Policy and practice

ADDRESSING THE CHALLENGE OF FOOD MARKETING TO CHILDREN: THE WHO REGIONAL OFFICE FOR EUROPE NUTRIENT PROFILE MODEL AS A COMMON TOOL

Jo Jewell,[1] Mike Rayner,[2] Joao Breda,[1] Chizuru Nishida,[3] Gauden Galea[1]

[1] World Health Organization Regional Office for Europe, Copenhagen, Denmark.
[2] British Heart Foundation Centre on Population Approaches for Non-Communicable Disease Prevention, Nuffield Department of Population Health, University of Oxford.
[3] World Health Organization, Geneva, Switzerland.

Corresponding author: Jo Jewell (email: jje@euro.who.int)

ABSTRACT

One in three children in the World Health Organization (WHO) European Region is overweight or obese. Marketing of foods high in saturated fats, *trans* fats, free sugars and/or salt has a harmful effect on children, is associated with unhealthy dietary behaviours, and an increased risk of becoming overweight. As a result, policy solutions have been sought. One barrier to policy development identified by countries is the difficulty in identifying foods to which marketing restrictions should apply. We describe the process of developing the WHO Regional Office for Europe nutrient profile model tool, which is expected to be a valuable resource for countries across Europe when designing and implementing policies to restrict food marketing to children. We also discuss how the model classifies several important food product categories, and the expected implications for policy across the Region.

Keywords: CHRONIC DISEASE, NUTRITION POLICY, DIET, MARKETING, FOOD

BACKGROUND

Childhood obesity is a major public health concern across the European Region. Data from the WHO European Childhood Obesity Surveillance Initiative show that, on average, one in every three children aged 6–9 years is overweight or obese *(1)*. Overweight children are at increased risk of suffering from psychological effects, gastrointestinal complications, cardiovascular disease and diabetes *(2)*. Furthermore, a large proportion of children who are overweight before puberty will remain overweight in early adulthood *(3, 4)*. Excess adult body weight (body mass index >25 kg/m^2) and excessive consumption of energy-dense, highly processed foods and beverages that are high in saturated fats, *trans* fats, free sugars and/or salt (hereafter termed "HFSS foods") have been particularly implicated in encouraging obesity and noncommunicable diseases, notably cardiovascular diseases, diabetes and several types of cancer *(5)*. The prevention of childhood obesity and promotion of healthy diets is a priority for many governments *(6–10)*. However, studies suggest that the European population is still consuming too many HFSS foods *(11)*. While the determinants of dietary behaviours operate at individual, family and environmental levels *(12, 13)*, promotional strategies (advertising, sponsorship and brand marketing) used by food companies to encourage purchase and consumption have been identified as an important factor in the continued excess consumption of HFSS foods *(14)*.

Marketing of HFSS foods is an important influence on children's food preferences, knowledge and attitudes, food requests and purchasing behaviour, and contributes to the development of unhealthy diets and childhood overweight or obesity *(14–16)*. Food marketing directed at children is also found to be

pervasive and expanding in terms of media platforms and persuasive techniques used *(17)*. The leading categories of food marketed to children are breakfast cereals, sugar-sweetened beverages, confectionary and savoury snack foods *(18)*. Based on this evidence, policy solutions have been proposed to reduce children's exposure to commercial marketing of HFSS foods.

POLICY RESPONSE AND RENEWED MANDATE

WHO has issued guidance to Member States on the marketing of foods and non-alcoholic beverages to children, as endorsed by the Sixty-third World Health Assembly in 2010 *(19)*. The overall objective of policy action recommended by WHO is to reduce both the *exposure* (amount of advertising seen) and the *power* (the persuasive techniques used) of marketing for HFSS foods. However, a 2013 WHO report indicated that few countries in the European Region have fully implemented restrictions on the marketing of foods to children *(20)*. One of the common obstacles to policy development identified by Member States is the challenge of classifying foods for which marketing should be restricted. One way of addressing this challenge is to develop a nutrient profile model *(21)*.

Nutrient profiling is "the science of classifying or ranking foods according to their nutritional composition for reasons related to preventing disease and promoting health" *(22)*. Of the 53 countries in the European Region, only Denmark *(23)*, Ireland *(24)*, Norway *(25)* and the United Kingdom of Great Britain and Northern Ireland (UK) *(26)* have developed or endorsed nutrient profile models for the purpose of restricting HFSS food marketing to children. A number of food companies and the EU Pledge (a voluntary initiative on the part of several of Europe's leading food companies) have developed nutrient profile models *(27)*.

Recent political endorsements in Europe, notably the Vienna Declaration on Nutrition and Noncommunicable Diseases *(28)* and the European Food and Nutrition Action Plan 2015–2020 *(29)*, have reinforced a commitment to establish strong measures to reduce all forms of marketing to children. There have been explicit calls for the development of a regional nutrient profile model.

APPROACH TO DEVELOPMENT OF THE REGIONAL MODEL

In response to these political mandates, WHO developed the European regional nutrient profile model through a two-stage process. This involved:

- a technical meeting with external experts and Member State representatives *(30)*
- pilot-testing of the draft model with a group of countries from across the European Region.

The technical meeting considered the pros and cons of using existing models in order to avoid the lengthy process of developing an entirely new model from scratch.

The Danish, Norwegian and UK models were considered. All three models are relatively strict and classify foods similarly (*see* Table 1, with the final thresholds from the WHO Regional Office for Europe model and the EU Pledge nutrition criteria also included for comparison). In the majority of cases, the same foods would / would not be permitted under all models; both for foods identified in the literature as being commonly marketed to children and for "core" foods.

Although the Norwegian, Danish and UK models classify foods in a similar way, experience from countries at adapting models suggests that category-based models are procedurally easier to adapt or modify than models based on a scoring system. A decision was thus taken to base the WHO European model on the two category-based models (Norwegian and Danish). Category-based models typically set nutrient thresholds for different food categories, and are often based on "nutrients to limit". Models based on a scoring system typically generate a single score for all foods, using an algorithm that may incorporate "nutrients to limit" and "nutrients and food components to encourage" *(32)*. Adapting the algorithm in a way that is applicable to all foods in a new country context has previously been identified as a challenge *(30)*.

It was decided that the draft WHO European model should deviate as little as possible from the original models, and some key principles were agreed upon:

TABLE 1. A LIST OF INDICATOR FOODS ILLUSTRATING HOW DIFFERENT NUTRIENT PROFILE MODELS CLASSIFY PRODUCTS

FOOD PRODUCTS	WHO European Region	Norwegian	Danish	UK	EU Pledge
Foods commonly marketed to children and non-core foods *(18)*					
Breakfast cereals with added sugar (typical total sugar content ≥25 g per 100 g; typical salt content ≈1.3 g per 100 g)	X	X	X	X	X
Confectionery, cakes, biscuits (typical total sugar content of chocolate bar ≥25 g per 100 g; typical energy content ≥400 kcal per 100 g; typical saturated fat content ≈4.5 g per 100 g)	X	X	X	X	X
Yoghurts with added sugar (typical total sugar content of full-fat fruit-flavoured yoghurt ≈19 g per 100 g; typical total fat content ≈3 g per 100 g)	X	X	X	X	X
Fast-food restaurant items (typical total fat content of a cheeseburger ≈11 g per 100 g; typical total sugar content ≈6 g per 100 g; typical salt content ≈1.5 g per 100 g; typical energy content ≈260 kcal per 100 g)	X	X	X	X	X
High-fat, high-sugar spreads (typical total fat content of a sandwich topping with chocolate ≈30 g per 100 g; typical total sugar content ≈56 g per 100 g)	X	X	X	X	X
Sugar-sweetened beverages (typical total sugar content ≥6 g per 100 ml)	X	X	X	X	X
Diet beverages with non-sugar sweeteners (typical total sugar content 0 g; typical energy content 0 kcal per 100 g)	X	X	✓	✓	X
100% fruit juice with no added sugar (typical total sugar content ≈10 g per 100 ml; typical energy content ≈43 kcal per 100 ml)	X	✓	✓	✓	✓
Potato chips/crisps (typical total fat content of ready-salted potato chips ≈30 g per 100 g; typical saturated fat content ≈3 g per 100 g; typical salt content ≈1.4 g per 100 g; typical energy content ≈500 kcal per 100 g)	X	X	X	X	✓
Crumbed meat (typical total fat content of breaded chicken nuggets ≈13 g per 100 g; typical saturated fat content ≈1.7 g per 100 g; typical salt content ≤1 g per 100 g)	✓	✓	✓	✓	✓
Frozen meals (e.g. pizzas) (typical total fat content ≥ 10 g per 100 g; typical saturated fat content ≥5 g per 100 g; typical salt content ≈1.4 g per 100 g; total energy content ≥240 kcal per 100 g)	X	X	X	X	X
Core food items[a]	✓	✓	✓	✓	✓
Fresh fruit					
Fresh vegetables	✓	✓	✓	✓	✓
Nuts without added sugar or salt	✓	✓	X	✓	✓
Breakfast cereals without added sugar (typical content of rolled oats <15 g total sugar per 100 g and ≥5 g dietary fibre/100 g)	✓	✓	✓	✓	✓
Low-fat/reduced-fat yoghurt (typical total sugar content ≈7 g per 100 g; typical total fat content ≈2 g per 100 g)	✓	✓	✓	✓	✓
Semi-skimmed milk (typical total fat content ≤2 g per 100 ml; typical total sugar content ≈5 g per 100 ml)	✓	✓	✓	✓	✓

X = marketing not permitted; ✓=marketing permitted

Sources: WHO Regional Office for Europe nutrient profile model *(31)*; Code of responsible food marketing communication to children *(23)*; Appendix 1 to Draft Regulations. Foods and beverages that are considered unhealthy under these Regulations *(25)*; Nutrient profiling technical guidance *(26)*; EU Pledge Nutrition Criteria White Paper *(27)*.

[a] Indicator "core foods" that are nutrient dense and low in discretionary energy.

1. Food categories should be taken from the base models.
2. The nutrients covered by the model should be the same as in the base models.
3. Thresholds should be in line with the base models, as well as guidance provided by WHO guidelines on dietary goals, taking the stricter criteria where the two models differed.
4. Supplementary criteria on issues of high public health concern (e.g. salt in bread) would be added where they were missing.[b]

The WHO Secretariat assessed whether the draft model covered all foods commonly marketed to children and were recognized as a nutritional challenge in children's diets. It cross-checked with existing guidelines from WHO *(33, 34)*, national governments and independent bodies such as the World Cancer Research Fund International *(35)*.

A working draft of the model was assessed at a meeting of the European Network on Reducing Marketing Pressure on Children (Action Network) in March 2014.[c] This led to some modifications, such as further clarifying the categories under which products should be classified and inclusion of the additional salt criteria agreed by Member States.

All 28 Member States participating in the WHO Action Network were invited to pilot test the revised version of the model and assess how the model classified foods that are commonly consumed by and/or marketed to children in the country *(31)*.

OBSERVATIONS

Respondent countries found the food categories and nutrient thresholds to be largely appropriate and proposed minor modifications.[d] There were some significant differences in the nutritional quality of foods that countries reported in the databases they provided. Where countries provided lists of foods commonly marketed to children, these tended to be predominantly HFSS foods. This had an impact on the percentage of foods that the model permitted across different countries (*see* Table 2 for some examples, notably Finland and Hungary).

TABLE 2. RESULTS OF THE PILOT-TESTING WITH COUNTRIES

Country	Total no. products tested	No. (%) of products permitted
Bulgaria	202	58 (29)
Serbia	120	32 (27)
Macedonia	69	22 (31)
Switzerland	125	31 (25)
Israel	129	34 (26)
Hungary	112	20 (15)
Norway	238	120 (50)
Slovenia	193	74 (39)
Portugal	498	231 (46)
Finland	240	53 (22)

Source: Figures taken from country responses to the pilot-testing of the WHO Regional Office for Europe nutrient profile model.

The final model consists of 17 food categories (*see* Table 3). According to the model, marketing for five food product categories is never permitted, i.e. no nutrient criteria are required (chocolate and sugar confectionery; cakes, sweets and biscuits; energy drinks; fruit juices; edible ices). These products are generally not recommended as part of national food-based dietary guidelines, and other existing nutrient profile models (including the Norwegian and the EU Pledge Nutrition Criteria) also restrict similar categories of products.[e] Conversely, no nutrient thresholds apply to the two food categories for which marketing is always permitted: fresh and frozen fruit and vegetables, and fresh and frozen meat, poultry and fish.

[b] Where salt thresholds were missing, the Finnish regulations on mandatory salt labelling were subsequently identified and proposed for use in the draft model (Ministry of Trade and Industry Decree on food packing markings 1084/2004 [website]. Helsinki: Finlex; 2015 [http://www.finlex.fi/fi/laki/alkup/2004/20041084, accessed 19 October 2015]).

[c] All Member States of the WHO European Region are invited to participate in the Action Network; currently 28 Member States participate (http://www.euro.who.int/en/health-topics/disease-prevention/nutrition/policy/member-states-action-networks/reducing-marketing-pressure-on-children, accessed 19 October 2015).

[d] The following countries were actively engaged at various stages of the consultation process: Albania, Austria, Bulgaria, Czech Republic, Denmark, Estonia, Finland, Hungary, Israel, Norway, Poland, Portugal, Serbia, Slovenia, Switzerland and the former Yugoslav Republic of Macedonia. Written feedback as a result of the pilot-testing was received from 10 Member States, and an additional six Member States were involved in the meeting of the Network.

[e] During pilot testing, a number of countries suggested that 100% fruit juices and dried fruits, with no added sugars, should be permitted in small portions, given that many national food-based dietary guidelines suggest that these can be a source of one daily portion of fruit per day. However, the decision was taken to retain a restriction on fruit juices in the WHO Regional Office for Europe model, so as to be in line with WHO Guidelines on sugars intake for children and adults. National dietary surveys indicate that they can be an important source of free sugars in the diets of children and adolescents.

TABLE 3. WHO REGIONAL OFFICE FOR EUROPE NUTRIENT PROFILE MODEL

Food category		Included in category (examples)	Not included in category (examples)	Customs tariff code (position and/or subposition number)[a]	Marketing not permitted if product exceeds, per 100 g:[b]						
					total fat (g)	sat. fat (g)	total sugars (g)	added sugars (g)	non-sugar sweeteners (g)	salt (g)	energy (kcal)
1	Chocolate and sugar confectionery, energy bars, and sweet toppings and desserts	Chocolate and other products containing cocoa; white chocolate; jelly, sweets and boiled sweets; chewing gum and bubble gum; caramels; liquorice sweets; spreadable chocolate and other sweet sandwich toppings; nut spreads, including peanut butter; cereal, granola and muesli bars; marzipan	Chocolate flavoured breakfast cereals; cakes and pastries; biscuits and other baked goods covered in chocolate	17.04; 18.06; some of 19.05; 20.06; some of 20.08; some of 21.06	Not permitted						
2	Cakes, sweet biscuits and pastries; other sweet bakery wares, and dry mixes for making such	Pastries; croissants; cookies/ biscuits; sponge cakes; wafers; fruit pies; sweet buns; chocolate-covered biscuits; cake mixes and batters	Bread and bread products	19.01.20; 19.05.20; 19.05.31; 19.05.32	Not permitted						
3	Savoury snacks	Popcorn and maize corn; seeds; nuts and mixed nuts; savoury biscuits and pretzels; other snacks made from rice, maize, dough or potato		08.01; 08.02; 10.05; 19.04.10 ; 19.04.20; some of 19.05; 20.05.20; 20.08.11; 20.08.19; 20.08.99				0		0.1[c]	
4	Beverages										
	a) Juices	100% fruit and vegetable juices; juices reconstituted from concentrate, and smoothies		20.09	Not permitted[d]						
	b) Milk drinks[e]	Milks and sweetened milks; almond, soya, rice and oat milks	Cream	Some of 04.01; some of 04.02; 22.02.90	2.5			0	0		
	c) Energy drinks[f]			Some of 22.02	Not permitted						
	d) Other beverages	Cola, lemonade, orangeade; other soft drinks, sweetened beverages, mineral and/or flavoured waters (including aerated) with added sugars or sweetener	100% fruit and vegetable juices; milk drinks	22.01; some of 22.02				0	0		
5	Edible ices	Ice cream, frozen yoghurt, iced lollies and sorbets		21.05	Not permitted						
6	Breakfast cereals[g]	Oatmeal; cornflakes; chocolate breakfast cereals; mueslis		19.04.10; 19.04.20	10		15			1.6	
7	Yoghurts, sour milk, cream and other similar foods	Yoghurt; kephir; buttermilk; flavoured sour, fermented milk and drinking yoghurt; fromagefrais; cheese-based and other yoghurt substitutes; yoghurt products containing additional ingredients (such as fruit, muesli); cream	Milks and sweetened milks; almond, rice and oat milks	Some of 04.02; 04.03; 04.04; some of 04.06.10; 19.01.10; 19.01.90; some of 21.06	2.5	2.0	10			0.2[c]	
8	Cheese	Medium-hard and hard cheeses; soft cheeses; fresh cheese (such as ricotta, mozzarella); grated or powdered cheese; cottage cheese; processed cheese spreads		04.06	20					1.3	
9	Ready-made and convenience foods and composite dishes	Pizzas; lasagne and other pasta dishes with sauces; quiches; ready meals; ready-made sandwiches; filled pastas; soups and stews (packaged or tinned); mixes and dough		Some of 16; some of 19.01.20; 19.02.19; 19.02.20; some of 19.05; some of 20.05; 21.04	10	4	10			1	225
10	Butter and other fats and oils	Butter; vegetable oils, margarines and spreads		04.05; 15		20				1.3	

Food category		Included in category (examples)	Not included in category (examples)	Customs tariff code (position and/or subposition number)[a]	Marketing not permitted if product exceeds, per 100 g:[b]						
					total fat (g)	sat. fat (g)	total sugars (g)	added sugars (g)	non-sugar sweeteners (g)	salt (g)	energy (kcal)
11	Bread, bread products and crisp breads[g]	Ordinary bread (containing cereal, leavens and salt); gluten-free bread; unleavened bread; crisp breads; rusks and toasted breads	Sweet biscuits; pastries; cakes	19.05.10; 19.05.40;19.05.90	10		10			1.2	
12	Fresh or dried pasta, rice and grains		Filled pasta and pasta in sauce	10; some of 11; 19.02 excluding 19.02.20	10		10			1.2	
13	Fresh and frozen meat, poultry, fish and similar	Eggs		02 excluding 02.10; some of 03 excluding 03.05	Permitted						
14	Processed meat, poultry, fish and similar	Sausage, ham, bacon; chicken nuggets; smoked and pickled fish; tinned fish in brine or oils; fish fingers and breaded/ battered fish	Pepperoni pizza	02.10; some of 03; some of 16	20					1.7	
15	Fresh and frozen fruit, vegetables and legumes	Fruit and vegetables; legumes; starchy vegetables, roots and tubers	Tinned fruits, vegetables and legumes; fruit in syrup; dried fruit; frozen fruit with added sugar	07 excluding 07.10, 07.11, 07.12, 07.13; some of 08 excluding 08.01; 08.02; 08.11; 08.12; 08.13; 08.14	Permitted						
16	Processed fruit, vegetables and legumes	Tinned fruit, vegetables and legumes; dried fruit,[h] dried vegetables and legumes; marmalade; jams; pickled vegetables and fruit; stewed fruits; fruit peel; frozen French fries; frozen fruit with added sugar	Fruit juice	07.10; 07.11; 07.12; 07.13; some of 08.03; some of 08.05; some of 08.06; 08.11, 08.12, 08.13 and 08.14; 20.01; 20.02; 20.03; 20.04; 20.05; 20.06; 20.07; 20.08.20;20.08.30, 20.08.40; 20.08.50, 20.08.60; 20.08.70, 20.08.80; 20.08.93; 20.08.97; 20.08.99	5		10	0		1	
17	Sauces, dips and dressings	Salad dressings; tomato ketchup; mayonnaise; ready-to-use dips; soya sauce; mustard and mustard flour		21.03	10			0		1	

Sat. fat= saturated fat

[a] Where appropriate, a four-digit position number has been given. Where "some of" is indicated, this means that most (but not all) food products in this position number are covered. In some instances a six-digit sub-position is provided so as to pinpoint specific products more easily.

[b] The food products should, where possible, be assessed as sold or as reconstituted (if necessary) according to the manufacturer's instructions.

[c] Salt equivalent

[d] This is in line with the WHO Guidelines on sugars intake for children and adults (in press), as fruit juices are a significant source of free sugars for children. However, it is recognized that countries, according to national context and national food-based dietary guidelines, may take the decision to permit the marketing of 100% fruit juices in small portions.

[e] Follow-up formulas and growing-up milks are not covered by this model. It should be noted that World Health Assembly Resolution WHA39.28, adopted in 1986, states that the practice of providing infants with specially formulated milks (so called "follow-up milks") is not necessary. Further, any food or drink given before complementary feeding is nutritionally required may interfere with the initiation or maintenance of breastfeeding and should, therefore, be neither promoted nor encouraged for use by infants during this period.

[f] There is no agreement on a definition of energy drinks. However, such a category of drinks includes a variety of non-alcoholic beverages. While caffeine is considered the main ingredient, a number of other substances are often present. The most common of these include guarana, taurine, glucuronolactone and vitamins. A common feature is that these beverages are marketed for their actual or perceived effects as stimulants, energizers and performance enhancers.

[g] For this category, countries may choose to include a threshold for minimum dietary fibre content, for example, ≥6 g dietary fibre.

[h] This is in line with the WHO Guidelines on sugars intake for children and adults (in press), as dried fruits are a significant source of concentrated sugars for children. However, it is recognized that countries, according to national context and national food-based dietary guidelines, may take the decision to permit the marketing of dried fruits in small portions.

POLICY IMPLICATIONS

There are several practical ways in which countries can use the nutrient profile model to support policy development. First, it can be used by policy-makers to monitor the extent and nature of HFSS food marketing in their country, whereby the food marketing identified can be classified according to the model. This is a necessary first step in building the domestic case for food marketing restrictions. By generating evidence of the problem, it can be used by policy-makers to determine an appropriate response *(17)*, and design policies to identify the foods to which marketing restrictions will apply. For example, in Ireland, where statutory restrictions have been implemented, it is clearly indicated in the Communications Code that foods assessed as HFSS in accordance with the nutrient profile model may not be marketed to children *(36)*. A similar approach could be taken by other countries to develop their own national policy using the WHO nutrient profile model. Finally, the model can be used to evaluate the impact of policies. Where self-regulatory or voluntary initiatives coordinated by the food industry are in place, policy-makers may choose to evaluate the extent to which the initiative is effective at reducing children's overall exposure to HFSS foods – in line with WHO recommendations – using the nutrient profile model.

The WHO Regional Office for Europe nutrient profile model can be adopted and incorporated into policy by countries in its current form. However, it allows for adaptation by Member States to the national context if necessary. Such adaptation could include:

- adding, merging or deleting categories, if appropriate to the national context and food marketing environment;
- altering nutrient thresholds to influence the strictness of the model (e.g. in some countries, the salt thresholds for breakfast cereals, ready-meals or processed meats could be lowered to become stricter);
- including or removing nutrients in some product categories (e.g. although saturated fat is included in some categories of our model, it could potentially be added to some categories such as processed meat, poultry, fish and similar).

WHO has been working with Member States on the development of nutrient profile models since 2009, and has issued technical documents providing guidance *(22, 37)*. The WHO Regional Office for Europe nutrient profile model responds to a specific challenge to policy development identified by countries *(28, 29)*. By promoting greater policy development and more effective policy design, there is significant potential for it to contribute to a reduction in children's exposure to HFSS marketing. A post-hoc evaluation of the model may be envisaged to explore how countries have used or adapted the model in practice, and consider whether any of the food categories or nutrient thresholds could be re-examined (i.e. made stricter, or prioritize other nutrients).

WHO should continue to support countries in other aspects of policy development on marketing restrictions, by helping them to clearly define:

- what forms of marketing should be covered by restrictions
- how "marketing to children" is conceptualized
- what is the age range of a "child" for the purpose of marketing restrictions.

In this way, countries will move a step closer to implementing the comprehensive restrictions envisaged by WHO on the marketing to children of HFSS foods. Lessons from the use of nutrient profiling may also facilitate adaptation or development of similar implementation tools for other policy areas, such as school food policies, front-of-pack nutrition labelling or price policies.

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