The new food classification: theory, practice and difficulties

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Abstract *The objective of this work was to present the theory, propose the practice and evaluate the difficulties of the new food classification system that was presented in the second edition of the Dietary Guidelines for the Brazilian Population. The questionnaire used included a list of 30 foods divided into four groups: in natura or minimally processed foods (I), culinary ingredients (C), processed foods (P) and ultra-processed foods (U). The participants categorized the foods before and after a mini-course. The correct classification score in the Global Assessment (C, I, U, P) was significantly higher after the mini-course (Median = 23) than before the mini-course (Median = 13) (Wilcoxon Signal Test; z = -7.33; p = 0.000; Cliff's Delta = 0.96). The low percentage of correct answers before the mini-course justifies the wide dissemination of the theme and the need for more similar courses for students, professionals and the general population.*

Key words *Dietary guidelines, Food, Learning, Foods*

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Introduction

Changes in the quality and quantity of foods in the last 50 years have been driven by, among other factors, changes in the production, distribution and consumption of food products worldwide[1], the increasing industrial processing of food[2-5] and the social, economic and cultural transformations that occur in contemporary society[6-8]. In Brazil, the consequences of these changes are reflected in the high population prevalence rates of overweight and obesity (52.5% and 17.9%, respectively)[9]. As shown in the Pesquisa de Orçamentos Familiares (Family Budget Survey; POF) conducted in 2008-2009[10], these negative changes in the quality of Brazilians' eating habits have signalled the priority for public policies to promote healthy eating[11].

Brazil and other countries have published official Dietary Guidelines that are based on food and nutrition policies to promote health, improve the nutritional status of the population and reduce the prevalence of chronic noncommunicable diseases (CNCDs).

The first Dietary Guidelines for the Brazilian Population were published in 2006[12]. Some of its principles were based on "explicitness" and "variations of quantities" of food, which refer to food portions and kilocalories. Furthermore, the classification of food groups based on the food pyramid adapted to the Brazilian population[13] was widely disseminated.

The food pyramid essentially divides the food groups into the content of macro and/or micronutrients. This distinction is used to direct nutritional recommendations for a diet rich in cereals, tubers, fruits, vegetables, beans, milk, and lower in oils, fats, sugars and sweets.

In regard to recommendations, to overestimate nutrients and foods and underestimate or neglect the industrial processing to which they are submitted[14,15] disregard the enormous difference between a whole grain cereal and a breakfast cereal; the latter is made from exclusively industrial technology, such as extrusion of corn flour, and includes large quantities of sugars, colourings and preservatives, among other food additives. Based on the food pyramid, these two foods are both placed in the cereals and tubers group, which does not make sense.

Therefore, in 2010, Monteiro et al.[15] proposed a new classification of foods based on the extent and purpose of industrial processing, which resulted in three groups: unprocessed or minimally processed foods (group 1), processed culinary and food industry ingredients (group 2) and ultra-processed food products (group 3).

Given the importance of disseminating this classification, the Ministério da Saúde (Ministry of Health; MS) proposed that it be included in a second edition of the Dietary Guidelines for the Brazilian Population. During the development of the second edition of the Dietary Guidelines, this classification was improved; then were presented four groups: *in natura* or minimally processed foods, culinary ingredients (described in the guidelines as a group of oils, fats, salt, and sugars), processed foods and ultra-processed foods[16].

Foods *in natura* are those obtained directly from plants or animals (such as leaves and fruits or eggs and milk). These foods are purchased for consumption without undergoing any changes after leaving nature. Minimally processed foods are *in natura* foods that have been subjected to cleaning, removal of inedible or unwanted parts, drying, packaging, pasteurizing, cooling, freezing, fermentation and other processes that do not add salt, sugar, oils, fats or other substances to the original food prior to its acquisition[16].

The culinary ingredients (salt, sugar, oils and fats) include those used to season and cook food and to create cooking preparations. Processed foods are generally recognized as modified versions of the original food and are produced with fresh (*in natura*) food and culinary ingredients. Ultra-processed foods are industrial ready-to-eat formulations made entirely or predominantly of substances extracted from foods (oils, fats, sugar, starch, and proteins), derived from food constituents (hydrogenated fats and modified starch) or products based on organic matter such as petroleum and coal that are synthesized in laboratories (colorants, flavourings, flavour enhancers and various additives used to provide the products with appealing sensory properties)[16].

In the second edition of the Brazilian Dietary Guidelines, published in November 2014, this new classification was presented to the population. In addition to describing the importance of industrial processing to distinguish *in natura* or minimally processed foods from ultra-processed foods (which often mimic the characteristics and composition of real foods), the new classification also allows the choice of foods considering cultural differences and socially and environmentally sustainable food systems. For example, in addition to causing the consumption of excessive calories, ultra-processed foods represent a sys-

tem, from production to consumption, that can have a negative impact on culture, social life and the environment[16].

In the second edition of the Brazilian Dietary Guidelines, food groups are characterized and exemplified, including figures showing examples of *in natura* food (fresh pineapple, corn cob, fresh fish), processed (pineapple in syrup, pickled corn and canned fish) and ultra-processed (pineapple powder juice, packaged corn chips and fish nuggets)[16]. However, in some cases, the Dietary Guidelines do not clearly explain the classification of certain foods in certain groups, such as milk; pasteurized milk, ultra-pasteurized milk (long shelf-life) and powder milk are classified in the same group, that is, in natural or minimally processed foods. This generates confusion among the target public of this Dietary Guidelines (i.e. among health professionals, students, and the general population).

The new classification of foods is important, particularly for health professionals and students, who will invariably help the population understand the theme. Based on this and the above findings the present study aimed to present the new food classification theory for the nutritionists and students, propose to them the practice of categorization of 30 foods according to the new classification and evaluate their difficulties in this process. This study will possibility to disseminate the new classification of foods, improve the understanding of the participants and answer questions about it. Thus, it will be expected that the participants spread knowledge about and use the new classification of foods.

Methodology

Participants

This quantitative, cross-sectional and descriptive study was developed at a Higher Education Institution in the State of Mato Grosso do Sul/MS/Brazil; this institute offers undergraduate courses in nutrition. The location was chosen because of proximity and the researchers' interactions with the institution.

The non-probabilistic and selected convenience sample was composed of undergraduate students in nutrition and nutritionists who participated in an academic activity in the institution. There was no distinction of class, gender or social group, and individuals who belonged to

vulnerable groups did not participate. All participants were 18 years or older at the time of the study in August 2015.

Procedures

Initially, a team researcher explained the stages of the study, its duration and objective. Those present were invited to participate, and a questionnaire regarding the following activity was given to those who expressed interest.

The activity on the new food classification consisted of a theoretical part and a practical part, which were conducted by a trained team researcher. In this study, a mini-course was the activity. In the theoretical part (2 hours), which was conducted as a dialogic lecture, were addressed: the changes in the production, distribution and consumption of food systems and the increasing industrial processing of food, the differences between the food classification proposed by the food pyramid and the new food classification, the scientific basis for their preparation, the types of techniques and ingredients used in food processing and the definitions and examples of the four food groups were addressed. The practical part was performed in two phases, before and after the theoretical part. The mini-course, therefore, consisted of the following steps: practical part 1, theoretical part, and practical part 2. The first and second practical parts were named, respectively, "before" and "after" the mini-course.

This educational intervention, which uses a mediator (researcher of the trained team), was chosen for this work because it is anchored in a constructivist model[17] and more precisely in the Vygotskian theory. This theory predicts the active participation of the student in the construction of his own knowledge through dialogues and discussions created by the educator[18].

Instruments

Before the mini-course, the nutritionists and students received a questionnaire (Chart 1). They were instructed to classify a list of 30 foods by marking its classification with an "x" in one of the columns for the I, C, P or U food groups (*in natura* or minimally processed foods, culinary ingredients, processed foods and ultra-processed foods, respectively). Fifteen minutes were provided to complete this stage. After the mini-course, the participants were asked to classify the same foods again using the columns assigned to

Chart 1. Questionnaire for nutritionists and students of mini-course.

Full name:		Email:					
If you are a nutrition student, please fill in here:							
Year/Semester:		Sex:					
Have you read the new Dietary Guidelines?					Yes:		No:
If you are a nutritionist, please fill in here:							
How long since you graduated:		Sex:					
Have you read the new Dietary Guidelines?					Yes:		No:

You are getting a list of names of various foods.
Mark with an "X" the column that represents its classification.

Classification of foods	**Before the mini-course**				**After the mini-course**			
	I	C	P	U	I	C	P	U
brown sugar								
white sugar								
white rice								
preserved olives								
cereal bar								
cream-filled biscuit								
coffee								
beef								
dried meat								
dried apricot								
breaded chicken								
cassava flour								
wheat flour								
candied fruits								
frozen ready-to-eat lasagne								
powdered milk								
pasteurized milk								
ultra-pasteurized milk								
frozen cassava								
butter								
pasta (with flour and water)								
soy oil								
egg								
loaf bread								
French bread								
peach in syrup								
cheese								
powder juice								
soda								
salt								

I: In natura or minimally processed, C: Culinary ingredient, P: Processed, U: Ultra-processed.

that step of the study (after the mini-course). The participants were given 15 minutes to complete the second classification and 30 more to clarify the difficulties they encountered during the classification.

For the purposes of analysis, according to the Dietary Guidelines, foods such as white rice, coffee, meat, dried apricots, cassava flour, wheat flour, powdered milk, pasteurized milk, ultra-pasteurized milk, pasta (with flour and water), frozen cassava and egg were considered foods in the *in natura* or minimally processed group; brown sugar, white sugar, butter, soybean oil and salt were considered culinary ingredients; preserved

olives, dried meat, candied fruits, French bread, peaches in syrup and cheese were considered processed foods; and cereal bars, cream-filled cookies, breaded chicken, frozen ready-to-eat lasagne, loaf bread, powder juice and soda were ultra-processed foods. The food in the questionnaire was presented in alphabetical order.

The food list presented in the questionnaire included examples of foods presented in the second edition of the Brazilian Dietary Guidelines with modifications for some of their names. For example, biscuit was denominated cream-filled biscuit, and nugget-type breading was called breaded chicken. Examples of the food definitions given in these Guidelines were also used in this study: food preserved in brine or salt and vinegar solution (pickled olive), dried fruit (dried apricots), canned fruit (peaches preserved in syrup), ready frozen dough (frozen ready-to-eat lasagne) and breads made with wheat flour, yeast, water and salt (French bread). These precautions were taken to avoid using examples of foods not covered by the guidelines.

Statistical analyses

The answers obtained in the questionnaires were typed in a Microsoft Excel spreadsheet, version 2013, to organize the variables and construct a database. Possible data typing errors were checked and corrected. Subsequently, the statistical analyses were performed using Statistical Package for the Social Sciences (SPSS), version 19.0. The analysis was based on descriptive statistics and statistical tests for a comparative analysis between variables. Scalar variables were evaluated in terms of median, mean and standard deviation. An exploratory analysis of the data was performed to characterize the sample, and then the Kolmogorov-Smirnov and Levene tests were applied to evaluate the normality and homogeneous variances of the variables under study. Given the non-normality of the data, the non-parametric Wilcoxon Signals and Mann-Whitney U-test were used. For all tests, a p-value with an less than or equal to 0.05 was considered significant. The Cliff's Delta[19] was used to calculate the size of the effects obtained.

All ethical issues were assessed in accordance with National Health Council Resolution 466/12, and this study was approved.

The present study did not receive financing for its realization.

Results

The study sample consisted of 85 participants (n = 85); however, there was a sample loss of 13 (n = 13) because of incomplete questionnaires (foods classified into two groups or unclassified foods); thus, the final sample consisted of 72 participants. Of these, 92% were females and 8% were males. Among the participants, 88% were nutrition students, and of these, 83% were in their first half of the nutrition course (1st to 5th semesters), and 17% were in their second half (6th to 10th semesters). Only 18% of respondents answered "yes" to the variable "Read the guidelines".

Figure 1 shows the mean performance and the respective standard deviation of the participants' correct classification scores before and after the mini-course. An analysis of the food group data (culinary ingredients – C, *in natura* or minimally processed foods - I, processed foods – P and ultra-processed foods - U) and data from a global analysis of all the groups together (C I, P, U) are displayed.

The correct classification in food group (C), which contained five foods, was significantly higher (p = 0.000) after the mini-course (Median = 4) than before the mini-course (Median = 1).

The results of the comparison obtained for the *in natura* or minimally processed food group (I), which contained 12 foods, also presented significant differences (p = 0.000). The correct classification score in this group was higher after the mini-course (Median = 10.50) than before the mini-course (Median = 3.50).

Moreover, the correct classification score in the group of processed foods (P), which contained six foods, was significantly higher (p = 0.000) after the mini-course (Median = 5) than before the mini-course (Median = 4).

The results also confirmed significant differences (p = 0.000) in the correct classification scores after the mini-course (Median = 5) compared to before the mini-course (Median = 4) for the ultra-processed food group (U), which contained seven foods. Similarly, the correct classification score in the overall analysis (C, I, P, U) was significantly higher (p = 0.000) after the mini-course (Median = 23) than before the mini-course (Median = 13).

The effect size of the mini-course was analysed using Cliff's Delta. The effects obtained for groups C, I and P were considered large whereas the effect obtained for group U was considered medium (Table 1).
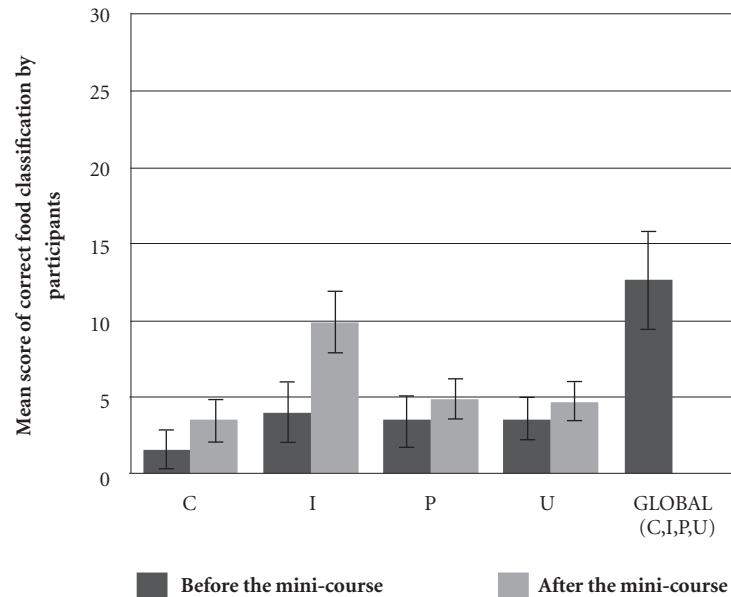
Figure 1. Means and standard deviations of the score of correct food classifications by the participants according to food groups and globally, before and after the mini-course.

Table 1. Comparison of the correct classification score by the participants before and after the mini-course for the food groups.

Food Groups	Before the mini-course			After the mini-course			z	p		Cliff's Delta**
	Median	Mean	(SD)	Median	Mean	(SD)				
Culinary ingredients	1.00	1.60	1.27	4.00	3.46	1.41	-6.37	0.000	*	0.65
In natura or minimally processed	3.50	3.97	2.02	10.50	9.92	2.00	-7.32	0.000	*	0.94
Processed	4.00	3.44	1.67	5.00	4.88	1.31	-5.01	0.000	*	0.50
Ultra-processed	4.00	3.58	1.43	5.00	4.68	1.32	-4.58	0.000	*	0.45
Global	13.00	12.60	3.24	23.00	22.93	4.19	-7.33	0.000	*	0.96

* = significant difference by the Wilcoxon Signal test when $p \le 0.05$.

** Cliff's Delta interpretation scale: negligible ($0.00 < $ delta $ < 0.14$), small ($0.14 < $ delta $ < 0.33$), medium ($0.33 < $ delta $ < 0.47$) and large ($0.47 < $ delta $ < 1.0$).

When comparing the number of correct answers based on profession, the semester of the nutrition students at the time of research and whether they read the guidelines (Table 2), there was a significant difference ($p = 0.041$) before the mini-course only for the profession variable, i.e., the correct classification score between nutritionists (Median = 16) was higher than that of students (Median = 13) for the list of 30 foods.

The Cliff's Delta measurement showed a medium effect size.

Discussion

In general, the correct food classification score was higher after the mini-course. Furthermore, both teachers and students present some knowl-

Table 2. Comparison of the correct classification score in the global analysis (C, I, P, U) based on the participants' characteristics.

Characteristics of participants	n(%)		Median	Mean	(DP)	z	p	Cliff's Delta**
Before the mini-course								
Profession								
Professional	9	13%	16.00	14.89	3.95	-2.04	0.042*	0.42
Student	63	88%	13.00	12.27	3.02			
Students' Nutrition Course Periods								
1 to 5	52	83%	13.00	12.33	3.01	-0.29	0.771	0.06
6 to 10	11	17%	13.00	12.00	3.19			
Read the guide								
Yes	13	18%	13.00	13.69	3.57	-1.08	0.280	0.19
No	59	82%	13.00	12.36	3.14			
After the mini-course								
Profession								
Professional	9	13%	22.00	22.11	3.62	-0.77	0.442	0.16
Student	63	88%	23.00	23.05	4.27			
Student's Nutrition Course Periods								
1 to 5	52	83%	23.00	23.58	4.12	-1.94	0.053	0.37
6 to 10	11	17%	20.00	20.55	4.27			

* = significant difference by the Mann-Whitney U test when $p \leq 0.05$.

** Cliff's Delta interpretation scale: negligible (0.00 < delta < 0.14), small (0.14 < delta < 0.33), medium (0.33 < delta < 0.47) and large (0.47 < delta < 1.0).

edge about elements related to the topic addressed in the mini-course. According to the Ausubelian perspective[20], previous knowledge (the cognitive structure of the learner) is the crucial variable for meaningful learning. Meaningful learning is the process by which new information relates in a non-arbitrary and substantive (non-literal) way to the learner's cognitive structure, i.e., the logical meaning of the learning material becomes a psychological meaning to the subject in any field of knowledge[21]. These results, therefore, indicate that the mini-course held as a dialogic expositive class had a positive effect on the meaningful learning of the participants: the mini-course successfully improved the participants' understanding of the new classification and clarified doubts about it.

The fact that students in their 6th to 10th semesters of the nutrition course did not present greater correct classification scores than students in their 1st to 5th semesters before the mini-course suggests that the additional years of nutrition study up did not influence their knowledge on the subject. This might have occurred because no specific discipline addressed the new food classification with due emphasis on the Dietary Guidelines. Conversely, the results of most studies evaluating the knowledge of students at the

beginning and end of a nutrition course about a topic show that the best scores are obtained by students in the final periods of the course, as shown in the results of the studies on the knowledge of nursing students[22] and nursing and medicine students[23] about breastfeeding.

With regard to reading the guidelines, participants who answered "yes" to this question (18%) did not show higher correct classification scores than those who answered "no." Considering this result, although self-directed learning is a strategy for renewing knowledge and permitting lifelong learning[24], researcher-mediated learning was important for the participants' understanding of the new food classifications. This finding corroborates Vygotsky[18], i.e., that the mediator plays a key role in the learning process. The reading of the guidelines itself, therefore, was not sufficient to allow complete understanding of the subject. This is an important issue to consider since the Dietary Guidelines are designed for everyone and must be understood.

Some questions related to the list used in this work for food classification are worth discussing.

The list sought to include a variety of foods so that the classification in the groups was widely practiced by the participants. The 30 foods included were considered appropriate for the 15

minutes allotted for classification. Much of the work involving questionnaires does not mention the time available for application, as in Badagnan et al.[22] and Lemos-Junior et al.[23]; however, it is of the utmost importance that this information be presented and discussed.

Based on the difficulties presented by the participants in classifying foods, some results will be discussed.

In the *in natura* or minimally processed food group, before the mini-course, wheat flour and cassava flour were correctly classified by 6% and 28% of participants, respectively. After explaining that milling, roasting and drying, among others, are typical food production processes in this group and do not involve the addition of substances such as salt, sugar, oils or fats to the *in natura* food, they were correctly classified by 82% of participants.

After the execution of this study in 2015, an updated and revised version of the food classification, NOVA[25], was published in 2016. In addition to what has been presented in the Dietary Guidelines, NOVA classifies all foods and foodstuffs into four groups, specifying the type of processing used in their production and the purpose underlying this processing. However, it includes a deepening on the topic of "allowed" food additives in each group.

Thus, NOVA explains that when additives are combined with *in natura* or minimally processed foods to preserve their original properties, such as antioxidants used in dehydrated fruits or cooked vegetables, vacuum-packaged vegetables, and stabilizers used in ultra-pasteurized milk, these foods continue to be classified in this group.

Indeed, this publication clarified why pasteurized, ultra-pasteurized (long shelf-life) and powdered milk are classified in the same group. Even before this publication, some of these issues were addressed in the mini-course, which meant that the percentage of participants who correctly classified these foods before the mini-course increased from 35%, 24% and 8% to 99%, 99%, and 88%, respectively, after the mini-course.

In relation to the group of culinary ingredients, before the mini-course, only salt was correctly classified by most of the participants (69%). After the mini-course, the other foods (white sugar, brown sugar, soybean oil), except for butter, were correctly classified by more than 70% of the participants. In general, ingredients are foods that are present in a cooking recipe, and they can be dry, liquid or pasty (or fatty)[26]. Eggs and milk, for example, can be considered

liquid recipe ingredients. However, according to the new classification, which considers the degree of food processing, culinary ingredients are those that have gone through the process of extraction, pressing and refining, some of the characteristic processes by which sugars, oils, salt and fats are obtained and are used in cooking preparations. To exemplify this discussion of the term "ingredient", before the mini-course, egg was classified as a culinary ingredient by 13% of the participants and by none of them afterwards.

Of all the processed foods, dried meat had the least number of hits by the participants before the mini-course (49%) and was classified as *in natura* or minimally processed by 43% of the participants. This result is relevant since it seems that the term "dried" did not refer to salted meat, which was the objective of the questionnaire. This term (dried meat) was used by the Dietary Guidelines as an example of a processed food; however, it should be replaced by salted meat to better understand what is meant. According to Araújo et al.[27], dried meats undergo a dehydration process that consists of eliminating most of the available water in the food by applying evaporation (heat) or sublimation (lyophilization) methods, which is different from the process of obtaining salted meats, in which salt is added with the purpose of reducing the concentration of free water molecules of the product[27].

In the ultra-processed food group, loaf bread obtained the smallest number of hits before the mini-course (11%) and was classified as processed by 78% of the participants. This result will be discussed later. The other foods, which are classic examples of products considered "unhealthy", such as cream-filled cookies, powdered juice and soda, were correctly classified by most of the participants before and after the mini-course. A study published in 2016 showed that the vast majority of the participants, made up of the general population, were able to give an explanation about ultra-processed foods; they considered such foods to generally contain additives and other artificial ingredients, have low nutritional quality and be unhealthy[28].

In relation to the list of foods, in addition to these problems related to the terms used, the following section includes some notes based on the text of the guidelines and the legal definitions thereof.

The guidelines mention the terms biscuits and cream-filled biscuits but not cream-filled cookies. However, the Resolution of the National Commission on Norms and Standards for Foods No.

12 of 1978[29] defines biscuits and cookies as "the product obtained by kneading and convenient cooking of dough prepared from flour, starch, fermented starch, or not" and states that the classification of these products varies according to the ingredient that characterizes it or its form of presentation. The resolution mentions salty or sweet crackers or cookies, which can be stuffed, coated, grissini, in the form of sticks and waffles. In some regions of Brazil, the term biscuit (alone) alludes to a product made with starch, milk, eggs (considered *in natura* or minimally processed foods), oil and salt (considered culinary ingredients), which can be made at home; this product would be classified as a processed food, as would bread made with wheat flour, yeast, water and salt. By contrast, cream-filled cookies are made with a wide range of ingredients for industrial use such as vegetable fat, colorants, emulsifiers and flavourings. Therefore, the term cream-filled cookies is preferred as an example of an ultra-processed food. In this study, 67% of the participants agreed on the classification of cream-filled cookies before the mini-course; after the mini-course, this percentage reached 100%.

The term breaded nuggets (mentioned in the guidelines) was replaced by breaded chicken. Before the mini-course, 78% of the participants agreed on the classification of this food, and after the mini-course, 90% agreed. Despite the attempt to omit the term nuggets, which refers to a product of a specific brand, more correct answers would be obtained if the term had been maintained. In a study performed by a member of this working group (unpublished data), the figure of the product with a black stripe on top of its brand allowed the participants to more assertively classify this food as ultra-processed.

The term frozen ready-to-eat lasagne used as an example of frozen ready-to-eat pasta was rated by 86% of participants before and after the mini-course as an ultra-processed food. In this case, the use of the term as it is in the guidelines (frozen ready-to-eat pasta) without doubt indicates that it is an ultra-processed food. The word "ready" refers to one of the characteristics of these foods – convenience (ready to heat and ready to eat)[4] – and most people know that these products are manufactured with a huge list of ingredients including various food additives.

French bread was used as an example of breads made from wheat flour, yeasts, water and salt. Despite the attempt to reduce the term to a specific example, and although the guidelines point to this food only in an example of a meal as a processed food, it is known that these are, for the most part, prepared from premixes or prepared mixtures that contain in addition to wheat flour, various food additives, including azodicarbonamide (a flour improver), which is allowed in Brazil[30] but banned in several countries due to its proven health hazards. Before the mini-course, 76% of participants correctly classified French bread whereas 78% correctly classified it after the mini-course.

However, loaf bread is classified as ultra-processed because in addition to these ingredients, it includes many other additives and an extensive list of ingredients for industrial use.

Final considerations

The mini-course disseminated the theme of the new classification of foods to improve understanding and clarify doubts of the participants. The mini-course was important but insufficient. More actions such as this are necessary throughout Brazil so that there is a wide dissemination of the second edition of the Dietary Guidelines and its contents for everyone to understand.

The questionnaire used was not submitted to a pilot study, which may be a limitation of the study. It is the first evaluation instrument on the new classification of foods and may require adjustments and validations to better serve this purpose in future studies.

One should keep in mind that food processing includes several benefits, mainly in terms of increasing the period during which the food remains suitable for consumption (shelf life) by preservation techniques that inhibit microbiological and biochemical changes, allowing time needed for distribution, sales and home storage[31].

Food classification should be performed by people not only based on the new classification theory but also from reflection on the composition, list of ingredients and/or nutritional information, resolutions on norms and standards, and processing technology of food, in addition to its effects on health.

The low percentage of correct answers before the mini-course and the difficulties of students and nutritionists (who study the theme "food") in relation to the new food classification justify the wide dissemination of the theme and the need for more actions such as this mini-course for students, professionals and the general population.

Knowledge about the new classification of foods may help people understand the negative

changes in the quality of their food and allow necessary advances to follow the dietary guidelines presented in the second edition of the Brazilian Dietary Guidelines to promote health, improve nutritional status and reduce the prevalence of CNCDs in the Brazilian population.

Collaborations

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