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Are foods 'healthy' or 'healthier'? Front-of-pack labelling and the concept of healthiness applied to foods

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Abstract

While food-based dietary guidelines have been widely disseminated for decades to improve nutritional knowledge in the population about healthy diets, more recent interventions such as front-of-pack labelling have made the differences between the two approaches apparent. While food-based dietary guidelines provide the overarching framework and benchmarks for a healthy diet, based on the current knowledge of the associations between various dietary components and health outcomes, front-of-pack labelling provides guidance to select a specific food, either within a food group or among similar foods belonging to various brands. Labelling foods as 'healthy' or 'unhealthy' raises multiple questions on the criteria used to define the terms and the implications of assigning an absolute healthiness value to an individual food in the context of complex diets. Gradual systems may provide more relative assessments and avoid dichotomisation. The present article presents the inherent differences and the complementarity of food-based dietary guidelines and food choice guidance in the context of food labelling.

Key words: **Front-of-pack labelling: Food-based dietary guidelines: Nutrient profile: Food policy**

In the last few decades, the prevalence of overweight and obesity has reached epidemic proportions[1], urging governments to put in place efficient actions to tackle the challenge associated with obesity-related non-communicable diseases[2,3]. Given that one of the key modifiable determinants of obesity and non-communicable diseases is dietary behaviour, a host of actions have been taken to improve dietary practices and habits at the population level[4]. The various strategies put forward challenge the notions of 'healthiness' conveyed to the consumer and interchangeably applied to diets or food products which we aim to explore.

The most widespread approach has been to develop and disseminate food-based dietary guidelines[5], reflecting knowledge about the components of a healthy diet that have been shown to be associated with a reduced risk of nutrition-related diseases (e.g. recommending consumption of whole-grain foods, limiting consumption of salty, fatty and/or sugary food/beverage products, etc.). For some food groups, a recommended quantity of consumption may be provided (e.g. at least five servings of fruit and vegetables a day, fish twice a week, no more than 500 g of meat/week), while for others, the recommendation is qualitative (e.g. limiting consumption of sugar, fat and salt). Additionally, food-based dietary guidelines encourage the consumption of unprocessed/minimally processed foods and home-cooked meals (e.g. the case in Brazil). Some food-based dietary guidelines, as the Australian model[6,7], for example, distinguish broad food groups as 'core' and 'discretionary'. More recently, the Brazilian dietary guidelines were defined according to the NOVA classification which takes into account the extent and purpose of industrial processing[8]. The NOVA classification more specifically formulated the concept of ultraprocessed foods, which are defined as food products manufactured from multiple ingredients, using a multitude of industrial processes to create the final product[9]. While food processing was developed to ensure longer shelf-life and safety of food products, ultraprocessing deteriorates the original ingredients' food matrix; it combines adulterated ingredients into ready to eat/heat, affordable and hyper-palatable products with increased energy density and sugars, saturated fats and/or salt contents and lower contents in fibres. Such products may also contain a number of potentially harmful additives[10].

In both the Australian and the Brazilian models, the respective guidelines state that the presence of 'discretionary' or ultraprocessed foods in the diet should be limited, while the consumption of unprocessed or fresh foods should be encouraged. These innovations in food-based dietary guidelines follow recent research efforts investigating novel aspects of foods such

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as the level of processing (using the NOVA classification)[11,12], effects of additives[10], modifications in the food matrix or food production chains (e.g. organic foods[13–15]) and their association with health outcomes.

Of note, 'discretionary' or ultraprocessed food groups are mainly highlighted in food-based dietary guidelines for their nutritional composition as being higher in fat and/or sugar and/or salt[16,17], as the scientific evidence regarding the other mechanisms linking ultraprocessed food consumption and health is still emerging and needs further research.

However, given the relatively large consensus about what constitutes a healthy diet, most food-based dietary guidelines overlap regarding the food groups that are recommended and those whose intake should be limited[5].

However, in the current industrialised food environment, the amount of time spent cooking[18,19] and the use of fresh and raw foods to prepare meals – rather than relying on ready-made meals or mixing industrial ingredients – tend to decrease[20]. The trends in food supply highlight industrially produced convenient and ready-to-use ingredients, meals and snacks as a fast-growing market[20]. The demand for healthier alternatives[21] is an additional driver for the industry, which produces heavily marketed foods with nutrition claims[22] that cannot be independently assessed by consumers[23,24].

In that context, more visible public health strategies, such as front-of-pack labelling, intended to help consumers easily choose healthier products at the point of purchase appear necessary[25].

However, the underlying principles guiding the development of food-based dietary guidelines and of front-of-pack labelling diverge in a number of ways.

National food-based dietary guidelines provide the overarching framework and benchmarks for a healthy diet, based on current knowledge of the associations between various dietary components and health outcomes[6]. However, the overall diet itself is the result of the consumption of a combination of individual foods, in both quantity and quality[6,26], with potentially synergistic effects[27]. Indeed, whereas one's diet may be qualified as relatively healthy or unhealthy, it is not so easy to qualify individual foods that constitute only a fraction of the diet. No food is detrimental or toxic *per se*, just as none is a universal panacea; only the habitual combination of different foods could lead to a healthy or rather unhealthy diet. Moreover, even within the food groups that are generally favoured by the food-based dietary guidelines, a large variability in nutrient composition exists; this is even more so as regards the available range of industrially processed foods. For example, fish can be purchased and consumed raw, canned, smoked, salted, battered, minced etc., yet all of these varieties would fall under the definition of fish as provided by food-based dietary guidelines.

Given these considerations, setting guidance regarding the health effect of individual foods requires different sets of tools (and perhaps even new knowledge) that are complementary to those used in elaborating food-based dietary guidelines. Whereas the latter set the overall criteria for what constitutes an healthy diet, front-of-pack labelling provides guidance to select a specific food, either within a food group or among similar foods belonging to various brands.

When considering individual foods rather than diets, often the only instrument available to the consumer at the point of purchase is the back-of-pack nutrition information table, providing detailed numeric data on the quantity of certain nutrients deemed essential. National regulations on the mandatory nutrition facts on the back-of-pack[28] reflect current consensus about the nutrients that are considered to be of nutritional importance[29]: Total sugar, salt and saturates are usually mandatory requirements, while added or free sugars are often absent. Whereas emerging research may allow in the future to take into account other aspects of food composition, nutrient content is for now the best available basis on which to rely when estimating the food's impact on health.

The nutritional quality of each food may then be defined according to nutrient content (using specific thresholds of each of several nutrients) or in terms of its overall nutritional quality using nutrient profiling[30]. Thresholds or nutrient profiling systems aim at ranking foods according to their contribution to a healthy diet, taking into account the recommended daily values. The overlap between nutrient thresholds or nutrient profile and food-based dietary guidelines can then be examined on a broader scale, knowing that it can never be 100 %. For example, while salmon falls into the recommended food group of fatty fish, the nutritional composition especially as regards salt content can range anywhere from 0·12 g for raw salmon to 1·22 g for canned salmon and up to 4·00 g for smoked salmon. These discrepancies do not necessarily invalidate nutrient profiling algorithms or food-based dietary guidelines but rather highlight the complementarity between the two approaches at the food and diet levels. They also demonstrate the necessity for supplementary guidance when disseminating the information at the population level.

A specific issue once nutrients and/or nutrient profile has been selected is assigning a threshold below which foods may be designated as 'healthy' or above which foods would be designated as 'unhealthy'. Indeed, if foods were to be distributed along a continuum of relative nutritional quality going from healthier to less healthy, assigning an absolute value as 'healthy' or 'unhealthy' would be challenging. The food labelling experiences in South America (under the nutrient-specific Warning label[31]) or in Northern Europe (under the 'green keyhole' system[32]) show that strict thresholds are preferred, based on optimal nutritional content, and thereby identifying a small fraction of food products as 'healthy' (under 20 % of food products in Peru[31] or in Chile[33], e.g. do not carry any warning label). Gradual systems, such as the Nutri-Score in France[34] and other European countries or the Health Star Rating system in Australasia, do not have embedded thresholds and thus do not directly dichotomise foods into 'healthy' and 'unhealthy'. Instead, they accentuate the relative nutritional quality of foods, thus facilitating their comparison. For Nutri-Score, while the underlying algorithm components were built on daily values, the overall thresholds for the attribution of colour/letter were based on the relative distribution of products in the food offer, with the secondary aim of fostering reformulation and innovation in the food industry. While all of the above-mentioned labels (Warning labels, Nutri-Score, Health Star Rating) are considered as 'directive' systems, as they provide a direct interpretation of the nutritional content of a given food in reference to a healthy

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diet, they differ in their scope and gradation as the number of categories into which they classify foods varies[35]. Nutri-Score, for example, maintains a 'middle' value (represented by the letter C and the colour yellow), highlighting the concept of 'middle-range' composition. However, some authors have suggested that foods falling into the A/B classes of the Nutri-Score or those with >3·5 stars of the Health Star Rating ought to be considered 'healthy'[7]. Recent calls by consumer associations and public health agencies in France demand the removal of advertising of foods classified as D/E in the Nutri-Score, setting yet another criterion to define 'unhealthy' foods[36]. The existing lack of uniformity in the thresholds used in categorising foods as for 'healthy' and 'unhealthy' therefore reflects nutritional policy objectives rather than an actual scientific consensus by which a given composition threshold would be directly linked to health risks. Some advocates argue only for the need to regulate very 'unhealthy' foods (i.e. disease prevention perspective), while others prioritise an exclusive focus on very 'healthy' foods (i.e. health promotion perspective). The strategies and objectives reflect the priorities of each country, the average socio-economic and educational status of the population, its level of health awareness and the nutritional quality profile of the food supply.

Even though the distinction between 'healthy' and 'unhealthy' or 'core' and 'discretionary' foods may be useful overall, it may also mislead some consumers. For example, the information provided may be interpreted as direct instructions to avoid 'unhealthy' foods entirely, or to consume 'healthy' foods exclusively, with some form of dichotomous thinking[23]. Designating foods as 'healthy' or 'unhealthy' may lead to an oversimplification of the complexity of the diet and induce unintended consequences in terms of dietary behaviour or food-related anxiety[37]. Research on consumer behaviour suggests that consumers tend to convert ordinal scales into binary cues[38] or that they have difficulties interpreting labelling in the mid-range of an ordinal scale[39]. Indeed, consumers tend to favour simple cues that can be directly translated into purchasing decisions, which are by nature binary (purchasing/not purchasing)[23]. However, though it may respond to demand from a marketing and economic perspective, from a nutritional point of view such simplification may be overreach. Front-of-pack labelling instead could be a tool for consumer education by providing more nuanced interpretations of the nutritional quality of foods through graded systems and with appropriate communication strategies could increase empowerment of consumers in decision-making when selecting foods. Clear communication about the objectives of front-of-pack labelling as a consumer guidance tool to encourage food substitutions should be devised, along with explanatory content on the fact that it delivers relative information on nutritional content only. In graded systems, such as the Nutri-Score, communication campaigns have highlighted the relative nature of the message being conveyed (e.g. letter A/dark green colour for foods of higher nutritional quality and letter E/red colour for foods of lower nutritional quality) and its goal to encourage food substitutions within a food group rather than to structure diets or impose exclusive dietary rules[40].

In other policy areas, such as advertising regulation or taxation, dichotomising is inevitable, as foods would be evaluated as passing/vetoed but in these areas such a binary approach is implied and not explicitly stated and may not have the same impact on consumer understanding of nutritional concepts.

Additionally, designating a given food as 'healthy' or 'unhealthy' might overlook important attributes apart from its nutritional composition. In fact, a number of food characteristics have recently been linked to health outcomes: degree of processing[12], organic production[41], presence of additives[42,43] or neo-formed contaminants[44]. While each of these attributes has been shown to be independently associated with human health, the level of evidence available for each dimension varies greatly. Moreover, though degree of processing is correlated with nutritional content, these dimensions do not entirely overlap and may be viewed as complementary characteristics of the foods. At present, there is no consensus about defining the relative contribution of each dimension of the nutritional composition, degree of processing or type of production system to an overall 'healthiness' indicator at the food level. Labelling foods as 'healthy' only based on their nutritional quality may also therefore reinforce halo effects, whereby consumers infer that one positive dimension of the food extends to all other aspects of it[23]. Finally, in the absence of strict guidelines, the term 'healthy' applied to foods is extensively used for marketing purposes by the food industry and the term itself may appear meaningless to some consumers[45].

Another fundamental difference between food-based dietary guidelines and guidance on food choices is the issue of the amount of foods that should be indicated. Taking foods in the context of the overall diet would lead to considering the portion size as a meaningful unit, as dietary guidelines specify the recommended amount of some food groups to be consumed in order to qualify one's diet as healthy. Incorporating recommended portion sizes to front-of-pack labelling is advanced as an argument for bridging the gap between food-based dietary guidelines and front-of-pack labelling, thus creating a cohesive strategy.

However, when considering guidance on food choices, the definition of portion sizes and also the way in which to convey the information to consumers might be challenging. Portion sizes differ widely depending on individual energy requirements, and studies have shown that consumers struggle to accurately gauge the amount corresponding to a portion when the nutrition facts information is provided at that level[46,47]. Moreover, in the current food environment, portion sizes are usually freely set by manufacturers[48]. Using portion sizes as a criterion for food choices might lead to potential manipulation by some manufacturers, using smaller portion sizes to artificially reduce the amounts of fat, sugar or salt present in the final product[48,49]. The effects of portion-based *v.* 100 g-based front-of-pack labelling on portion size selection for less healthy products have been shown to encourage consumption of some food categories, highlighting the potential detrimental effect of using portions as a basis for front-of-pack labelling[49]. Therefore, taking into account a standard amount, such as 100 g of product would be a more reasonable choice, permitting a valid comparison across food products without inducing any estimations errors.

In conclusion, food-based dietary guidelines and food choice guidance ought to be regarded as complementary tools from a public health nutrition policy standpoint. However, the set of criteria devised to define healthy diets may not fully correspond to

those used in determining the healthfulness of individual foods, given some fundamental differences in the underlying considerations of these two types of approaches. Communication strategies clarifying the objectives and the use of each of these tools could be used to empower consumers to move towards healthier diets.

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