one commentator, manufacturers have "made the formulation of soft claims into a fine art, creating claims that imply health effects without actually naming a disease" [17].

From a commercial point of view, the use of health claims has had mixed results. Evidence from the US and Europe suggest that they can increase market share for products [18], and it is claimed that they have improved communication to consumers about the role of diet in disease prevention, supported increased clinical research on food ingredients and stimulated product development [19]. But there have also been some significant marketplace failures for foods with claims [20]. The recent WHO review of health claim regulations concluded that too little is understood about the role health claims play in nutrition education and that there is insufficient evidence concerning their effect on diet and public health [2].

There are methodological challenges in any attempt to evaluate the impact of the use of health claims on consumer behaviour or health. Anecdotal reports from marketers of established food brands suggest that, for the majority of food products, health messages influence purchases with only one third of consumers at best. Unlike taste, cost or convenience, consumers usually cannot evaluate the truth of health claims. Health claims

are extraordinarily affected by the day-to-day communications context and they require consistent reinforcement to maintain sales effectiveness.

This review is a based on a search of published and unpublished research into consumer understanding and use of health claims. Electronic databases (Australasian Medical Index, Cinahl, Cochrane, Expanded Academic Index, Lexis, Medline, Proquest, Psychinfo, ScienceDirect and Synergy) were searched using combinations of the following search terms: food, nutrition, diet, labelling, labeling, label, package, information, health claim, and consumer. Additional hand searching was carried out using the reference lists of relevant articles identified during the electronic search, supplemented by recommendations from key informants working in international regulatory agencies. The primary focus of the review was consumer understanding and use of health claims. The search excluded studies or reports about consumer understanding of nutrition labelling or nutrient claims in general, which have been systematically reviewed elsewhere [21]. Eligible studies were assessed for scientific quality using the methods and criteria described by the European Heart Network, and studies with a low quality rating were excluded [21]. Since the first explicit use of health claims only appeared on food products in 1984, the period of review was limited to the twenty-year period from 1984 to 2004. All relevant investigative studies have been included in the review, but only a selection of the editorial or policy commentaries have been referred to in the Introduction to illustrate the range of opinions on this topic.

The main aim of this review is to summarise the descriptive studies related to consumer behaviour when they read health claims, in order to inform decisions related to health claims regulation, but findings from research on health outcomes has also been considered. The specific objectives were to assess:

1. to what extent consumers want and use heath claims on food products
2. how consumers interpret and understand health claims
3. what influence health claims have on consumer knowledge and purchase behaviour
4. to what extent health claims have an influence on health outcomes, and
5. what gaps exist in current research in this area.

For the purposes of reporting, the studies have been divided into three broad categories:

1. Survey and focus group studies investigating consumers attitudes to health claims on foods
2. Experimental studies, where consumer reactions to different forms of claims have been examined
3. Outcome studies, which have attempted to examine purchase behaviour changes or health impacts associated with health claim use.

Surveys and Focus Groups

In order for health claims to have an impact on purchasing behaviour, consumers have to be exposed to them. In many countries health claims are still prohibited and, aside from the US, there is little information on the prevalence of health claims in the marketplace. In the US, where health claims have been permitted now for over 10 years, it is noticeable that the proportion of packaged foods carrying claims is relatively low. Several supermarket surveys there have found between 2-4% of products with health claims, a level largely unchanged from 1997 to 2001, with the highest proportion carried on cereal products [22-24]. Similarly low levels have been reported in studies of television and print advertisements for foods, and the level is less than that before the introduction of NLEA legislation that now regulates claims [25, 26]. Nonetheless, introduction of NLEA does appear to have substantially reduced the level of misleading health claims in advertisements in the US [23, 27].

A variety of surveys, interviews and focus group with consumers in several countries indicate that health claims are seen as useful and do influence attitudes. In Canada more respondents in a telephone survey about products with functional benefits believed that packaging should promote the health benefit it provides (45%), rather than only the presence of the component itself (34%) [28]. In other words, they preferred health claims to content claims and 47% rated them as very useful compared to less than 10% who saw little or no value for them [29]. Studies have found similar supportive views amongst consumers in Australia [30], Denmark [31], Ireland [32], Scotland [33], Finland [34], the UK [35] and

the US [36]. The reasons for liking health claims seem to be related to general difficulties in interpreting existing nutrition information on labels. In a French study three-quarters of consumers said they only sometimes or never used the nutrition information on food mostly because they believe it to be too complicated [37]. In the UK in 2003, 29% of consumers believed there was too little information on the label to help them find healthy foods [35].

While consumers may say that health claims are useful, the extent to which they use them is less clear. Consumers claim they often use information on labels to find foods that are good for their health [38], but most consumers only read labels when they are contemplating buying a new product for the first time or when an alternative brand is on special [39]. It has been suggested that the impact of claims is greatest on those who already tend to buy a particular type of product; people are unlikely to buy a new type of product because of a claim [29]. In 2003, Australian research (at a time when only one health claim about folate was legal) found 14% of people reported ever using a health claim [40] and in the UK, when asked which information they looked for on labels, around 20% mentioned health claims [35]. It is clear that usage is generally higher in those who are better educated, older, female and with an interest in nutrition [36, 41]. A lack of nutrition knowledge can limit consumers' abilities to understand or evaluate a health claim [42] and this lack of understanding can diminish the credibility of claims [43].

There is a high level of consumer scepticism about all aspects of information on food labels, including health claims, and concern is often expressed over manufacturers using

claims just as a sales tool [42]. Trust in health claims is not necessarily related to the strength of promise made in the claims [34] and messages are more likely to be believed when they repeated frequently by different and trusted sources [44]. In France in 2002 three-quarters of consumers interviewed said they did not believe claims about health benefits on foods [37]. In the UK just over half of people interviewed in 2003 were concerned about the accuracy of health claims, although most of these were "fairly" rather than "very" concerned [35]. Paradoxically, in a telephone survey conducted by the FDA, consumers who reported more use of health claims also reported being more sceptical of them [45]. Consumers often assume that claims on foods have already been approved by government authorities, even when there are explicit statements to the contrary [46], and most studies show strong agreement from consumers with the idea that health claims should be approved [29, 36, 39, 47].

The type of health claim that is preferred by consumers is unclear. Research in Sweden suggested consumers there preferred claims where promotion of health was emphasised rather than those associated with illness [43], but studies in the UK, other parts of Scandinavia and the US report that claims about prevention of chronic diseases or health enhancement were of more interest to consumers than claims about normal physiological function or health maintenance [31, 33, 48]. Some of these differences may be due to cultural factors between countries. It is a common finding in the UK, Finland and France that consumers do not make clear distinctions between nutrition content claims, structure-function claims and health claims [34, 37, 44]. The research shows that a hierarchy of claims based a purely scientific structure does not correspond with consumer responses or

understanding, which is often of a non-scientific kind [48]. Once consumers are familiar with a nutrient-disease relationship (eg calcium and bone health) a mere nutrient content claim may be interpreted as a health claim.

Consumers generally don't like long and complex, scientifically-worded claims on foods and they prefer split claims – with a succinct statement on the front of pack and more detailed information provided elsewhere on the package [42-44]. In some studies consumers seem particularly sceptical of claims with qualifying words such as "may" or "could" [42-44], but this is not a universal finding. In a US study of claims about probiotic cultures, consumers were wary about claims that were too broad or absolute to be credible and preferred "may reduce" or "helps reduce" claims [47]. Disclaimers about the level of scientific substantiation for a claim do not seem to be attended to or understood by consumers [46].

Experimental Studies

A number of studies have been conducted with consumers, showing them mock food packs with variations in labelling format, to evaluate the impact of health claims on beliefs and attitudes about the product. It should be noted however that all but one of these published studies were conducted in the US and their relevance to consumers in other countries is uncertain.

Perhaps the largest and most cited study of this kind is one conducted for the FDA, using face-to-face mall intercept interviews with 1403 primary food shoppers in eight cities across the US. The variables included three products (cereal, lasagna and yoghurt) and ten label formats, testing the effect of different lengths of claims, their position on the label and types of endorsement on consumers' evaluation of product healthiness and purchase intent [49]. The results were complex but indicate that:

- when a product features a health claim, respondents view the product as healthier and state they are more likely to purchase it
- the effect of health claims on label reading was to reduce the likelihood consumers would read the nutrition information on the back of the package
- brief health claims were more effective than long ones and there was no indication that short health claims encouraged inappropriate or exaggerated beliefs about products health benefits compared to long claims
- claims that provided new information had a positive effect on attitude to the product; claims that provided no new information had no effect
- health claims seemed to have limited ability to communicate educational information; more than 20% respondents did not acknowledge that a product had any health benefits even when carrying an explicit claim
- perception of health benefits seemed largely based on prior beliefs about the product rather than specific information provided by the claims
- nutrient content claims appeared to have similar effects to health claims
- endorsements and split claims had little impact on communication effectiveness.

Some of these findings have been replicated in other studies, but some have not. The most consistent finding is that health claims do increase consumers' expectations about the healthiness of a product and produce more positive attitudes toward its nutritional value [50-55]. This effect is found for claims in advertisements as much as on labels [51]. This influence can result in a general "halo" effect, affecting belief about nutritional attributes unrelated to the health claim [50]. A study of 1700 consumers in shopping malls conducted by the US Federal Trade Commission (FTC) found that even warning statements about risk-increasing nutrients in a product (such as a high sodium content) were overlooked by a significant proportion of consumers in the presence of health claim [56].

Consistent with the findings of several of the surveys reported earlier and the FDA results, several other experimental studies have also found a preference for shorter or split claims. Wansink et al [57] report that the presence of short health claim on the front label generates more specific attribute-related thoughts, more inferences, and creates a more believable and positive image in the consumers' mind than does a longer health claim. In fact consumers who were given longer claims were no more likely to believe in the claimed health benefit than those who saw no front label information. This may be because consumers find such claims take too long to read and understand. In another study where participants examined packages of soy protein patties, with three versions of a health claim about heart disease risk, and were asked to record their thoughts and beliefs, it was found combining short health claims on the front with full health claims on the back of the package lead consumers to more fully process and believe the claim; consumers tended to ignore or not understand the longer claim on front of pack [58].

Some studies have supported the FDA finding that the presence of a health claim is associated with a greater probability that a search for information is limited to the front panel only, ignoring the nutrition information panel, especially for those consumers with lower education [59], or that the presence of nutrition facts information did not moderate the effect of a claim [55]. However this is not a consistent finding. One mailed survey of primary household shoppers found they relied on the nutrition facts panel to a greater extent than they do on claims on the front of pack [60]. Mitra et al [52] reported that when claims about heart health and four different versions of a nutrition facts panel were presented together on mock packages of a frozen dinner, the claim had no significant effect on product evaluation and consumers could correctly interpret the nutrition information panel even in the presence of contradictory health claims.

At least one other study supports the finding of the FDA investigation that health claim information that is new or unfamiliar has greater impact. In a study of consumers in Denmark, Finland and the US, Poulsen reports that there was a considerably greater effect of a health claim about oligosaccharides (which very few consumers knew about), compared to a claim for omega-3 fats, in three different products [54]. Other factors that have been reported to influence consumer acceptance of a health claim are medical community support for the claim [61] and whether consumers have an interest in nutrition information generally.

The accuracy of consumers' interpretation of health claims has been examined in only a few studies. Andrews et al [62] showed primary shoppers various labels for canned soup and found that a claim of "healthier" resulted in a slightly more favourable and misleading evaluation of the sodium content of the product, but the claim had no significant effect on belief that consumption would reduce disease risk. One FTC study has tested consumers' ability to interpret qualified disclosures about the scientific support of the alleged benefits (as are now appearing in qualified health claims in the US). The authors found consumers do seem to be able to correctly interpret some strong disclaimers, such as explicit references to inconsistent study results, but mildly qualified statements (eg "it looks promising, but scientists won't be sure until longer research is completed") did not lower consumer certainty ratings significantly [56].

Outcome Studies

Although surveys of consumer opinions and experimental studies are useful, on their own they are not sufficient to evaluate the ultimate impact of health claims on consumer behaviour and health outcomes. In reality, it is known that what consumers say in surveys and focus groups often does not translate into behaviour in the supermarket. One study asking British and Australia shoppers to think aloud during shopping for a predetermined list of products found that health-related endorsements (such as the Heart Foundation "Pick the Tick" symbol) were rarely used during actual food selection, although subjects had claimed in interviews to use them [63]. A full evaluation of the impact of health claims would ideally consider not only product purchase behaviour, but also changes in nutrition

knowledge, awareness of diet-disease relationships, and ultimately impacts on total diet quality and health status. In fact, after more than a decade of experience of health claims on foods, there has been remarkably little direct evaluation of the impact on consumers using these endpoints and none attempting to measure ultimate health impacts.

Before the introduction of NLEA, estimates of the discounted life-years gained across the US in the first 20 years after implementation of the Act ranged from a high of 2.1 million to a low of 40,000, however most of this estimate was related to the mandatory requirement for nutrition content information on labels rather than the impact of possible health claims permitted under NLEA [64]. A study by Moorman [65] with observation and interviews with over 1000 US supermarket shoppers before and after NLEA concluded that consumer acquisition and comprehension of nutrition information (measured in time spent searching per brand) had increased after NLEA, but so did consumer scepticism about the nutrition information on labels. Again, however, the impact of health claims was not separated from other nutrition information components of the new label format.

A few studies attempting to measure the effect of claims on purchase behaviour have relied on examining sales data and correlating this with presence or absence of health claims. It has been claimed by some food companies that health claims can grab the attention of consumers and increase the consumption of healthful products. There were positive increases in sales of both oats and folate-enriched breakfast cereals after claims or media coverage about the health benefits of these products [66, 67]. However, claims alone do not guarantee success for new products and there have been notable failures of

products with health claims in the market, including the Kellogg psyllium-enriched "Ensemble" range, and Campbell's "Intelligent Cuisine" [19].

Some of the best evidence of the benefits from a health claim comes from the pre-NLEA experience of Kellogg Company in the US carrying a message on All-Bran packs from the National Cancer Institute, focusing on the link between dietary fibre and cancer. A study by the FTC concluded that the use of that health claim led to a significant increase in consumer knowledge of the fibre-cancer relationship, greater fibre cereal consumption, and product innovation bringing more high fibre products to market [68]. Others have criticised this conclusion, noting that there was no attempt to consider other consumer education programs conducted by government and other health authorities during the period under study [69]. Another study by Mathios [70] examined the sales of cooking oils in New York before and after the introduction of NLEA. Before NLEA firms actively competed with explicit health claims about heart-health, promoting lower saturated fat and higher monounsaturated fat (MUFA) choices. After NLEA this was prohibited and the study found consumers shifted purchases towards nutritionally inferior cooking oils with higher saturated fat and lower MUFA levels. The only three supermarkets where the level of MUFA increased were in the areas with the highest levels of education. Although this study is limited by not measuring total consumption of saturated fat from oils, it suggests that elimination of health claims on cooking oils may have stifled the flow of useful information to consumers, especially the less educated.

In Australia, a pilot health claim related to folate and neural tube defects (NTD) was permitted on a voluntary basis in 1998 and several studies attempted to evaluate the impact on consumer knowledge and behaviour. Inclusion of a specific claim explaining the role of folate in preventing birth defects in TV and print advertising and on food packs appeared to increase consumer awareness and knowledge of this diet disease relationship to a greater extent than similar promotions without an explicit health claim [71]. Knowledge of good food sources of folate also increased, but there was no evidence of change in the purchase of foods with the folate health message [72]. However the folate-NTD claim had a very specific target audience and occurred at the same time as other education activities, including promotion of folate supplements to women, so the extent to which the findings of this pilot can be generalised to other claims is debatable.

In an attempt to separate the effect of public health education efforts from that of health claims for foods, Teisl et al [73] correlated data on people's awareness of diet-disease relationships obtained from the US Health and Diet Surveys (1984-95) with newspaper articles and advertising citing specific diet-disease relationships. Higher awareness levels were associated with time periods of increased newspaper activity; lower levels of awareness were associated with time periods of increased advertising activity. One interpretation of this result is that consumers place a relatively low level of credence on producer-provided health information (including health claims) whereas news media seems to educate the public and provide a general stimulus to the purchase of healthier products. However, in this study, health claims probably did not alter consumer

awareness because very few health claims were made in advertising (less than 3% of all advertisements) so nutrient content claims were also included in the study.

There is one study that has attempted to relate use of health claims with diet quality [74, 75]. It took data on label use in a sample of 5343 people from the 1994-96 Diet and Health Knowledge Survey and used information from the Continuing Survey of Food Intakes by Individuals to compare the Healthy Eating Index (HEI) score – a USDA measure of total diet quality, with a maximum value of 100 – of individuals before and after using different food label elements. The authors controlled for personal and household characteristics such as age, gender, level of education, ethnicity, employment status and income through the use of an endogenous switching regression model. The data show that label use generally has a positive effect on improving diet quality and that improvement is highest when consumers use health claim information on the label - greater than the effect of use of ingredient lists, nutrient content claims, serving size or the nutrition panel. Improvements in HEI scores ranged from 4.3 points when the nutrition information panel was used to 6.1 for health claims.

Conclusions

It is clear that more research is needed to understand the impact that health claims could or do have on food choice and health, especially outside of the US. The studies that we have often provide contradictory or inconclusive results and there are likely to be significant differences between consumers in various countries, between different

consumer segments and between reactions to claims on new versus existing food products. The drivers of consumer purchasing behaviour are complex and a number of factors other than advertising claims and price, such as concerns about nutrition and consumer dispositions towards innovativeness and susceptibility to normative influence, will affect the probability of trial of new products.

However there are some common findings to be drawn from the studies that have been reviewed:

- Health claims on foods are seen by consumers as useful and when a product features a health claim they view it as healthier and state they are more likely to purchase it
- Consumers are sceptical of health claims from food companies and strongly agree with the idea that health claims should be approved by government
- Consumers do not make clear distinctions between nutrition content claims, structure-function claims and health claims
- Consumers generally don't like long and complex, scientifically worded claims on foods and prefer split claims – with a short succinct statement of the claim on the front of pack

The experimental studies do raise the possibility that the "halo" effect of a health claim might discourage consumers from seeking more information to evaluate the full nutritional value of a food. However, although the evidence is limited, the results from all the case studies examining particular claims are consistent with the proposition that health claims can support

improved nutrition awareness and better food choices. There does not appear to be any evidence to date of adverse consequences from the use of health claims, but the low level of use of claims on products makes studying this possibility difficult and further research is needed.

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