

# Food and catering modifications for public health: chronic disease and obesity prevention

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## Abstract

Increasing consumption of processed and pre-prepared foods contributes to increased energy and lowered micronutrient intakes. Guidance to assist caterers to prepare products adhering with national and international dietary recommendations is justified and international examples exist. Producing items lower in energy, fat and free sugars may offer health and financial advantages. Consumers are often unaware of the content of meals and labelling of pre-prepared and restaurant meals show promise in improving food choice. Some labelling terms such as 'low fat' may favour increased consumption. Voluntary approaches have led to some product reformulation and portion-size reductions. Mandatory targets are favoured by the health lobby but opposed by industry. Fiscal schemes, including taxes on high fat/sugar foods to alter food intakes, have enjoyed mixed success.

**Keywords** Calorie labelling; food choices; food taxes; reformulation; retail sales

## Introduction

Processing foods influences energy and macro/micronutrient content. Consuming prepared meals and foods removes consumer control over composition and portion size, making understandable labelling essential.

The frequency of eating outside the home has been estimated at one in six meals and snacks, or a quarter of men's and a fifth of women's calorie intake. Associations between out-of-home eating and nutrient intakes<sup>1</sup> suggest that it leads to higher intake of energy and fat and lower intake of micronutrients.

## Strategies to alter catering provision

Guidance for caterers could alter the type and composition of food provided outside of the home. An early voluntary scheme charged catering establishments with gradually increasing fruit and vegetable provision by providing them with main courses at no additional cost.<sup>2</sup> Catering included fast-food outlets, and operators were requested to expand their range and choice to include a healthy option. No improvements were seen in provision and only those caterers aspiring towards accreditation awards succeeded.<sup>3</sup> Little evidence of concerted attempts to

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## What's new?

- Calorie labelling of ready-to-consume snacks and meals is evident internationally, though results of evaluations of impact are conflicting. Some benefits affecting food choice/energy intake were seen in those noticing labelling. Health and institutional settings showed most promise
- Voluntary approaches to encourage processors to reduce energy, fat, sugar and salt content have shown limited impact on product composition and portion size. Financial benefits to caterers are possible

lower the fat/sugar content of food and drinks was found, and evaluation confirmed little impact on provision. Perhaps the guidelines were too general, lacked fiscal backbone<sup>3</sup> and overlooked portion-size issues.

Another strategy aimed to increase the sale of healthier options to >80% of items on sale in Australian government catering outlets.<sup>4</sup> Food and drinks were classified by traffic-light coding. Green foods included carbohydrate-rich items, fruit and vegetables, reduced-fat dairy products, lean meats, fish and poultry. Amber comprised mainly processed foods with some free sugar, salt and/or fat. Those in the red zone were nutrient-poor, and high in fat, added sugar and/or salt. Red items were limited to below 20% of foods and drinks, not prominently displayed and removed from vending machines. Green foods were promoted whereas amber food and drinks were chosen carefully and offered in reduced portion sizes. Foods offered across participating units were similar and costs the same. Adherence to elements of the strategy varied, but 25% of units reported implementing the entire strategy. Implementation was problematic for vending machines with customers dissatisfied about withdrawal of red items, especially sugary drinks. The scheme appears to have been partly successful, though the impact on total sales, profits and calorie sales pre- and post-implementation are unknown.

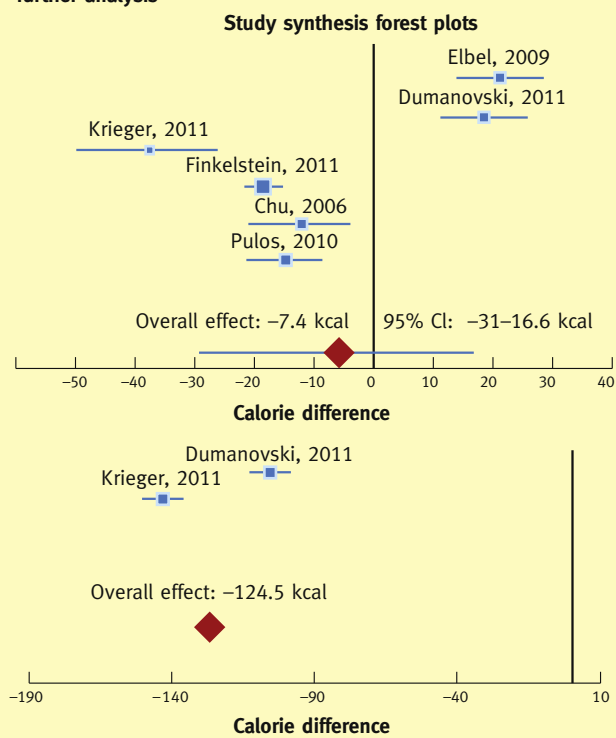
## Calorie labelling

The first anti-obesity legislation was calorie labelling, implemented initially in New York City. Chain restaurants were legally obliged to label their menus with energy content alongside price after the enforcement in 2008 of legislation passed in 2006.<sup>5</sup> Before the bill nutritional information was rarely available in chains, but as the majority of foods sold were high in energy it was suggested that legislation might affect calories sold.

Formal evaluation sought to determine whether the addition of calorie labelling in fast food chain restaurants affected purchasing.<sup>6</sup> The evaluation included around 8000 customers patronizing 168 outlets of 11 firms, before and after legislation, with reported purchases verified by receipts. There was little impact on calorie choices, despite the ease of altering calories purchased by choosing a smaller portion size of the same meal. A meta-analysis estimated the impact of calorie labelling on purchases, finding an overall reduction of 7.5 kcal, but in the two studies where consumers noticed labels the reduction in purchases was 125 kcal, sufficient to affect weight if repeated habitually<sup>7</sup> (Figure 1). Some food industry partners have

## Meta-analysis forest plots of the impact of calorie labelling on calories purchased

Meta-analysis of all studies reporting differences which allowed further analysis



Adapted from Nikolaou C, Hankey CR, Lean MEJ. Calorie-labelling: does it impact on calorie purchase in catering outlets and the views of young adults? *Int J obesity* 2014.

Figure 1

subsequently adopted calorie labelling on a voluntary basis as part of the English Department of Health's Responsibility deal.<sup>8</sup>

Settings for the implementation of calorie labelling are crucial to impact. A labelling study was performed in two hospitals, both employing digital menu boards in canteens to list choices and costs.<sup>9</sup> The intervention site board displayed the nutritional content of foods, calories, sodium and fat contents with a logo beside most healthy items. The comparator hospital menu boards were unchanged. The outcome was energy macronutrient content of purchases. Intervention-site consumers chose items containing significantly less energy ( $-21\%$ ,  $P < 0.001$ ), sodium ( $-23\%$ ,  $P < 0.001$ ), saturated fat ( $-33\%$ ,  $P < 0.001$ ) and total fat ( $-37\%$ ,  $P < 0.001$ ), though it is unclear whether sales were affected. Calorie labelling was employed in retail outlets of an urban university in the UK.<sup>10</sup> Labels were posted at the point of sale for items, mostly sandwiches and rolls, at retail catering outlets accessed by students and staff. Comparator outlets selling the same items on the university campus had no labelling in place. Sales of all labelled items fell significantly ( $-17\%$ ), but were unchanged in the comparator sites free of labelling ( $-2\%$ ). Sales data demonstrated an impact on calorie sales; higher-calorie items, defined as those providing  $\geq 400$  kcal per portion fell more than the low-calorie items, ( $-30\%$  vs.  $-18\%$ ). Calorie

labelling reduced total sales overall but increased purchases of reduced-calorie items. These studies suggest a positive impact of calorie and nutritional labelling on choice, with financial disadvantage in one case. Demographic characteristics and consumer preferences appear to predict use of calorie label, with healthcare and academic settings offering promise, in contrast to fast-food outlets.

### Front-of-pack labelling

Fifteen seconds is all it takes a consumer to decide on a supermarket purchase, with labelling often the deciding factor. At present, only back-of-pack labelling is mandatory. An example of current and forthcoming labelling is shown in Figure 2.<sup>11</sup>

Somewhat surprisingly, front-of-pack labelling appears on 80% processed foods in the UK, and frequently includes the traffic-light system, which is clear to consumers (Figure 3).<sup>11</sup> However, blanket terms, such as 'low fat' may potentially mislead and encourage the development of obesity. This was illustrated in a laboratory-based study of adults with a range of BMIs. Chocolate was offered *ad libitum* and intake recorded, and participants were told it was either 'low fat' or standard. Intake of the version labelled 'low fat' was increased by up to 50%, with people assuming it had fewer calories.<sup>12</sup> A study in subjects who were either restrained or unrestrained eaters<sup>13</sup> found restrained eaters ate more of an unhealthy brand of biscuits when it was labelled as low calorie, whereas unrestrained ate more of the healthy brand regardless of caloric content. Clear labelling of foods as more healthy may increase sales.<sup>12</sup>

The potential influence that labelling may exert over sales can be gauged by the strength of the food industry's challenge against the compulsory use of the traffic-light system.<sup>1</sup> Traffic lights are clear and understandable to consumers and have been shown to be popular and unambiguous.<sup>1</sup> Recently, European Union

### Current format until 12/12/2014

	Per 100g
Energy	1500kJ/356kcal
Protein	9.9g
Carbohydrate of which sugars	58.1g 16.8g
Fat of which saturates	7.4g 1.1g
Fibre	8.9g
Sodium	0.04g

### Format to be used when providing nutrition information from 13/12/2014

	Per 100g
Energy	1500kJ/356kcal
Fat of which saturates	7.4g 1.1g
Carbohydrate of which sugars	58.1g 16.8g
Protein	9.9g
Salt	0.10g

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Figure 2 Back-of-pack labelling.

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