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Food labeling

Gradation of solutions in food labelling?

The increased burden of obesity and other diet-related diseases all around the world, concomitant with the industrialization and globalization of the food chain, pushed many public health authorities to regulating the information delivered to the final consumer through food labelling, at least for pre-packed foods. The three papers in this issue of the Global F&V Newsletter illustrate different aspects of the topic ranging from factual (neutral) information, still very diverse despite the efforts of the Codex Commission towards international harmonization (Padilla), the proposal of Front-of-pack synthetic notation of food nutritional quality on the basis of nutrient profiling (Julia), to the suggestion of more stringent regulation of nutritional aspects of some types of food promotions (Jahns). Though all these aspects still require more research to better refine the definition of healthy diets and the characterization of the nutritional quality of a given food, public health managers should not wait for a definitive scientific answer (which likely will never exist) about what could be the best and the most efficient tool: there is currently enough available knowledge (as shown in this issue as examples) in many countries to already implement reasonably improved regulations in food labelling/promotion beside neutral basic information... with a reasonably expected efficiency if they are part of a more global nutrition-health policy.

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A worldwide shared newsletter

Acknowledgement to 250 contributors since 2006

February 2013 : C. Hartmann; A. Flego; M. Caraher (Cooking skills: a tool for a healthy diet)

March 2013 : DA. Greenaway; L. Kim; MA. Chiasson; DY. Chena ; JA. Gazmararian (WIC: Latest advances)

April 2013 : R. Varraso; CA. Camargo Jr ; P. Ellwood, I. Asher; J. Protudjer, LG. Wood (Update on Diet and Asthma)

May 2013 : J. Breda; M. Leenders; B. Bueno-de-Mesquita ; A. Bellavia ; Z. Kabir (F&V consumption and life expectancy in Europe)

June 2013: K. Allen ; G. Mitrou and colleagues; C. Hawkes (F&V - from latest science to policy in action)

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An overview of legislation and trends in food labelling

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Significant variation in labelling regulations

Consumers are aware of dietary recommendations yet the number of people suffering from food related Non-Communicable Diseases is still increasing. Food labelling is supposed helping consumers to choose, but the format, number and types of nutrients that must be included on product labels vary from country to country[1]. While the information required in different countries about the ingredients contained in products is fairly homogeneous, concerning nutrients it is far from being the case, despite the best efforts of the Codex Alimentarius, which, in 1985, introduced the Guidelines on Nutrition Labelling, an international set of regulations which was revised in 2013. Variations in labelling regulations are not just a problem for the food industry and international trade: they result in both additional costs and public incomprehension.

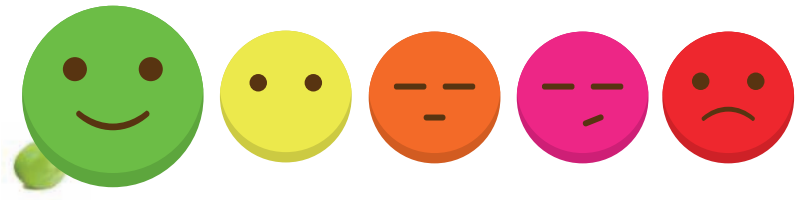
Regulations on food labelling were introduced in USA in 1990, with the Nutrition Labelling and Education Act (NLEA). Since 1994, all pre-packed products must carry information on nutritional content and all fresh products must provide an information point. Information must be given concerning energy (as calorie content), calories from fat, total quantity of fat, sodium, cholesterol, fibre, carbohydrates, proteins, sugars, vitamins A and C, and minerals (e.g. iron and calcium). The information is based on an average daily diet of 2,000 calories. In China, food labelling is voluntary, but regulations are to be introduced shortly. Canada, Mexico, Australia and New Zealand, Malaysia, Israel and the Mercosur countries already have legislation concerning nutrition labelling. In EU, regulations introduced in 2011 require the agri-food industries to provide information about the energy content of their product and six specific nutrients (fat, saturates, carbohydrate, sugars, protein and salt), expressed as a quantity per 100g or 100ml of product by December 2016. Any other information is provided voluntarily. The format for providing the information still needs to be determined, as this can influence consumer's choice. Based on an analysis of four EU countries, Feunekes et al. (2008) found that consumers make better choices when the information is on the front of the package rather than on the back[2]. In the USA, the FDA is developing a single 'front-of-pack labelling' system after studying 20 different methods. The system is said to encourage the industry to reformulate products and to help consumers understand the nutritional data whatever their level of education or cultural origins. In England, a standardised format has been developing since the introduction of the Guideline Daily Amount (GDA) in 1988. There is also an increasing tendency to provide this kind of information on restaurant menus, particularly with respect to fast food: in many American states this is compulsory, while in England some 28 restaurant chains do so as part of the Department of Health's voluntary Responsibility Deal programme[3].

Consumer comprehension and reactions

According to a report by Nielsen (2012), irrespective of the region of the world they lived in, 5 to 8% of people questioned said that they don't understand food labels. The terms low, free, high, rich, etc. need to be clarified. Although there is no doubt that it is worthwhile to provide consumers with the nutritional information they need to make informed choices, initiatives like these are based on the assumption that consumers actually want this kind of information. However, Nayga (2000) has shown that the consumers who actually read the labels are those who are already more conscious of such issues[4], and highly educated women in particular[5].

Conclusion

Faced with the complexity of trying to achieve international standardisation and the difficulty consumers have in understanding the labels, a number of simple, voluntary initiatives have been introduced, such as the USA's 'Nutrition Keys' in 2011, the traffic light system used in England and the 5 colour code currently under discussion in France. As well as being easy for consumers to understand, they also help combat popular beliefs regarding the nutritional qualities of a given product. Nevertheless, voluntary initiatives like these that have not been included in European legislation are encountering a certain amount of resistance from producers, retailers and the food industry.



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Discriminating nutritional quality of foods using the 5-Color Nutrition Label in the French food market.

Consistency with nutritional recommendations

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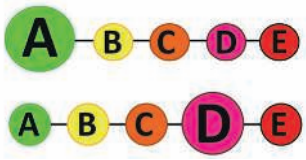
A recent French proposal for a front-of-pack nutrition labelling system

Recent propositions in public health nutrition in France have put forward the use of a front-of-pack nutrition label on foodstuffs, as a complementary public health tool, in order to help consumers at the point of purchase. This label would summarize the nutritional quality of the food or beverage[1], based on the Food Standards Agency nutrient profiling system (FSA score)[2-4]. The proposed format for the label would include five color-coded categories of nutritional quality (the 5-CNL), and presented in the form of a chain of five discs of the different colors (Green/yellow/orange/pink/red), with a larger disc representing the nutritional quality of the product (see Figure 1).

Figure 1: 5-CNL format



How to transfer a nutrient profiling system to labelling purposes in the French context ?

However, some adjustments or modifications of the original score may be necessary for it to be consistent so that such a system is adapted for labelling and complies with the French nutritional recommendations[5]. Finally, in order to be efficient in a purchasing situation, the 5-CNL would need to be able to discriminate the nutritional quality of foods across food groups (e.g. fruit and vegetables should be classified with a higher nutritional quality than snacking products) and within a category (e.g. among dairy desserts, yogurt should be classified with a higher nutritional quality than chocolate pudding).

Objectives: consistency of the classification with French recommendations

Our objectives were to assess the performance of the 5-Colour nutrition label (5-CNL) front-of-pack nutrition label based on the Food Standards Agency nutrient profiling system to discriminate nutritional quality of foods currently on the market in France and its consistency with French nutritional recommendations.

Methods:

Nutritional composition of N=7777 foods available on the French market collected from the web-based collaborative project Open Food Facts were retrieved. FSA score for each food was computed using its composition for 100g in energy, sugars, saturated fatty acids, sodium, proteins, fibers and percentage of fruit and vegetables. Distribution of products across the 5-CNL categories according to food groups, as arranged in supermarket shelves was assessed. Discriminating performance was considered as the number of color categories present in each food group. In the case of discrepancies between the category allocation and French nutritional recommendations, adaptations of the original score were proposed.

Results:

Consistency with French recommendations

Overall, the distribution of foodstuffs in the 5-CNL categories was consistent with French recommendations: 95.4% of 'Fruits and vegetables', 72.5% of 'Cereals and potatoes' were classified as 'Green' or 'Yellow' whereas 86.0% of 'Sugary snacks' were classified as 'Pink' or 'Red'. Moreover, within each group, differences in nutritional quality within the various sub-groups were also grasped by the 5-CNL classification, with good discriminating performance (at least 3 colors present) (Figure 2). For example, within 'Dairy products and fresh desserts', 'Milk and yogurt' were consistently distributed in higher nutritional quality categories than 'Dairy desserts and other fresh desserts' (Figure 2). In the 'Fruit and vegetables' category, Vegetables were mainly in the 'Green' class (87.7%), with some in the 'Yellow' class (10.6%) and up to the 'Pink' class (0.3%). Fruits were also mainly in the 'Green' class (94.5%) or 'Yellow' class (3.8%) and up to the 'Orange' category (1.6%). Dried fruit, on the other hand, were mainly classified as 'Orange' (72.7%) and up to the 'Rd' category (3.0%).

Adaptations of the original nutrient profiling system to match recommendations

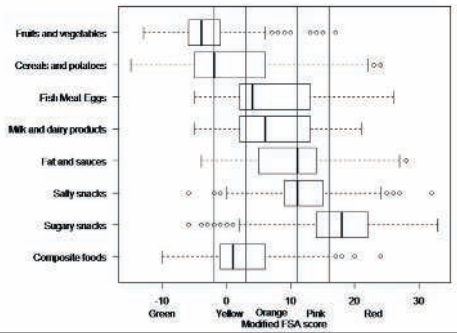
Adaptations to the original FSA score computation model were necessary for beverages, added fats and cheese in order to be consistent with French official nutritional recommendations. For beverages, the FSA score energy and sugar components of the score were modified taking into account the distribution of energy and sugars in beverages. This allowed for a better discrimination of beverages according to their nutritional quality.

For cheese, the protein component of the score was included in the computation whatever the level of points for unfavourable nutrients (energy, saturates, sugars and sodium), allowing to take into account the calcium content of cheese. For fats, the saturates component of the score was adjusted to take into account the distribution of this component in fats, allowing for a discrimination between animal and vegetable added fats.

Conclusion:

The 5-CNL label displays a high performance in discriminating nutritional quality of foods across food groups, within a food group and for similar products from different brands. Adaptations from the original model were necessary to maintain consistency with French recommendations and high performance of the system.

Figure 2: Boxplot of the distribution of food groups in the modified FSA score.



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Diet quality of items advertised in supermarket sales circulars compared to the diets of the US population, as assessed by the Healthy Eating Index-2010

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Supermarket sales circulars

Worldwide, supermarkets use sales circulars to highlight specific foods that maximize store profitability, usually at discounted prices. Circulars therefore function to promote sales of items that help form the set of available foods within households from which families and individuals make choices about what to eat. If circulars promote discretionary foods (usually high in added sugars and solid fats), they have the potential to adversely affect diet quality and contribute to the obesity epidemic.

In most countries, supermarket sales circulars promote unhealthy foods, with discount stores advertising more unhealthy foods than traditional supermarkets[1-3]. In the US, content analyses have shown that items advertised in sales circulars are not concordant with federal dietary guidance[4,5]. However, the quality of the total mix of foods had not been evaluated. The aim of this study was to quantify the diet quality of the items promoted in one year's worth of weekly supermarket flyers using the US Healthy Eating Index-2010 (HEI-2010) diet scoring system[6]. We also compared the HEI-2010 scores of the diet of the US population to those of the sales circulars to assess their comparability.

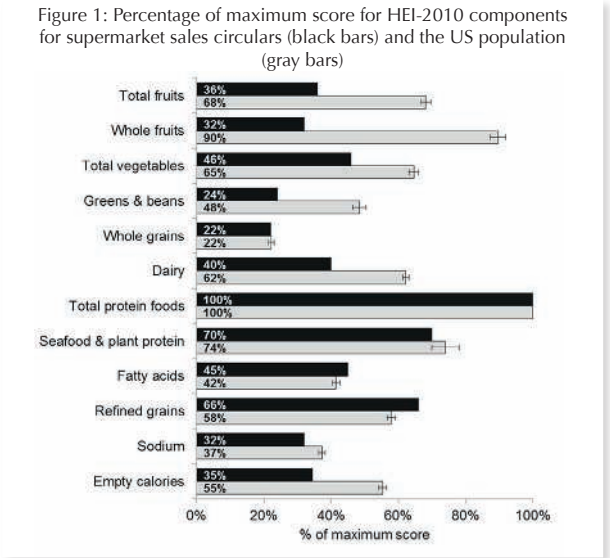
Study design

This study involved analysis of 52 weekly Sunday supermarket sales circulars from one chain store in a small Midwestern town in the USA and the nationally representative National Health and Nutrition Examination Survey (NHANES). The HEI-2010 scoring system is composed of 12 food group and nutrient components which are then added to derive a total score. Nine components are recommended for Americans to consume more of and three are components that should be consumed in moderation. The NHANES data consisted of 24-hr recall data reported by 9,522 individuals aged two years and older. Each food item from the circulars was coded (excluding nonfood items and alcohol), resulting in 9,149 items coded using the same schema as the NHANES. The codes were used to construct the components of the HEI-2010 for both datasets.

HEI-2010 scores of the sales circulars and US population

The total HEI-2010 score for the circulars was 42.8 out of a maximum of 100 points, lower than the total population score of 55.4 ± 0.7. Scores were lower for several dietary components, including empty (discretionary) calories (Figure 1). Our results indicate that sales circulars may be nudging consumers in the direction of unbalanced diets by promoting items that are low in vegetables, fruits and dairy and higher in salt and discretionary calories. Modifying sales circulars to more closely reflect dietary guidance is a potential way for public health interventions to promote a healthier dietary intake, especially for budget-conscious shoppers.

Figure 1: Percentage of maximum score for HEI-2010 components for supermarket sales circulars (black bars) and the US population (gray bars)



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