

## Review

# Monitoring the health-related labelling of foods and non-alcoholic beverages in retail settings

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## Summary

Food labelling on food packaging has the potential to have both positive and negative effects on diets. Monitoring different aspects of food labelling would help to identify priority policy options to help people make healthier food choices. A taxonomy of the elements of health-related food labelling is proposed. A systematic review of studies that assessed the nature and extent of health-related food labelling has been conducted to identify approaches to monitoring food labelling. A step-wise approach has been developed for independently assessing the nature and extent of health-related food labelling in different countries and over time. Procedures for sampling the food supply, and collecting and analysing data are proposed, as well as quantifiable measurement indicators and benchmarks for health-related food labelling.

**Keywords:** Food environments, food labelling, INFORMAS, monitoring.

**obesity reviews** (2013) **14** (Suppl. 1), 70–81

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## Background

The rising burden of obesity and diet-related non-communicable diseases (NCDs) has focused attention on policy-responsive aspects of the food environment that might influence consumer behaviours towards the selection of healthy food choices and/or influence food manufacturers towards improving the healthiness of their food products. Food labelling is a policy area where improvements have potential health benefits.

The Codex Alimentarius Commission (Codex) defines food labelling as ‘any written, printed or graphic matter that is present on the label, accompanies the food, or is displayed near the food, including that for the purpose of promoting its sale or disposal’ (1). Most elements of food labelling are voluntary on the part of the food producer or retailer, but in many jurisdictions, some elements are mandatory (such as lists of ingredients) and others are subject to mandatory conditions (such as nutrient claims).

Food labels are an important source of useful information for consumers aiming to improve their health depending on the labelling content, its format and context (2–9). Content is obviously important: for example, labelling is only as useful in as much as it is truthful. Also, some labelling formats are clearly more useful than others. For example, for lists of ingredients, quantitative ingredient declarations (QUID) are more informative than lists in order of weight, and for front-of-pack supplementary nutrition information, formats that interpret the information for the consumer, using say colour coding, are more understandable than those that merely use numbers. Finally, the context in which labelling is provided is also important to its utility. For example, food labelling will only be useful if the consumer trusts the information.

Food labels, as well as being a source of information, are also a source of marketing claims by food producers. Such claims have the potential to inform consumers, but can also mislead consumers in their food choices by, for example, highlighting positive product attributes while ignoring other, less desirable characteristics (4,10).

There are many components of food labelling, some more pertinent to health than others. For example, consumers may use country of origin labelling to make purchasing decisions, but such decisions may not impact on the nutritional quality of the food consumed. This paper focuses only on health-related food labelling, i.e. lists of ingredients, nutrient declarations, supplementary nutrition information, nutrition claims and health claims (for definitions see the glossary).

Food labelling is increasingly found in a variety of different venues including food retail outlets, quick service/fast food and other types of restaurants, and school and workplace cafeterias. Increasingly, electronic media are used to provide food labelling information and claims.

There appears to have been an increase in the prevalence of some types of health-related food labelling in recent years, particularly front-of-pack supplementary nutrition information (5).

With the increase in labelling venues and in the types of labelling, such as supplementary nutrition information, comes the challenge of regulating an ever-expanding food labelling environment. In 2010, Codex published the eighth edition of its General Standards for the Labelling of Pre-packaged Foods (1), and in 2012 amended its Guidelines on Nutrition Labelling (11) and its Guidelines for Use of Nutrition and Health Claims (12). Several countries and jurisdictions, such as the United States and the European Union, have developed labelling regulations that are consistent with Codex’s standards and guidelines. An overview of international and national regulations on health-related food labelling has been published by the World Health Organization (WHO) (10), but is now quite out of date (13).

The International Network for Food and Obesity/NCD Research, Monitoring and Action Support (INFORMAS) is a global network of public-interest organizations and researchers that aims to monitor, benchmark and support public and private sector actions to create healthy food environments and reduce obesity, NCDs and their related inequalities (14). The food labelling module of INFORMAS seeks to monitor food labelling globally, and aims to answer the research question, ‘What health-related labelling is present for foods and non-alcoholic beverages (henceforth just “foods”)?’ This paper focuses on the monitoring of health-related food labelling on food packages in retail settings as part of the food labelling module of INFORMAS. (For a definition of a ‘retail setting’ see the INFORMAS module on monitoring the retail environment (15)).

The monitoring of health-related food labelling in quick-service/fast food restaurants and other food service environments is not addressed in this paper. Other types of in-store health-related information other than that on food packaging (e.g. shelf tags, posters near foods) in retail settings are also not considered.

The purposes of this paper were (i) to provide a taxonomy of food labelling components; (ii) to review previous and current activities to measure and report food labelling; (iii) to propose a step-wise approach to monitoring food labelling and (iv) to propose measurement indicators and benchmarks for providing useful health-related food labelling on food packaging within the retail sector.

## Scope, definitions and taxonomies

In order to define more precisely the focus of this module, a review of taxonomies for food labelling components for foods was carried out by reviewing guidelines from international governing bodies and legislative documents. Because Codex is the most authoritative international body

concerned with food labelling, the taxonomy used for this module was based on the taxonomy implicit within Codex food labelling standards and guidelines (henceforth 'standards') and that the definition of terms used in the taxonomy should, wherever possible, be as given by Codex. The proposed taxonomy is shown in Fig. 1 and the definitions of terms used in this taxonomy can be found in the glossary.

Note that our taxonomy takes no account of whether the labelling is verbal, numerical or pictorial (symbolic), e.g. 'high in whole grain', '10% whole grain' and a symbol representing whole grain present would all be defined as a health-related ingredient claim according to the taxonomy presented in Fig. 1. Nor does the taxonomy take any account of whether the labelling is mandatory or voluntary.

Note also that a number of fairly subjective judgements will need to be made to classify actual labelling according to this taxonomy. For example, 'diet' in some countries is an implied nutrient content claim meaning 'low calorie'; whereas, in other countries 'diet' is an implied general health claim meaning 'healthy'.

The use of Codex standards to develop this taxonomy leads to three problems because of:

1. Some anomalies within Codex standards, e.g. Codex defines a nutrient function claim as a type of nutrition claim whereas it would be more logical to consider it as a type of health claim. The list of Codex definitions used as the basis for this module has therefore been modified (as indicated) to provide greater clarity to our taxonomy.

2. A lack of Codex definitions for some labelling subcomponents, e.g. of supplementary nutrition information. This has been addressed by adopting additional definitions (and thereby creating additional labelling subcomponents not found in Codex standards) on the basis of national or international legislation and relevant government reports. For example the definitions of the U.S. Institute of Medicine (5) have been used as a starting point for subdividing supplementary nutrition information.

3. Ambiguities in Codex definitions leading to difficulties in assessing:

- (i) How claims relating to the content of some ingredients, such as whole grain, should be categorized. Here, such claims are classified as nutrition claims because, although they do not refer to nutrients, they do refer to an ingredient as if it has the functions of a nutrient. This has been addressed by the creation of an additional component not found in Codex standards called 'health-related ingredient claims';

- (ii) How imprecise health-related claims, such as 'healthy', should be categorized. This has been addressed by the creation of an additional component not found in Codex standards called 'general health claims' to cover such claims. On the other hand, when health-related claims clearly imply a connection to a particular nutri-

ent, ingredient or health condition, they should be classified as a nutrient claim, a health-related ingredient claim, a nutrient and other function claim, or a reduction of disease risk claim depending on the implied connection. For example, if a heart-shaped symbol seems to imply a relationship between consumption of the product and cardiovascular disease risk, then it should be categorized as a disease risk reduction claim.

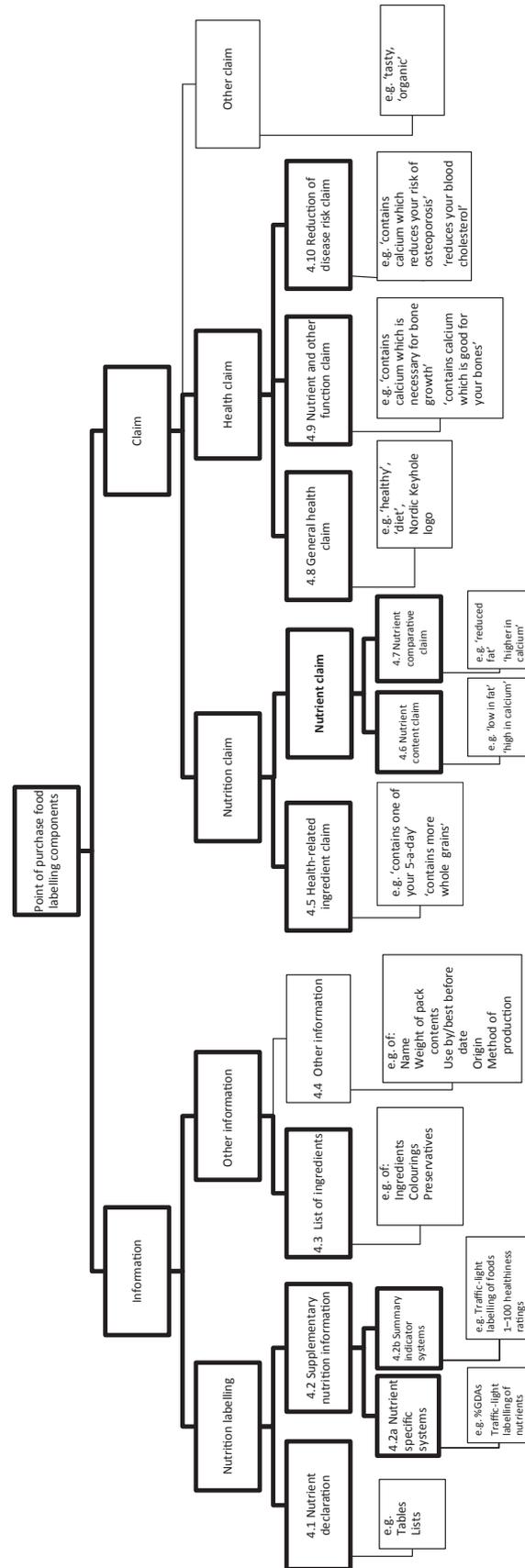
The scope of this module does not extend to monitoring the scientific accuracy of labelling. For instance this module does not provide guidance on monitoring whether a nutrient declaration on a food label is accurate, or whether a health claim is substantiated. Nevertheless, the monitoring data collected using the framework could be used in conjunction with legal standards to assess, to some extent at least, whether labelling is legal or not.

## Review of previous food labelling studies and monitoring activities

A systematic review was conducted to identify previous studies that assessed and reported the presence of health-related food labelling in retail outlets providing mainly packaged foods. The review included studies that assessed the presence of at least one of the following food-labelling components: supplementary nutrition information, nutrition claims and health claims. Studies of the presence of nutrient declarations alone were not included because their focus was normally the nutrient composition of foods rather than its labelling. The results reported here form part of a more comprehensive systematic review, the results of which will be reported in detail elsewhere.

Six databases (PubMed, Science Direct, ProQuest, Web of Science, Oxford Journals Online, Google Scholar) were searched using combinations of the MeSH terms 'food label\*', 'nutrition policy', 'food packaging', 'health promotion' and the keywords 'health claim', 'health information', 'nutrition claim', 'nutrition information', 'survey' and 'study'. Studies before 1990 were excluded. Only studies in supermarkets and similar retail outlets were included (i.e. studies of labelling in such venues as quick service restaurants, schools or workplaces were excluded). In addition to peer-reviewed journals, publicly available government reports were included in the search. Only research reported in English was included.

Among studies of labelling of foods sold in retail outlets, 15 were identified as regional studies (16–30), three were identified as national studies (31–36) and five included multiple countries (37–41). Four of these studies were part of ongoing surveys or monitoring and surveillance systems (16,31–35,37), and a further seven were studies repeated over a finite time period (17,18,21,22,24,25,27). Research outputs from ongoing studies are counted as one study.



**Figure 1** A taxonomy of health-related food labelling for INFORMAS. The last layer is not a part of the taxonomy. It just provides examples of the components shown in the figure. Health-related endorsements of foods (by government agencies, heart foundations, etc.) are classified according to their implied claims. Boxes in bold constitute 'health-related food labelling'.

## Approaches to sampling and data collection

The sampling frame and methods of data collection methods varied among the studies. While most studies surveyed selected foods or food categories sold in selected retail outlets, mainly supermarkets, there was a study that surveyed all packaged food products sold in retail outlets across the survey area (19).

In most studies, data were collected in-store (17–25,27–30,38–40) and recorded on survey forms completed by the research team. However, several of the large-scale studies purchased the products from stores or had the products or product information delivered to the research premises for analysis (16,31–35,37,41). Other studies utilized websites to collect label information (36,39,40). In one study, agreements were signed with the food industry and food retailers to allow product information to be sourced directly from the food manufacturers, and to allow data collectors to photograph the products in store (33,35).

In addition to collecting information about supplementary nutrition information, nutrition claims or health claims, most of these studies collected information about the manufacturer (20,28–30,38,41), ingredient content (21,31–34), nutrient content (19,21–24,27,29–36,39,40) and declared serving size (17,19,30,31,33,41).

The granularity of data collection varied, with some studies recording the presence or absence of information or claims, and other studies collecting more detailed data such as the reference nutrient for the claims or even their precise wording (e.g. 20,28,29).

## Monitoring objectives and measurement parameters

A common objective of all these labelling studies was to determine the prevalence of health-related food labelling components at a particular point in time. Additional study findings were dependent on the study design and data granularity. For example, ongoing studies such as the U.S. Food and Drug Administration's (FDA) Food Label and Package Survey (FLAPS) or the Food Standards Australia New Zealand Ongoing Food Label Monitoring Survey have allowed for comparisons to be made over time (31,32,34,37). Studies with a higher level of data granularity reported findings such as the prevalence of specific health and nutrition claims (e.g. nutrient claims for trans-fat) (e.g. 19,29,31,34), or the format for supplementary nutrition information (38).

## Measurement limitations and opportunities for improvement

A number of limitations were identified by the authors of these studies. The most common limitation was the small

sample size of either foods or retail outlets surveyed because of limited resources. Other limitations included sample selection biases because of seasonal availability, position of the food in the store or on-shelf, the location of the retail store, or the omission of some types of food such as store-owned brands (20,28,32,34,37,38). In addition, authors of the studies thought that the categorization of food label components could have been affected by an interpretation bias (19,37), related to the subjectivity in classifying labelling components.

Despite these limitations, studies such as the U.S. FDA FLAPS survey (31,32,34) or the French Oqali database (33,35) collect regular information from a wide range of food products and food retailers. Smaller-scale surveys have also been able to survey a large number of food labels, despite a limited sample of retail outlets (e.g. 17–19).

## Proposed approach to the prioritisation of activities to monitor food labelling

The philosophy of INFORMAS is that each country should choose an appropriate set of monitoring activities based on the resources available and local priorities (14). Although monitoring will most likely vary in the way retail outlets and foods are sampled, and in the granularity of the data collected, all countries should use standard protocols that can be repeated over time and should aim to collect a minimum set of data so that the labelling environments in different jurisdictions can be compared.

As well as taking account of the resources available, it is proposed that monitoring activities should consider the relative importance of different food labelling components, the information conveyed through those components, the format of those components in relation to their likelihood in affecting health-related food choices and some aspects of the context in which the labelling is presented. In the section later, methods for prioritizing particular aspects of labelling and their contexts are explained, but first methods for sampling retail outlets and foods are discussed.

## Proposed procedures for sampling retail outlets and foods

The proposed step-wise approach to sampling retail outlets and foods is shown in Table 1.

First, the types and numbers of retail outlets from which labelling data are going to be collected needs to be determined. The major retail outlets (in terms of numbers of foods sold there, % market share, etc.) would seem an obvious place to start. Ideally, the sample of outlets should be selected randomly, with the size of the sample dependent on the precise research questions, e.g. whether it is considered necessary to ascertain the prevalence of rare labelling components by food category.

**Table 1** Step-wise approach to selection of retail outlets and foods surveyed

Monitoring aspect	'Minimal' monitoring	'Expanded' monitoring	'Optimal' monitoring
Selection of retail outlets	From one or more selected retail outlets	From all retail outlets of a particular type (e.g. retail outlets of a particular size) in the jurisdiction	From all retail outlets in the jurisdiction
Selection of foods	From all foods in selected categories of pre-packaged foods	From all pre-packaged foods	From all foods

Next, procedures for sampling foods within outlets need to be decided and justified. At an early stage it needs to be decided whether monitoring will just include packaged foods or unpackaged foods as well. If unpackaged foods are not included then many healthy foods, such as fruit and vegetables, will be missed, meaning that the sample is likely to be less healthy than all the foods supplied in retail outlets.

For the monitoring data to be reflective of the food labelling environment, the data should be as representative as possible. Ideally, the sample frame (denominator) should be all foods available/sold in the country (or other geographical region under consideration), but it could, for example, be all foods of a particular type or category, all foods sold by just one retailing company, all foods of a particular category sold by one retailing company, etc.

The sample of foods should be drawn from the sample frame of foods by a random selection process, e.g. using a stock list provided by the store. The sample size (numerator) needs to be calculated using standard power-calculations and it may not need to be very large, if the sample frame (denominator) is relatively constrained.

In collecting data on the extent and nature of food labelling it will clearly be necessary to examine individual food packets. There are three basic methods of collecting food labelling data from food packaging:

1. Purchasing the products for extracting food labelling information later
2. Photographing the food packet (preferably all sides)
3. Recording food labelling information in store using a data collection form

If methods 2 and 3 are selected then permission from the store to collect data may need to be sought. Note that methods 1 and 2 make extracting data from food packaging considerably easier and more reliable, and may not require significantly more resources than method 3.

### The relative importance of different food labelling components

Systematic reviews of consumer understanding and use of food labelling (2–9) were analysed to determine the relative

importance of labelling components when making health-related choices about foods. From these reviews, we have concluded that monitoring of health-related food labelling in relation to NCDs (the focus of INFORMAS) should involve the recording of the presence/absence and other aspects of the lists of ingredients, nutrient declarations, supplementary nutrition information, nutrition claims and health claims, but not other non-health-related labelling information (e.g. date marking, country of origin), and non-health-related claims (e.g. relating to environmental sustainability, such as 'organic', or those relating to taste such as 'chocolaty').

### The relative importance of the information conveyed through different food labelling components

The content of food labelling has an important bearing upon its utility. The focus of INFORMAS is the prevention of obesity and NCDs, but some health-related food labelling is only relevant to diseases and health conditions unrelated to NCDs (such as micronutrient deficiencies). Here, it is proposed that for health claims the 'minimal' level of monitoring should be of claims that refer to NCDs or health conditions related to NCDs (such as obesity). Expanded monitoring should involve health claims in relation to other health conditions and diseases. Similarly, for nutrition information and nutrition claims, it is proposed that 'minimal' monitoring should be for labelling of nutrients and ingredients relevant to NCD prevention. 'Expanded' monitoring should involve nutrition claims and nutrition information that are relevant to other diseases and health conditions.

There are various possible ways of prioritizing nutrients relevant to NCD prevention. The WHO has developed a list of population dietary goals, that, if attained, would lead to a significant reduction in the burden of NCDs (42). These goals relate to total fat, saturated fat, polyunsaturated fat, n-6 polyunsaturated fatty acids, n-3 polyunsaturated fatty acids, trans-fats, monounsaturated fat, total carbohydrate, free (added) sugars, protein, cholesterol, sodium, dietary fibre and non-starch polysaccharides.

**Table 2** Codex, World Health Organization (WHO), and International Network for Food and Obesity/non-communicable diseases Research, Monitoring and Action Support (INFORMAS) lists of prioritised nutrients and other food components

Codex recommends as a minimum for nutrient declarations (11)	WHO population goals (42)	INFORMAS food labelling monitoring: 'minimal' monitoring	INFORMAS food labelling monitoring: 'expanded' monitoring
Energy		Energy	
<b>Total fat</b>	<b>Total fat</b>	<b>Total fat</b>	Polyunsaturated fat
<b>Saturated fat</b>	<b>Saturated fat</b>	<b>Saturated fat,</b>	n-6 polyunsaturated fatty acids
<b>Trans-fats</b> (in countries where it is a public health concern)	Polyunsaturated fat	<b>Trans-fats</b>	n-3 polyunsaturated fatty acids
<b>Protein</b>	n-6 polyunsaturated fatty acids	<b>Protein</b>	Monounsaturated fat
<b>Total carbohydrate</b>	n-3 polyunsaturated fatty acids	<b>Total carbohydrate</b>	Cholesterol
Total sugars	<b>Trans-fats</b>	Total sugars	Dietary fibre
<b>Sodium</b>	Monounsaturated fat	Free sugars	Non-starch polysaccharides
	<b>Total carbohydrate</b>	<b>Sodium</b>	
	Free sugars		
	<b>Protein</b>		
	Cholesterol		
	<b>Sodium</b>		
	Dietary fibre		
	Non-starch polysaccharides.		
	Fruit and vegetables	Fruit and vegetables	

Those dietary components listed in bold are those shared by the Codex and WHO lists.

However, here it is proposed that 'minimal' monitoring should be of labelling (both nutrition labelling and nutrition claims) that refers to those nutrients that are recommended by Codex for mandatory declaration within nutrient declarations (11). These nutrients are energy, protein, available carbohydrate (i.e. total carbohydrate excluding fibre), total sugars, fat, saturated fat and sodium (or the amount of sodium in salt equivalents as 'salt'). Some of these nutrients are more relevant to NCD prevention than others, but for completeness, it is recommended that, at minimum, monitoring should collect information relating to all seven nutrients.

Codex notes that 'the amount of trans-fatty acid may be required [for nutrient declaration] according to national legislation' (11) so it is also recommended that trans-fats should be a priority nutrient. In addition, recognizing (as does WHO in setting dietary goals (42)) that it is free sugars, not total sugars, that are most closely related to health, then it is also recommended that free sugars should be considered a priority nutrient in relation to the monitoring of food labelling while recognizing that it is total sugars, not free sugars, to which most labelling refers.

Other nutrients such as polyunsaturated fatty acids, fibre, minerals and vitamins do play a role in the maintenance and promotion of health and yet are not so critical in causing or protecting against NCDs. 'Expanded' monitoring should collect labelling data in relation to non-priority nutrients.

As well as goals for nutrient intakes, WHO proposes a goal for the intake of some foods and, in particular, for fruit and vegetables. Accordingly, it is proposed that 'minimal' monitoring should involve the collection of information

about labelling that relates to fruit and vegetable content (the most common type of fruit and vegetable labelling is a health-related ingredient claim).

Prioritisation of nutrients for monitoring labelling by INFORMAS is summarized in Table 2.

### The relative importance of the format of the food labelling component

The format for food labelling information has an important bearing upon its utility, and the format of a food labelling claim is important in relation to its effects on food purchasing. Some aspects of format are relatively easy to define; while others are less easy. For instance, the presence or absence of traffic-light colours in supplementary nutrition information is relatively easy to score (and this should be part of 'minimal' monitoring), but the various wordings of some types of health and nutrition claims are difficult to classify and should be attempted only in well-resourced (expanded monitoring) projects. Even the positioning of some labelling components such as supplementary nutrition information can be an important determinant of its use, so monitoring positioning would be desirable.

### The context in which the labelling is presented

The context for food labelling is an important determinant of its utility and use. Accordingly, a global monitoring framework for food labelling needs to take account of differences in regulatory environments and in private- and public-sector policies and actions that promote or impede

**Table 3** Step-wise approach to data collection

Food labelling component	'Minimal' monitoring	'Expanded' monitoring	'Optimal' monitoring
Product information	Product name Product composition data for priority nutrients Recommended serving size	Manufacturer information Product composition data for non-priority nutrients Price	
Lists of ingredients	Presence or absence Presence or absence of QUID for priority ingredients (fruit or vegetable)	Whether QUID for: all, most or characterizing* ingredient(s),	
Nutrient declarations	Presence or absence Presence of declarations for priority nutrients	Format (whether list or table, whether % reference intakes, etc.) Presence of declarations for non-priority nutrients	
Supplementary nutrition information by: Nutrient specific systems Summary indicator systems	Presence or absence Format (whether % reference intakes, traffic-light colours, stars etc) Presence of declarations for priority nutrients <sup>†</sup>	Presence of declarations for non-priority nutrients <sup>†</sup> Reference quantity(s) for declarations <sup>†</sup>	Position on packaging
Nutrition claims by: Health-related ingredient claims Nutrient content claims Nutrient comparison claims	Presence of claims for priority nutrients or ingredients	Presence of claims for non-priority nutrients Format of claims (whether verbal, numerical, symbolic, etc.)	Wording of verbal claims
Health claims by: Nutrient and other function claims Reduction of disease risk claims General health claims	Presence of claims for NCDs and health conditions related to NCDs	Presence of claims for other diseases and health conditions Format of claims (whether verbal, numerical, symbolic, etc.)	Wording of verbal claims
Other contextual information	Food labelling legislation and voluntary guidelines		

\*Characterizing ingredient: 'where the ingredient or category of ingredients is essential to characterize a food and to distinguish it from products with which it might be confused because of its name or appearance' (47).

<sup>†</sup>Not necessarily to be ascertained from the packaging alone for certain formats  
NCD, non-communicable diseases; QUID, quantitative ingredient declaration.

healthy food choices through the provision of information and claims for foods.

In analysing food labelling data, it is, therefore, proposed that the relevant food labelling legislation and any voluntary guidelines for food labelling that are applicable in the jurisdiction where the monitoring takes place should be used. Almost all countries have some labelling legislation (10). Voluntary guidelines for some labelling components are more likely than others; for example, voluntary guidelines (produced by governments, non-governmental organisations and industry-funded bodies) for the content and format of supplementary nutrition information are now relatively common.

It is proposed that composition data for the foods that do or do not bear particular forms of labelling will also be necessary for minimal monitoring, and will be necessary, for example, for assessing whether nutrition claims are in line with Codex standards (see later). Composition data for foods is the subject of another INFORMAS module (43) and it would be sensible to collect composition data and labelling data in tandem. Price is another aspect of foods

that could be used (in 'expanded' monitoring) in the analysis of food labelling data, and is the subject of an INFORMAS module (44).

Table 3 summarizes our proposed approach to monitoring health-related food labelling in relation to its content, format and context.

### Measurement indicators and proposed benchmarks

Monitoring data can be evaluated between countries or regions and over time by comparing a 'suite' of measurement indicators. The indicators proposed here (Table 4) are related to global or national food labelling policy. Measurement of these indicators would provide an overview of the food labelling environment.

These indicators can be used to measure the success (or failure) of policy changes or advocacy (measured in the process modules of INFORMAS (45,46)) aimed at creating healthier food (including labelling) environments. Benchmarks for each indicator have been identified in order

**Table 4** Proposed indicators and suggested benchmarks relating to the prioritized food labelling components

Food labelling component	Indicator	Benchmark
Lists of ingredients	Proportion of foods with a list of ingredients	All foods should have a list of ingredients <sup>§</sup>
	Proportion of foods with QUID*	All foods should have QUID for at least all characterizing ingredients <sup>†</sup>
Nutrient declarations	Proportion of foods with a nutrient declaration	All foods should have a nutrient declaration <sup>§</sup>
	Proportion of foods with a nutrient declaration in line with Codex standards	All foods should have a nutrient declaration in line with Codex standards <sup>§</sup>
SNI	Proportion of foods with SNIs	All foods should have a SNI which is at least as 'interpretive' as traffic-light labelling of nutrients
	Proportion of foods with each different SNI scheme in use	The number of SNI schemes in use should be one
Nutrition claims	Proportion of foods making a claim that meets Codex standards	All nutrition claims should meet Codex standards <sup>§</sup>
	Proportion of foods making a claim that are healthy <sup>‡</sup>	All nutrition claims should only be made for foods that are healthy <sup>‡</sup>
Health claims	Proportion of health claims referencing NCDs	All health claims should related to important <sup>‡</sup> health problems
	Proportion of foods making a claim that are healthy <sup>‡</sup>	All health claims should only be made for foods that are healthy <sup>‡</sup>

\*Quantitative ingredient declaration.

<sup>†</sup>See footnote to Table 2.

<sup>‡</sup>With respect to an agreed definition or definitions.

<sup>§</sup>Benchmark derived from Codex Standards.

NCD, non-communicable diseases; QUID, quantitative ingredient declaration; SNI, supplementary nutrition information.

to enable future demonstration of which food labelling policies are working well, and allow the identification of areas where policies need to be put in place to reach those benchmarks. The benchmarks proposed are based on, but exceed, Codex standards.

Assessment of the proposed 10 simple indicators will give an easily interpretable snapshot of the impact of public and private sector actions on improving food labelling environments. While measurement of these indicators will be consistent among all participating countries, the benchmarks for each indicator may vary to account for the baseline provision of labelling and specific labelling components in that country or region. Measurement of these indicators should support efforts to improve health-related food labelling in participating countries.

## Conclusions

This paper proposes a framework for monitoring health-related food labelling. This framework is aimed at facilitating the collection and analysis of country-level data on the food-labelling environment. Data from such monitoring can be used not only to monitor countries' progress towards creating healthier food environments, but also to compare progress between countries.

There are many aspects of the food labelling environment, ranging from the venues where labelling is found to the format of the labelling. This paper has focused on the monitoring of labelling on foods sold in retail

outlets. However, future papers related to this module of INFORMAS could (and should) be developed to encompass the many other aspects of the food labelling environment, including labelling in other venues (e.g. restaurants, workplaces, etc.), other mediums of labelling (e.g. labelling in online supermarkets or on company websites), and ever more detailed aspects of the content, format and context of food labelling.

The monitoring of food labelling along with the other modules of INFORMAS will provide standardized assessments of the food environment, and point to areas where policies and actions are needed to make the environment more conducive to healthy food choices. Major reductions in obesity and diet-related NCDs are unlikely to occur without major improvements in the healthiness of food environments.

## Acknowledgements

The authors would like to thank Anja Mizdrak and Asha Kaur for their help preparing this paper. The Rockefeller Foundation kindly supported the work of INFORMAS by hosting the first formal meeting of INFORMAS at the Rockefeller Foundation Bellagio Centre, Italy from 19 to 23 November 2012. The following organizations provided funding support for the travel of participants to Italy for this meeting and the preparation of background research papers: The Rockefeller Foundation, International Obesity Taskforce (IOTF), University of Auckland,

Deakin University, The George Institute, University of Sydney, Queensland University of Technology, University of Oxford, University of Pennsylvania Perelman School of Medicine, World Cancer Research Fund International, University of Toronto, and The Australian National University. The authors would like to thank Francesco Branca and Godfrey Xuereb from the World Health Organization for their participation in the first formal meeting of INFORMAS, and for their input into this paper. The Faculty of Health at Deakin University kindly supported the costs for open access availability of this paper, and the Australian National Health and Medical Research Council Centre for Research Excellence in Obesity Policy and Food Systems (APP1041020) supported the coordination and finalizing of INFORMAS manuscripts.

### Conflicts of interest

Bruce Neal is the Chair of the Australian Division of World Action on Salt and Health (2007–ongoing), was a Member of the Pepsico Global Scientific Advisory Board (2010–2012), was the Independent Adjudicator for the Australian Responsible Marketing to Children's Initiative (2009–2010) and holds funding from the Australian Food and Grocery Council as part of a National Health and Medical Research Council of Australia Partnership project (2010–2014). The other authors declare that they have no competing interests.

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## Glossary

### Definitions from Codex standards and guidelines

*Food labelling* – ‘any written, printed or graphic matter is present on the label, accompanies the food, or is displayed near the food, including that for the purpose of promoting its sale or disposal.’ (STAN 1-1985)

*List of ingredients* – ‘All ingredients [in a food] shall be listed in descending order of ingoing weight (m m<sup>-1</sup>) at the time of the manufacture of the food.’ (STAN 1-1985)

*Nutrition labelling* – ‘a description intended to inform the consumer of nutritional properties of a food.’ (CAC/GL 2-1985)

*Nutrient declaration* – nutrition labelling which is ‘a standardized statement or listing of the nutrient content of a food.’ (CAC/GL 2-1985)

*Supplementary nutrition information* – nutrition labelling ‘intended to increase the consumer’s understanding of the nutritional value of their food and to assist in interpreting the nutrient declaration.’ (CAC/GL 2-1985)

*Nutrition claim* – ‘any representation which states, suggests or implies that a food has particular nutritional properties including but not limited to the energy value and to the content of protein, fat and carbohydrates, as well as the content of vitamins and minerals.’ (CAC/GL 23-1997)

*Nutrient content claim* – ‘a nutrition claim that describes the level of a nutrient contained in a food [or its energy value]’ (CAC/GL 23-1997). [In this taxonomy nutrient content claims include ‘Non-addition claims’ defined by CAC/GL 23-1997 as ‘any claim that a [nutrient] has not been added to a food, either directly or indirectly. The [nutrient] is one whose presence or addition is permitted in the food and which consumers would normally expect to find in the food’]

*Nutrient comparative claim* – ‘a [nutrition] claim that compares the nutrient levels and/or energy value of two or more foods.’ (CAC/GL 23-1997)

*Health claim* – ‘any representation that states, suggests, or implies that a relationship exists between a food or a constituent of that food and health.’ (CAC/GL 23-1997)

*Nutrient function claim* – ‘a [health] claim that describes the physiological role of the nutrient in growth, development and functions of the body.’ (CAC/GL 23-1997) [Although Codex classifies nutrient function claims as nutrition claims it seems more logical to classify them as health claims]

*Other function claim* – health ‘claims concerning specific beneficial effects of the consumption of foods or their constituents, in the context of the total diet on normal functions or biological activities of the body. Such claims relate to a positive contribution to health or to the improvement of a function or to modifying or preserving health.’ (CAC/GL 23-1997)

*Reduction of disease risk claim* – health ‘claims relating the consumption of a food or food constituent, in the context of the total diet, to the reduced risk of developing a disease or health-related condition.’ (CAC/GL 23-1997)

### Definitions for the purpose of this INFORMAS module

*Health-related ingredient claim* – any representation which states, suggests or implies that a food has particular nutritional properties not related to its energy value or to the content of protein, fat and carbohydrates, vitamins and minerals but related to the content of an ingredient’

*General health claim* – a health claim concerning the general beneficial effects of the consumption of foods or their constituents on health.

[NB Codex (CAC/GL 23-1997) does have a category of permitted claim called ‘*Claims related to dietary guidelines or healthy diets*’ which is similar to our category general health claim but specifies that ‘Foods should not be described as “healthy” or be represented in a manner that implies that a food in and of itself will impart health’, whereas our category of general health claim would include claims such as ‘healthy’.]

### Definitions of sub-components of ‘supplementary nutrition information’ adapted from those of the Institute of Medicine (IOM, 2011)

*Nutrient specific systems* – supplementary nutrition information which displays the amount of select nutrients from the nutrient declaration using numbers including % Daily Values (%DV) or % Guideline Daily Amounts (%GDA) or words such as ‘high,’ ‘medium,’ or ‘low’ or traffic-light colours or symbols, etc.

*Summary indicator systems* – supplementary nutrition information which use a single symbol, icon, or score to

provide summary information about the nutrient content of a product. Products are given a numeric score (i.e. 1–100) or number of symbols (e.g. 0, 1, 2, 3) to indicate the nutritional quality of the product. (NB Summary indicator systems do not include symbolic representations of the verbal claim ‘healthy’, e.g. the Nordic Keyhole)

(Note that the Institute of Medicine has a third type of Supplementary nutrition information called *Food group information systems* – defined as supplementary nutrition information that uses a symbol awarded to a product based on the presence of a certain food group or ingredient, but in our taxonomy such labelling is classified as a claim because products without the food group or ingredient are not labelled unlike the other two types of supplementary nutrition information).

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