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Analytical Methods

The use of food composition data in the Choices International Programme ☆

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ABSTRACT

Food composition data have extensively been used in the Choices International Programme: they formed the basis of both criteria development and nutrient intake modeling. Criteria were developed for key nutrients linked to non communicable diseases by an independent scientific committee. The criteria can be used for the logo assignment on food products, in order to stimulate producers to improve their products and to stimulate consumers to purchase these products. Insights in steps of development of the criteria for the Choices program illustrates the importance of food composition data in this process. Modeling studies with the criteria for the Dutch Choices program showed an improved nutrient intake profile if consumers would choose products fulfilling the criteria of the Dutch logo as part of their diets. The role and availability of food composition databases in the development of the criteria and the modeling studies is discussed.

1. Introduction

The incidence of non-communicable diseases (NCDs) such as obesity, diabetes, cardiovascular disease, and certain forms of cancer is increasing worldwide. A healthy diet is considered to be one of the factors that could have a positive impact on this incidence. An excessive and unbalanced intake of energy, saturated fatty acids, trans fatty acids, salt and sugars increases the risk for developing chronic non-communicable diseases. In 2003, a joint WHO/FAO consultation called upon the food industry to develop healthier products and to help the consumer to identify healthier options (FAO/WHO, 2003; Waxman, 2004). In line with these recommendations, the Dutch Ministry of Health, Welfare and Sport asked the Dutch food industry, including out-of-home and retail, to take action. This resulted in 2006 in the establishment of the Dutch Choices Foundation ('Stichting Ik Kies Bewust') (Dötsch-Klerk & Jansen, 2008; Stichting Ik Kies Bewust): A front of pack health logo identifying the healthier choices within a product group. The Netherlands was the first country were a Choices Program was launched, other countries (such as Poland, Czech Republic) followed, leading to the formation of the Choices International Program (Choices International Programme A). The Choices program is functioning as a multi-stakeholder collaboration between scientists, food industry and government. Independent scientists set criteria that select the products within a product group with the better composition regarding the amounts of sodium, trans- and saturated fatty acids, fiber, energy and added sugar. Industry, retail and "out-of–home" companies which join the program may use a front-of-pack logo to mark their products that meet the criteria after approval by an independent certifying agency. Stakeholders and companies are guided through the process via the website of the initiative (Choices International Programme B).

Aim of the Choices International Programme is to help consumers to make the healthy choice and to stimulate the food industry, including retail and "out–of-home" market, to improve the offered products. To define what the healthier choices are, nutrient criteria have been developed based on the WHO/FAO recommendations for a healthy diet (Roodenburg, Popkin, & Seidell, 2011). Every three to four years, the scientific committee will evaluate the criteria against new scientific insights on nutrition, food technology, the actual composition of products offered at the market, etcetera. This time period is chosen to give consumers time to get used to less salty or sweet tastes of improved products, and to give the food industry time to develop improved products. This evaluation makes it important to have access to up to date Food Composition Databases (FCD)s to evaluate the technical possibilities within a product group and to estimate the effect on the

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percentage of products that can fulfill new criteria. Since 2006, the impact of the introduction of the Dutch Choices logo, has been evaluated (Vyth, Steenhuis, Roodenburg, Brug, & Seidell, 2010; Vyth et al., 2009; Vyth, Steenhuis, & Vlot et al., 2010; Vyth and Steenhuis et al., 2011; Vyth and Hendriksen et al., 2011). Additional studies have been initiated to calculate the potential impact of the (products carrying the) logo on daily intake of nutrients (Menezes et al., 2013; Roodenburg, van Ballegooijen, Dötsch-Klerk, van der Voet, & Seidell, 2013; Roodenburg and Popkin et al., 2011; Roodenburg and Schlatmann et al., 2011).

Food composition data have been used extensively both in the development of nutrient criteria to determine when a food can carry a health logo as well as in the calculation of the potential impact of the Choices International Programme. The present article will describe more in detail how food composition data were used.

2. The use of food composition data in development of nutrient criteria

The methodology of the nutrient criteria development for the Choices logo has been described in detail (Roodenburg and Popkin et al., 2011; Roodenburg and Schlatmann et al., 2011). The criteria have been developed based on the assumption that while doing their groceries, consumers choose a product within a product group. The front of pack logo has to stimulate the consumers to select the healthier products within this product group. Because the composition of products differs considerably between different product groups (i.e. bread, meat, drinks and sauces have different amounts of sodium, saturated fatty acids, sugar etc.), criteria had to be set per product group. In addition, if product group specific criteria are realistic, they will stimulate producers to improve their products.

2.1. Product groups

Consumers choose within a product group. Therefore product groups need to be defined.

The focus is not only on limiting the intake of nutrients with a negative impact on health, but also on ensuring the intake of essential and beneficial nutrients. To achieve this, a distinction has been made between basic foods and discretionary foods. Basic food product groups significantly contribute to the intake of essential and beneficial nutrients for example, vitamins, minerals and water. These were based on product group classifications from food-based dietary guidelines used in more than 20 countries worldwide (Roodenburg and Popkin et al., 2011; Roodenburg and Schlatmann et al., 2011). Main basic food groups include fruit and vegetables; carbohydrate sources; protein sources; fat, oils and fat containing spreads; water and meals like main course or sandwiches. Discretionary product groups do not significantly contribute to the intake of beneficial nutrients. They are included because they are eaten frequently, are important sources of trans-fatty acids, saturated fatty acids, sodium, added sugar and energy, and therefore targets for product innovation (Roodenburg and Popkin et al., 2011; Roodenburg and Schlatmann et al., 2011). These product groups include: soups; different sauces; snacks; bread toppings and beverages. Criteria for discretionary food groups were defined to be stricter when compared to those for basic food groups.

2.2. Key nutrients

Nutrient criteria were set for the key nutrients that are linked with NCDs: saturated fatty acids (SAFA), trans fatty acids TFA), sodium and added sugar. Added sugar was preferred above total sugar for the possibility for producers to influence the amount and hereby stimulating product innovation. When appropriate for the product group, criteria were set for fiber and energy. To ensure micronutrient intake, the source of fiber must originate from the actual ingredients of the product group (for example, whole grain, vegetables).

Nutrient recommendations were translated into generic criteria. Generic criteria were defined as the recommendation for nutritional intake of a nutrient + 30%. The population intake goals as defined by the WHO/FAO formed the basis (FAO/WHO, 2003). Because not all products in a daily diet contain the nutrient, the overall average intake might still be in the recommended range. The arbitrary 30% might be lowered after some years when the composition of the offered products have been improved. Intake modeling was used to substantiate that adding 30% does not counter the objectives of the program (Roodenburg, Temme, Howell, & Seidell, 2009).

2.3. Product group specific criteria

To encourage the intake of essential and beneficial nutrients, consumers should have access to more healthy choices within basic product groups (as these provide essential nutrients) than within the discretionary product groups. Therefore for basic product groups, the aim was to have at least 20% of products comply with the criteria within a given product group, and approximately 10% for the discretionary product groups. These percentages were used as a starting point for deciding when a product-group-specific criterion is needed and what the criterion should be. To determine the 10–20% complying foods, food composition data was used as a surrogate for the food supply on the supermarket shelf. In addition food composition data from so called indicator foods were used as example to further define the criteria (Appendix 3, Supplementary material in Roodenburg and Popkin et al., 2011; Roodenburg and Schlatmann et al., 2011).

2.4. The food composition data

To determine the actual percentages and the existing variations in product composition on the international market, a food composition test database was created. It consists of food composition data for 7000 foods from 12 European countries (Belgium, Denmark, France, Germany, Ireland, Italy, the Netherlands, Norway, Poland, Spain, Sweden and the United Kingdom). This selection was based on geographic representation, data completeness, costs and availability—both electronically and in the English language. For more details, see Supplementary material Appendix 2 'Development of a test database on food composition' in Roodenburg and Popkin et al., 2011; Roodenburg and Schlatmann et al., 2011.

All the product composition data had to be organized and completed before any analysis could be done. This work included the following steps as described in Supplementary material Appendix 3 in Roodenburg and Popkin et al., 2011; Roodenburg and Schlatmann et al., 2011:

(1) To assign all products to the right product group, based on the product description. If this was not clear, the decision tree for product group classification was used (Fig. 1).
(2) To calculate or estimate the missing values for trans fatty acid content based on:
    (a) Total fat content in relation to the origin, in line with TRANSFAIR* Study. TRANSFAIR study is used as a golden standard for it is assumed to provide reliable and comparable data on trans fatty acid (TFA) content of foods in Europe (Aro, Antoine, Pizzoferrato, Reykdal, & van Poppel, 1998).