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Nutrient Profile of Commercially Packaged Food Products in Türkiye

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Abstract: Nutrient profiling models are useful for describing the health value of foods and underpinning various nutrition-related public health strategies. They are generally based on a food's content of several nutrients (e.g., protein, salt, carbohydrates). The aim of this study is to review information on the nutritional profiles of foods and beverages sold in Turkey. Ten food and drink categories were reviewed in six physical food stores and four online stores. A total of 1,000 foods and beverages, 100 products from each group, were checked for nutrient profile according to their labels. While all dairy products are produced locally, 74% of baby and young children foods are produced foreign. Snacks have the highest energy and saturated fat (on average 2072.6 kJ/579.4 kcal; 13.2±6.23 g respectively). Dried food and ingredients have the highest fat (on average 35.2 g±21.61). Confectionaries received the highest carbohydrates and sugars (on average 79.6±19.56 g; 56.0±27.41 g respectively). Chilled foods have the highest protein levels (on average 18.0±9.31 g). Condiments and sauces have the highest salt (3.4±4.59 g). Beverages have the lowest energy, fat, saturated fat, protein and salt (on average 160.3 kJ/37,7 kcal; 0.0±0.00 g; 0.0±0.00 g; 0.1±0.16 g; 0.0±0.15 g respectively). Dairy has the lowest carbohydrates (on average 5.8±4.52 g) and chilled foods have the lowest sugar (on average 2.0±0,69 g). As nutrient profiling models are increasingly used worldwide to support public health strategies, having an up-to-date resource listing them and detailing their characteristics is crucial. It is believed that the results of this study may provide an up-to-date guide for determining the nutrient profile of commercially packaged foods sold in Türkiye.

Keywords: Nutrient profiling, Food labels, Commercially packaged foods

Introduction

Current evidence indicates that four types of non-communicable diseases (NCDs), cardiovascular disease, cancer, diabetes, and chronic respiratory disease, are the leading global causes of death, kill 41 million people each year, equivalent to 74% of all deaths globally. NCDs are largely preventable and also some preventive interventions early in the course of life offer lifelong benefits. Reducing salt levels, eliminating industrially produced trans fatty acids, decreasing saturated fats, limiting free sugars, and providing accurate information to consumers in the form of nutrition labels are effective interventions totackle NCDs (WHO, 2023).

Since most of the actions taken by governments to address obesity are focused on diet as one of the key determinants of disease, it is required to define and classify food and drink products containing excessive amounts of such nutrients. One way to establish acceptable critical nutrient thresholds is with a nutrient profiling system (WHO, 2011). Nutrient profiling algorithms aim to characterize the overall nutritional quality (healthfulness) of foods and beverages (Scarborough et al., 2007). They are generally based on a food product's content in multiple nutrients, some of which may be to encourage (e.g., fiber, protein) and others to limit (e.g., sugars, sodium). Nutrient profiling is primarily relevant to the field of public health nutrition when there is a need to define as clearly and objectively as possible what represents a "less" or "more" nutritious food in the context of various nutrition-related policies and regulations (Sacks et al., 2011).

The importance of food labelling is very frequently overlooked; however, it is essential to help consumers make healthy and safe food purchasing choices and is extremely important in relation to societal wellbeing. Thus, clear and unambiguous food labelling is vital for the presentation of critical safety information to consumers (Brown et al., 2015).

In 1994, the Food and Drug Administration (FDA) enacted the Nutrition Labeling and Education Act, which requires nutrition facts panel (NFP) labels on the back of most food products. The goals of this legislation include helping consumers make healthy food choices, reducing consumer confusion about food labels, and providing an incentive for firms to improve the nutritional quality of food (Wilkening, 1992). Several studies find that approximately 60 percent of U.S. consumers rely on fact panels sometimes or always when making purchasing decisions (Todd & Variyam, 2008; Ollberding et al., 2010; Campos et al., 2011), and consumers with diet-related diseases are even more likely to use NFPs (Post et al., 2010). We contribute to the literature by examining the nutritional information on the labels of packaged foods sold in stores. The nutrient content of food groups was analyzed based on the information on the nutrition facts panel.

Method

Type of the Study

This research is a cross-sectional study at five levels of evidence. The inclusion criteria are that the products are packaged, sold commercially, and can be easily found all over Turkey. The exclusion criteria are that unpackaged products, those not sold commercially in markets or online markets, and products that only belong to a certain region. Ethics committee approval was not required in this study, so it was not applied.

Physical Stores

Six mega physical stores in the Turkey were visited. Two of them were supermarkets and four of them were convenience stores. These stores were chosen as they are part of a retailer chain and are widespread in Turkey. Prior to the visit, verbal consent was obtained from each store manager. All packaged foods' labels that were obtained in physical stores were taken photos from all sides (front, back and other sides). Foods and beverages were randomly selected from the shelves.

Online Stores

Premium, regular, and budget stores (n=4) offering online deliveries were selected. In the online store webpage, each page offers a selection of 40-50 items per food category. Five items per page were selected systematically by selecting every 8th or 10th item that were listed on the page.

Survey

Commercially processed and packaged food products' labelling were evaluated for declaration of nutrient profiling. Ten food and drink categories were selected. A total of 1,000 foods and beverages, 100 products from each group, were checked for nutrient profile according to their labels. The foods and beverages are representative of the range of commonly purchased food in Turkey. The researcher collected this data from May 2023 to July 2023. Two or three digital photographs were taken for each product. The photographs were evaluated and items such as place of manufacture (local or foreign), protein, carbohydrate levels. Data from each label were entered into an excel sheet according to food category.

Statistical Analysis

Descriptive statistics were used and the results are shown as percentages. Results were entered into an excel data sheet and percentages were calculated.

Results

In this study, a total of 1,000 foods and beverages, 100 products from each group, were checked for nutrient profile according to their labels. The place of the manufacturer of packaged foods was examined. All dairy products are locally produced. In local production, this is followed by chilled foods (99%) and bakery products (96%). The most foreign-produced products are baby and young children foods (74%), followed by condiments and sauces (42%) and dried food and ingredients (19%) (Figure 1).

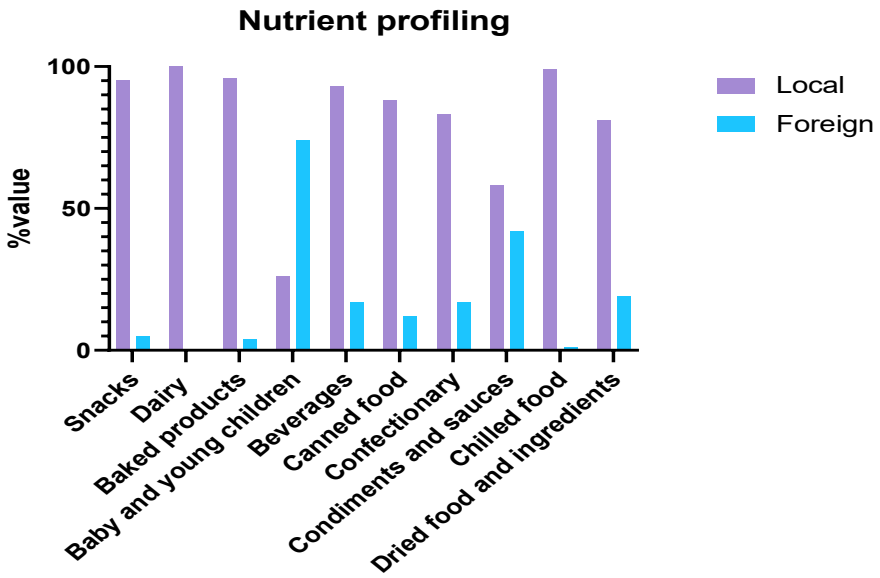

Figure 1. Place of manufacturer

Snacks have the highest energy and saturated fat (on average 2072.6 kJ/579.4 kcal; 13.2±6.23 g respectively). Dried food and ingredients have the highest fat (on average 35.2 g±21.61). Confectionaries received the highest carbohydrates and sugars (on average 79.6±19.56 g; 56.0±27.41 g respectively). Chilled foods have the highest protein levels (on average 18.0±9.31 g). Condiments and sauces have the highest salt (3.4±4.59 g). Beverages have the lowest energy, fat, saturated fat, protein and salt (on average 160.3 kJ/37,7 kcal; 0.0±0.00 g; 0.0±0.00 g; 0.1±0.16 g; 0.0±0.15 g respectively). Dairy has the lowest carbohydrates (on average 5.8±4.52 g) and chilled foods have the lowest sugar (on average 2.0±0,69 g) (Table 2).

Table 2**.** Nutrient labeling profiles

Food and drink categories	kJ	Kcal	Fat (g)	Saturated fat (g)	Carbohydrate (g)	Sugar (g)	Protein (g)	Salt (g)
Snacks	2072.6	495.6	25.7	13.2	56.7	27.9	7.4	0.7
Dairy	779.0	187.0	14.5	8.7	5.8	4.8	8.6	0.7
Baked products	1373.5	367.6	8.2	2.5	52.2	6.7	10.1	0.9
Baby and young children	479.0	116.0	3.3	1.2	19.5	10.8	2.9	0.1
Beverages	160.3	37.7	0.0	0.0	9.0	8.5	0.1	0.0
Canned food	705.4	178.3	6.5	3.0	9.5	5.1	9.0	1.3
Confectionary	1590.8	378.1	4.0	2.9	79.6	56.0	2.8	0.4
Condiments and sauces	637.4	153.4	8.1	0.9	17.0	12.1	2.0	3.4
Chilled food	1053.7	255.8	17.6	8.4	5.9	2.0	14.6	2.1
Dried food and ingredients	2023.8	579.4	35.2	6.5	30.0	12.8	18.0	0.9

Discussion

Nutrition labeling is the provision of information on protein, carbohydrates, fat, fiber, sodium, vitamins, and minerals along with the energy value on the label. It can be used for various applications. It is commonly used in food labelling schemes aimed at helping consumers better understand the nutrient composition of foods and identify foods that are healthier options. It can also be used in implementing the recommendations on the marketing of foods to children (Dikmen et al., 2015). With the development of the food industry, more and more packaged foods are entering the market. Given this diversity, individuals need to pay more attention and care to

the information on labels when buying food. Reading labels is an effective way to make decisions when choosing food (Priya & Alur, 2023). The aim of this study is to review information on the nutritional profiles of foods and beverages sold in Turkey.

Overseas countries have started to develop various nutrient profile models for different applications. In the United Kingdom, the traffic light labelling system ranks fat, saturated fat, sugar and salt of a food product by assigning the colour green, amber and red according to the content levels. In addition, food products that exceed specified levels of fat, salt and sugar cannot be advertised in television programmes commissioned for audiences below the age of 16. In Australia, the Health Star Rating system rates food products from ½ a star to 5 stars, based on their nutrient contents (i.e. energy, saturated fat, sugar, and sodium, and in some instances, protein, calcium and dietary fibre) and ingredient information (i.e. fruits, vegetables, nuts and legumes). The more stars, the healthier the choice. In some Nordic countries, the Keyhole labelling scheme identifies healthy foods within a product group, based on the criteria relating to dietary fibre, salt, sugar, fat, and saturated fat (CFS, 2016).

As can be seen, each country has a different method of nutrition declaration on the nutrition label. Turkiye use nutrition fact panel in order to declare nutritional ingredients. As can be seen, each country has a different method of nutrition declaration on the nutrition label. In Turkey, the nutrition table is used to declare the ingredients. According to this table, the foods with the highest kJ are snacks. The reason why snacks have a high kJ value is because of the unhealthy additives and oils they contain. The reason for the high kJ value of dried food and ingredients, is that they contain many healthy fats. The main reason for the high energy content of confectionaries, the third food group with the highest kJ content, are the simple sugars in their structure. Beverages are the food group containing the fewest kJ. The reason why the second-ranked baby and young children foods have a low energy content is that this food is prepared according to the needs of babies. Although the ranking is different, the top three foods in terms of kcal are the same as kj (dried food and ingredients, snacks, and confectionaries respectively). Dried fruits, which are the food group with the highest kcal value, also have the highest fat content. This is the most important evidence that the caloric content of food increases with increasing fat content. The kJ value of the food group with the highest saturated fat content was also found to be the highest. This proves that the kJ value parallels the amount of saturated fat in the food. Similarly, foods high in carbohydrates and sugars have also been found to have high kcal values. The food group with the highest protein content is dried food and ingredients. The food group with the highest salt content is sauces.

Conclusions

This is the first empirical study to evaluate the nutrition profile on commercially packaged food and drink products. Ten food and drink categories were reviewed in six physical food stores and four online stores. A total of 1,000 foods and beverages, 100 products from each group, were checked for nutrient profile according to their labels. While all dairy products are produced locally, 74% of baby and young children foods are produced foreign. Snacks have the highest energy and saturated fat (on average 2072.6 kJ/579.4 kcal; 13.2±6.23 g respectively). Dried food and ingredients have the highest fat (on average 35.2 g±21.61). Confectionaries received the highest carbohydrates and sugars (on average 79.6±19.56 g; 56.0±27.41 g respectively). Chilled foods have the highest protein levels (on average 18.0±9.31 g). Condiments and sauces have the highest salt (3.4±4.59 g). Beverages have the lowest energy, fat, saturated fat, protein and salt (on average 160.3 kJ/37,7 kcal; 0.0±0.00 g; 0.0±0.00 g; 0.1±0.16 g; 0.0±0.15 g respectively). Dairy has the lowest carbohydrates (on average 5.8±4.52 g) and chilled foods have the lowest sugar (on average 2.0±0,69 g).

Recommendations

The goals of the nutrition labeling are to reduce consumer confusion about food labels, help consumers make healthy food choices, and provide an incentive for firms to improve the nutritional quality of food. Nutrition information on food labels should be more understandable to consumers. If necessary, training on reading nutrition labels and evaluating nutrition labels should be provided.

The limitation of this study was obtaining the nutrient label of the packaged foods. In this study, only 1000 foods were examined. To obtain more meaningful results, more commercially packaged foods should be studied. In addition, the lack of a previous study on this topic shows the originality of the study, but since there is no source to discuss the results in the discussion section, the study is discussed with its own data.

Scientific Ethics Declaration

The authors declare that the scientific ethical and legal responsibility of this article published in EPSTEM journal belongs to the authors.

Acknowledgements or Notes

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