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Commentary. The big issue is ultra-processing

Labelling: The fictions



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Introduction



All forms of food labelling are mostly types of promotion for processed foods. A large proportion of these now are ultra-processed products (as symbolised by the double bacon-cheeseburger above) and as such, best consumed only occasionally or in small amounts. 'Front-of-pack' labelling, with its beguiling images and imaginative claims in big print, is obvious product promotion. In this commentary I maintain that on the whole, 'side and back of pack' small print labelling, which is supposed to protect customers and consumers, is also a form of advertising. This includes 'nutrition labelling', supposed to help prevent obesity and chronic diseases.

In this commentary, I mention only some aspects of labelling. The current examples I give are from the USA, where food labelling is most developed. Labelling systems first devised in the USA are adopted or adapted in many other countries, such as my own country of Brazil.

In this and my previous *WN* commentaries, I am not recommending that everybody should only consume fresh and minimally processed food. Not at all. Anybody in doubt on this point should please read *my first commentary*. What I am recommending is that food systems and supplies, and therefore diets from population to personal level, should contain a lot less degraded energy-dense fatty, sugary or salty, ultra-processed products than is the case in all high-income countries and now many if not most lower-income countries. This month, I warn that food labelling, as now devised, is liable to lead customers to consume not less but more ultra-processed products, and to lead parents to buy more such products for their children.

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Discussion

Box 1
Labelling: My view

Food labelling is supposed to inform and protect consumers. But in fact all forms of labelling essentially are types of advertising, mostly for packaged products, many of which are ultra-processed. Fresh foods are usually not labelled. Any food product that is labelled probably has something to hide. Labelling is supposed to make clear what is inside food and drink products. In fact much of it obscures their actual content. This is not the intention of the UN and national government officials and committees responsible for the regulation of food. It is however, I believe, the intention of the food manufacturers with whom regulators have to negotiate the nature, form and content of labelling.

You may think that systems of labelling other than product and brand names, such as claims and descriptions (the big words), lists of ingredients ('recipe labelling'), and nutrition labelling, are controlled or imposed by regulators. To some extent this is so. But increasingly, what is on food labels is what food manufacturers want you to know, or believe, about their products, which is what is good, or thought to be good, about them. What is bad about them generally remains concealed. Manufacturers are not about to warn you against their products. Labels that collectively amount to chaos are also in the interests of manufacturers (1). Inasmuch as food labelling, including nutrition labelling, gives customers and consumers the impression that ultra-processed products are healthy, it is not part of the public health solution, but part of the problem.

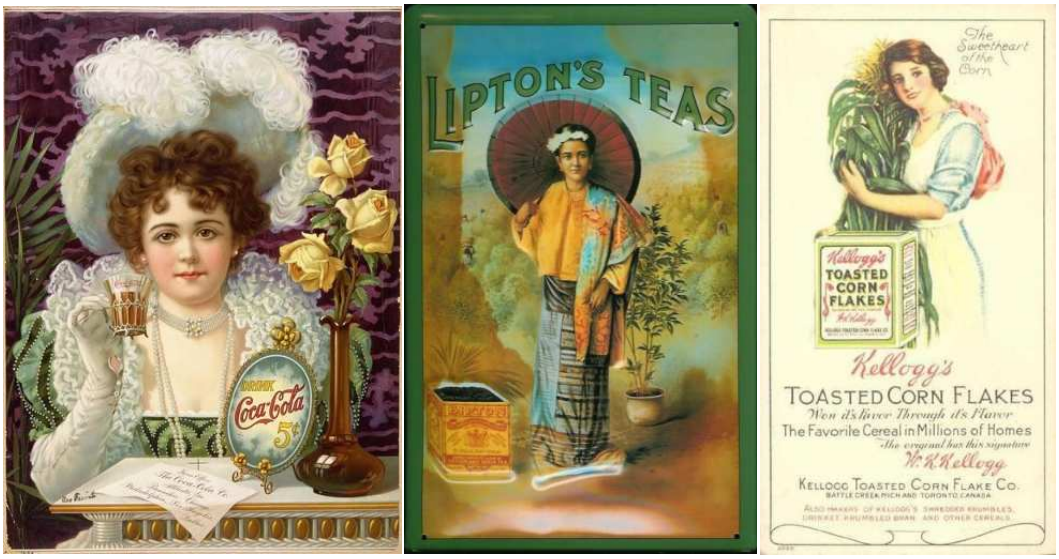
A very short history of labelling

Before food systems became industrialised, there was practically no food labelling, in the sense we know it now. There was no place on food for labels. Shops had signs indicating the nature of their wares. As sold, food was seasonal and fresh, or else processed by age-old methods. Meat came in joints and offals. Smaller animals, poultry, fish and seafood were sold as whole bodies or pieces. Other foods were sold from sacks, barrels, boxes, casks, churns, jars, and other wholesale containers, or else were heaped or bundled. Bread and other cereal products such as cakes and pastries, and also meat products such as sausages, were sold whole, unpackaged, and therefore unlabelled. Typically the only written identification was the name and the price, placed at the point of sale. Choice items, like prime meat and vintage wine, might be labelled with their location of origin, and sometimes with the name of the maker. Retailers such as butchers, fishmongers, greengrocers, grocers, vintners, bakers, and other traders, knew their business. Customers could usually see what the food was,

and if they were not sure, could ask. Street markets, and some small speciality shops not yet driven out of business by supermarkets, are still like this.

Names, brands, images, claims

Food as sold began to be labelled with brands, images and claims, as well as with names and prices, as products become increasingly mass manufactured in factories, processed by industrial methods, and then sold in packages (2). Air-tight canning and sterilisation of foods such as meat, vegetables and fruits, soups and broths, processes invented in France, were commercial enterprises by the early 19th century. Beginning in Britain, the vast increase in the production and importation of sugar as from the first half of the 19th century led to the mass manufacture of cakes, biscuits and candies, sold in tins and other packages. The 'mechanisation of death', using slaughterhouses with disassembly lines, refrigerated railway trucks, and canned meat products, developed notably from Chicago as from the second half of the 19th century (3). Pre-cooked packaged breakfast cereals on the market before the beginning of the 20th century, as was bottled Coca-Cola, formulated in Atlanta (4,5). Tea, coffee, extracts, sauces and other comestibles became sold in packets or bottles.



All this meant the beginning of labelling as we know it now. Manufacturers wanted to out-sell their competitors. Retailers were increasingly not responsible for what was in the products they sold. Customers often could not tell what the product was actually made of. From the start, labelling was a form of advertising, on- and off-pack. It included the name of the manufacturer, the type or brand of the product, maybe the price, and health and other claims, some of which were very imaginative. Image was crucial. Common techniques, as shown in the pictures above, were associations with high society (Coca-Cola, around 1890), dusky maidens (Lipton's tea, around 1900), and wholesome living (Kellogg's corn flakes, around 1910).

This style of advertising was also used for the first types of modern ultra-processed products. These were formulated by chemists who, beginning in the first half of the 19th century, believed that they could successfully imitate or improve on fresh or preserved foods. They did this in various ways. One was to reduce food to its constituent parts and then stick them together again usually with the aid of additives that made it resemble a natural product. Another, more radical, was to use ingredients that analysed out as chemically similar to those of the constituent parts of foods. Bold inventors, such as those that boosted the protein content of baby formula, claimed that the artificial product was an improvement on the natural food. In the 19th and early 20th century three outstanding examples of ultra-processed products were beef extract, originally devised by the German chemist Justus Liebig; baby formula, made popular in particular by the German merchant Henri Nestlé; and margarine, invented by the French chemist Hyppolyte Mège-Mouriés and later mass-produced using the hydrogenation process (of which more next month).







The off-pack advertising glamorised these early ultra-processed products. Pictures of the products with their labels were commonly featured, as shown above. Maidens, a symbol of purity, angelic as on the left, or bucolic and carrying what seems to be a jar of the type that might store butter, remained popular. Categorical claims, like 'the complete food for young children', were made.

But what was in industrially processed products? Increasingly, retailers and customers did not know and could not tell. In early modern times, food regulations were chiefly concerned with fraud (adulteration) and infection (contamination). After series of scandals, the UK Food Safety Acts first passed in 1860 were followed by the first US Pure Food and Drugs Acts of 1906 and the foundation of the US Food and Drug Administration. In urging the US Acts, then president Theodore Roosevelt made the case for regulation, aware of the words of Edmund Burke justifying regulation: 'Society cannot exist unless a controlling power upon will and appetite be placed somewhere' (6). Official inspectors needed to know what actually was in processed food. This marked the beginning of labelling that went further than name, firm, brand, and claims, and which was meant actually to state what was in the product. As it has turned out, the devil is in the detail.

Ingredient ('recipe') labelling

The US Food, Drugs and Cosmetics Act of 1938 obliged manufacturers to state the ingredients of their products. This 'recipe' labelling takes the form of a list of the ingredients of processed foods, in order of weight (not of contribution to total energy), and so on down to items that supply small while significant amounts of weight. Later, manufacturers were also required to specify some, but not all, of the chemical and other additives increasingly used to make the products look, smell and taste like real food. Below is a current US example, of a ready-to-heat ultra-processed pizza product, whose ingredients are listed underneath the nutrition label.

Nutrition Facts

Serv. Size 6 2/25 oz (172g)
Serv. Per Cont. 3
Calories 370
Fat Cal. 160

*Percent Daily Values (DV) are based on a 2,000 calorie diet.

Amount/serving	%DV*	Amount/serving	%DV*
Total Fat 18g	**28%**	**Total Carb.** 31g	**10%**
Sat. Fat 8g	**40%**	Fiber 2g	**6%**
Trans Fat 0g		Sugars 4g	
Cholest. 40mg	**14%**	**Protein** 20g	
Sodium 1040mg	**43%**		

Vitamin A 10% • Vitamin C 6% • Calcium 35% • Iron 15%

INGREDIENTS: Pizza Crust (Wheat Flour, Water, Soybean Oil, Yeast, Sugar, Salt, Calcium, Propionate, L-cysteine.), Low Moisture Part Skim Mozzarella Cheese (pasteurized part skim milk, cheese culture, salt, enzymes), powdered cellulose (to prevent caking) potassium sorbate and natamycin (preservatives)), Tomato Sauce (Tomato Concentrate Made From Red Ripe Tomatoes, Salt, Citric Acid, Red Bell Pepper Powder, Natural Flavoring, Spice.), Beef Sausage Crumbles (beef, water, salt, spice, sugar, monosodium glutamate, sodium phosphate, BHA, propyl gallate, citric acid), Water, Tomato Paste (tomatos, citric acid), Pork Pizza Topping (pork, water, textured vegetable protein (soy flour, isolated soy protein, caramel coloring) spices, salt, sodium phosphate, sugar, garlic powder, monosodium glutamate), Canadian Style Bacon water added (cured with water, salt, dextrose, corn syrup, sodium phosphate, sodium erythorbate, sodium nitrite), Pepperoni (pork, beef, salt, contains 2% or less of water, dextrose, natural flavorings, natural smoke flavoring, sodium ascorbate, garlic powder, oleoresin of paprika, lactic acid starter culture, sodium nitrite, citric acid, BHA, BHT.), Pizza Sauce Seasoning (salt, spices, onion, garlic, natural flavors, parsley)

CONTAINS: MILK, SOYBEANS, WHEAT

Ingredients labelling teems with problems. The list is reproduced here perhaps larger than it appears on the actual pack in the shops. In this example, sugars and syrups are listed six times separately, and salt and its compounds 17 times. Sources of fats such as meat, milk and cheese are listed six times, and oil once – high up the list of the ingredients of the crust. There are nearly 30 additives listed, and the product is likely to contain a large number of flavours, which do not have to be individually listed. The actual nature of the 'beef' and 'pork' remains obscure. (A colleague thinks this may be a composite label for various ready-to-heat pizzas, not any particular product, which if so, is confusing). In the lists of many products (this is not an example), the term 'hydrogenated', now fairly familiar, and 'hydrolysed', which for most people is mysterious, referring to intensive forms of processing of fats and proteins respectively, appear. Sometimes ingredients labels state the percentage of the total weight supplied by some ingredients.

This mess is not the fault of ingredient labelling as such. The problem is caused by the nature of ultra-processing. Ingredient labelling in my view is somewhat more informative than nutrition labelling. In this example, you can tell from the list that the product is very different from pizzas cooked on-site in reputable restaurants or at home. Thus you can see – if your eyesight is good enough – that the foods used as

toppings of proper pizzas, as no doubt displayed on the front of the ultra-processed pizza container, have largely been replaced by powders and cosmetic additives.

Until the second half of the last century, nutrition scientists concerned with public health focused on avoidance of nutritional deficiencies, and ways to make populations bigger, stronger, and more resistant to infection. This remains the main focus of professionals concerned with nutrition and public health in low-income countries. However, beginning in the early part of the second half of the last century, serious chronic diseases became rapidly epidemic in high-income countries. These included heart disease, diabetes, and various cancers, osteoporosis, and obesity, all of which are now also epidemic in most lower-income countries.

As from the 1960s, UN agencies, national governments, and authoritative non-government organisations have regularly convened expert committees whose task has been to identify the dietary causes of these diseases (7). The recommendations of most of these reports have become convergent. As summarised in the most recent UN report (8), they have usually agreed that the diets typically consumed in industrial countries and settings contain too much total and saturated fats, too much sugar and salt, and not enough dietary fibre, vegetables, and fruits.

Nutrition labelling

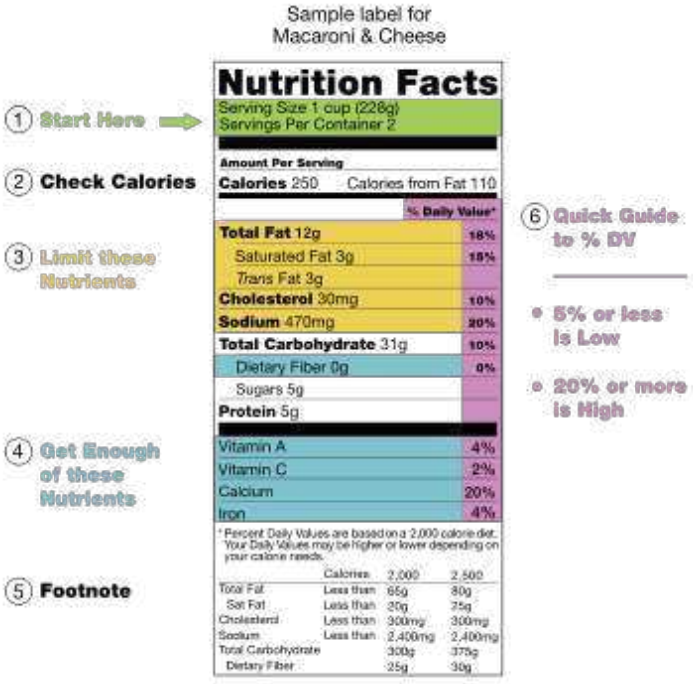
This is the public health reasoning behind nutrition labelling. It responds to the generally harmonious recommendations to prevent chronic diseases. It was introduced at first in the US in the 1970s, then in Europe in the 1980s, then in lower-income countries mostly in this century. In Brazil it was introduced in 2000. Practically all nutrition professionals believe in and recommend nutrition labelling.

The context of nutrition labelling is often overlooked. Since the 1980s, it has steadily become a substitute for regulation. Its introduction, at first on a voluntary basis, and then as required by statute in more or less elaborate forms, has run in parallel with the time when food supplies have become much more ultra-processed. Specialist shops, the main retail outlets for food in most cities until the second half of the last century, have now been largely displaced by self-service supermarkets most of whose products are packaged, in high-income countries since around the 1960s, and in lower-income countries since the 1990s.

All over the world, regulations guaranteeing the nature and quality of processed foods have been abolished, and the competence and authority of regulatory bodies have been weakened. Responsibility for the content of food products has passed from government to industry. Deregulation is an intrinsic part of privatisation. The deal set forth by governments committed to 'the free market', is that food manufacturers are free to make products out of anything that is legal and safe,

including the cheapest available raw materials, as long as the products are labelled with clear, uniform and explicit statements about their nutritional nature and quality.

Typically, the solution is seen as 'promoting healthy diets and lifestyles' (8) which, on the whole, is interpreted as meaning more information and education of consumers. The declared policy has been and is that customers and consumers are then able to make informed choices. If they don't understand what's on the label, or choose not to learn its codes or to pay no attention, that's too bad. While this is never stated, nutrition labelling represents an attempt by regulators to limit the damage caused by the great wave of ultra-processed products. Let the buyer be aware!



But are nutrition labels clear and explicit? No, they are not. Above is a nutrition label of the type now used in the US. The example shown is for chilled ready-to-heat macaroni and cheese. Points 1-6 do not appear on any label; nor does the colour coding. These are further guides, available from the US Food and Drug Administration (FDA). If you access the FDA website, you can read a long essay explaining the nutrition label of macaroni and cheese (9). The complete FDA book of rules for nutrition labelling issued in 1993 contained 875 pages (10).

As can be seen, four of the main divisions on the label are the 'big four' macronutrients: energy (expressed as calories, and in many countries also as kilojoules), fat, carbohydrate, and protein. Salt (as sodium) and in the US dietary cholesterol, are also emphasised. Underneath are lists of micronutrients – vitamins and minerals. In the US vitamin A and C, calcium and iron, have to be listed. The nutrition labels of products that are 'enriched', such as ready-to-eat breakfast cereals, include long lists of micronutrients, whose presence, together with claims and

indications of health benefits, is usually also stated in big print on the front of packs.

The numbers given in the main part of the label correspond to a serving (or portion) size, which in the US is specified by the FDA. This is usually substantially less than is actually consumed, which suits manufacturers. In this example, 1 cup of macaroni cheese contains 3 grams of saturated fat, another 3 grams of *trans* fat, and 470 milligrams of sodium (just over a gram of salt). How much this means to people in the USA who still think in terms of pounds and ounces, is anybody's guess.

Now look at the numbers on the right hand side of the label. In case you can't read them, these show that 18 and 15 per cent of the 'daily values' (DVs) for fat and saturated fat respectively, and 20 per cent for sodium, are supplied by one serving, and therefore 36, 30 and 40 per cent if two cupfuls are consumed. This means that the product is very fatty, with 44 per cent of its energy coming from fat, and that it is extremely salty, as you would know if you tasted it. It is not possible to tell whether its protein or sugar content is significant, because no DVs are given. Down the label, guided by the USDA tips not on the label, it is also possible to see that the product is a very poor source of vitamins A and C and iron, whereas it is high in calcium, because of the cheese.

The label does not state what percentage of the DV for energy, here given as 2000 (or 2500) calories a day, is in a serving, or in the whole thing. Manufacturers are keen not to disclose this information. You can work it out, and this particular product does not require a calculator. If your energy turnover is 2000 calories a day, somewhat above that of most sedentary women, one serving supplies 12.5 per cent of your energy turnover, and the whole thing 25 per cent. On a 2500 calorie a day turnover, a bit below that of most sedentary men, the figures are 10 and 20 per cent.

What are 'Daily Values' or DVs, (known in other countries as 'Daily' (or 'Dietary') 'Reference Values' or DRVs? The term has two completely different meanings, as indicated by the USDA tips. It may mean an upper limit, for food constituents usually consumed excessively, such as saturated fat. Or, it may mean a target, for items depleted in typical industrial diets, such as dietary fibre and various vitamins and minerals. Are readers of nutrition labels aware of this ambiguity? No doubt some are. Is it misleading? Yes. Objections to nutrition labelling are summarised below.

Seven objections to nutrition labelling

Nutrition labelling is supposed to inform and protect customers and consumers. That's the story, and this is what regulators want. But the story is fiction. The fact is that on the whole it protects the manufacturers and promotes their interests.

1 Products with nutrition labels are often and perhaps usually not nourishing

Nutrition labels appear on the packages of processed foods. Many of these are degraded, energy-dense, fatty, sugary or salty ultra-processed products. Perhaps the main value of nutrition labelling is as a warning, or at least a caution.

2 Nutrition labels are mystifying

Nutrition labels are mainly lists of 'macronutrients' and 'micronutrients', together with numbers and percentages supposed to guide customers and consumers. That is to say, these lists are of chemical constituents of foods. As such, much of this information is, for anybody not trained in nutrition science, incomprehensible.

3 'Carbohydrate' is meaningless and misleading

Inclusion of 'carbohydrate' is meaningless. What is useful to know, as a warning, is the amount of sugar, which is listed on nutrition labels in the US but usually not in other countries. Also, the relevant point about any type of carbohydrate is the extent to which it is processed. This type of information is absent from nutrition labels, which say or indicate nothing about processing.

4 'Protein' has no value

Protein, like carbohydrate, is included on nutrition labels simply because it is one of the 'big four' macronutrients. Chemically, all food is made up from proteins, carbohydrates, and fats, which supply energy. Alcohol, which also supplies energy, is not counted. But anybody with enough money to buy processed products is most unlikely to be short of protein. Indeed, most people who consume industrialised diets take in plenty of and even excessive amounts of protein. In any case, 'protein' is given no 'daily value' on nutrition labels. It serves no purpose.

5 The presence of vitamins and minerals is often misleading

Nutrition labelling has given manufacturers a massive incentive to 'enrich' their products with synthetic vitamins and minerals, and to make big-print claims or suggestions about the supposed health-giving powers of the products. The nutrition labels of some products, especially those marketed for children, resemble the labels of multi-vitamin and mineral pills which, for anybody who wants 'health insurance', are a more rational way to 'top up' with micronutrients. Many 'enriched' products are degraded, energy-dense, ultra-processed and basically unhealthy, marketed as if they are 'health foods'.

6 The term 'daily value' is misleading

Daily amounts of nutrients on labels are given in the US in terms of 'daily values'. In other countries the terms used are 'daily' or 'dietary' 'reference' values. All these terms are misleading. The amounts specified refer to nutrients that people consuming industrialised diets are maybe or usually short of, such as dietary fibre and various micronutrients. They also have a completely different meaning, and refer to dietary components that are contained excessively in industrialised food supplies, where the 'value' is a top advisable limit. (No 'value' is given for sugar, because manufacturers are still successfully resisting imposition of any meaningful upper limit number). But the term 'value' in its ordinary meaning implies that customers and consumers should tot up the amounts of saturated fat and sodium they consume, in order to reach the daily 'value' target. In the US, assiduous customers and consumers who read and pay attention to footnotes are given some guidance on this point.

7 Nutrition labelling is intrinsically obscure

In order to make proper sense of nutrition labels, customers and consumers would need to have a good idea of their actual average daily energy turnover. They would need to decide a top limit for added sugar consumption (less than 10 per cent of energy is recommended internationally). They would further need a calculator, a magnifying glass, and a notebook. They would also have to calculate the nutritional contribution to their regular diets of all foods they purchase that do not carry nutrition labels, including most of that which is consumed away from home, and not forgetting alcoholic drinks, all of which would involve consulting food composition tables. Does any shopper do this? I am sure not. Does any nutrition professional do this? Very unlikely, I dare say. Do you?

Conclusion

Food labelling tells consumers little of what they need to know about processed products. This includes nutrition labelling. Food manufacturers have successfully pressed for nutrition labelling to exclude useful information and to include useless information, and use its formats to promote grossly degraded products 'fortified' or 'enriched' with synthetic vitamins and minerals. At its worst, nutrition labelling amounts to a form of legally sanctioned fraud. It is not possible to reform nutrition labelling in anything like its current form, so that it might be really useful.

Are these views too harsh? I suggest not. Attempts by regulators, supported by health and civil society organizations, to adapt nutrition labels to make them really useful – such as 'traffic light' systems, or use of words like 'high', 'medium' and 'low', referring to fat, sugar or salt content – have been successfully blocked by the food manufacturing and associated industries and their trade organisations. In Europe,

rejection of such a system in 2010 by the European Parliament followed an industry lobbying campaign said to have cost €1 billion (11). Labelling? Watch out.

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