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Brazilian food labeling: a new proposal and its impact on consumer understanding

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Abstract

The difficulty in understanding food labels demands their reformulation. The objective was to elaborate a proposal of nutritional labeling and to compare its understanding with current labels. A cross-sectional study was conducted in 2016. Socioeconomic and health data were collected and questionnaires were used to evaluate reading and comprehension of the current label (Group A) and the proposed label (Group P). Student's t test and chi-square test (p <5%) were applied. A total of 980 consumers participated at supermarkets in a Brazilian capital, with 38.2 ± 13.9 years old, predominantly women, high school, family income of 2 to 4 minimum wages, without chronic disease, and Body Mass Index of 25,6 ± 4.7 kg/m^2. Reading and comprehension were satisfactory for 54.1% and 36.1% of Group A and for 93.3% and 96.9% of Group P, respectively. Among the interviewees, 36.5% reported that the current label helped and 97.5% for the proposed label. All the answers had differences when comparing the groups (p <0.05) and the comprehension of the proposed label was higher (p = 0.026). Conclusion: the understanding of the proposed label was better than that of the current label, reinforcing the need for its reformulation.

Keywords: food labeling; nutritional facts; industrialized foods; food.

Practical Application: This study proposal's will help consumer understanding food labeling and make healthier choises

1 Introduction

Nutrition labeling is a very important tool because it allows the consumer to know the nutritional composition of the food and, thus, make healthier food choices (Campos et al., 2011).

The nutritional information presented on the food label, however, is approached in very technical terms and difficult language to understand for a large part of the population (Hieke & Taylor, 2012). This high complexity may be one of the reasons why consumers lack the habit of reading food labels and end up disregarding them as an aiding tool at the time of purchase (Bendino et al., 2012; Vemula et al., 2014).

In general, even those with higher levels of schooling, insecurity about food choices is still high, and comparisons between products are often necessary to assist with food choice (Miller & Cassady, 2015).

There are many barriers to reading and understanding labels, especially because the most relevant data are often not read or, when they are, they are not interpreted correctly (Prieto-Castillo et al., 2015).

This difficulty is faced worldwide, which makes evident the need for constant reformulation of food labels (Vemula et al., 2014). In this sense, the development of a simpler label with ratings could enable a better understanding of the nutritional information by the consumer and, therefore, facilitate the practice of healthier eating habits (Sanz-Valero et al., 2012; Robert & Khandpur, 2014).

The use of colors to represent the classification of the content of some nutrients characterizes the nutritional traffic lights, initially developed by the Food Standards Agency (Food Standards Agency, 2007). This and other methods have been discussed in several countries in the search for a more didactic label to be understood by a larger portion of the population. The objective of this work was to elaborate a new proposal of nutritional labeling for Brazil and to compare the consumer's understanding of the new label in relation to the current food label.

2 Methods

Cross-sectional study carried out in a Brazilian capital. Data collection occurred in the first half of 2016 and was performed by a previously trained Nutrition team.

The total sample was calculated expecting to obtain 50% of affirmative answers regarding the understanding of the current label and 80% of affirmative answers regarding the understanding of the proposed label. Thus, a dichotomous analysis was performed to compare two proportions, with Group 1 equal to 50% and Group 2 equal to 80%. A significance level of 5%, 95% test power and a monocaudal hypothesis test were considered. The sample calculation for each supermarket corresponded to 52 people in each group (104 participants in both groups). 35% were added to obtain a more robust sample, reaching a total of 140 people interviewed in each of the seven supermarkets, with a total of 980 participants in the final sample.

Seven supermarkets were drawn and authorized in writing their use as collection fields, each located in a region of the city to enable a better representation of the population.

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We included all consumers aged 18 or over who entered the preserved and canned goods section during their purchases and agreed to participate in the study, signing the Informed Consent Form.

The research was divided in two phases: the first, corresponding to the Current Label (Group A), and the second, corresponding to the Proposed Label (Group P), both carried out in the seven supermarkets.

General information about the interviewee was collected, such as sex, age, schooling, family income, presence of any diagnosed illness and weight and height. Participants in Group A and Group P also responded to a questionnaire containing five questions:

1. "Do/ Would you read this food label at the time of purchase?"
2. "Can you understand all of this nutritional information easily?"
3. "Can you tell me if this product has a high, medium or low sodium content?"
4. "Can you tell me if this product has a high, medium or low sugar content?"
5. "Do you think this label helps people to choose the food they will buy?"

At the time of the interview, the participant in Group A answered the questions by observing the current label of a pack of olives, while the respondent from Group P answered for the proposed label fixed on a symbolic pack of olives.

Choosing the olives label in both groups was a way to represent a food theoretically known as "high in sodium" and "low in sugar" to see if consumers in fact were aware of its composition. In addition, since every Brazilian food label follows the standardization determined by Agência Nacional de Vigilância Sanitária (2003), the label of olives could represent all other food labels in the market.

Questionnaire questions were objective, with "yes" and "no" alternatives, but the participants were free to express themselves subjectively if they chose to do so.

Consumer interviews were conducted on alternate days and times, from Monday to Sunday and in the morning, afternoon and evening periods.

Qualitative data regarding subjective responses were analyzed by thematic units, through the grouping of similar subjective responses for inference of the information found (Bardin, 2011). The quantitative variables were entered and analyzed in the SPSS program (version 20.0). Age and Body Mass Index (BMI) were expressed as mean ± standard deviation and the other variables were expressed in absolute and relative frequencies. For the analysis, Student's t-tests were used for comparison between means, chi-square for comparison of proportions and *Odds Ratio* (OR) for association between overweight and habit of reading and comprehension of the labels. For all analyses, a significance level of 5% was considered.

This research was approved by the Human Research Ethics Committee of the Hospital das Clínicas - Federal University of Goiás (CAE nº 53105316.5.0000.5083).

2.1 Proposed labeling

The proposed labeling was modeled after the Food Standards Agency (2007), with the addition of facial expressions to emphasize the meaning of the colors red ("high-content"), yellow ("medium-content") and green ("low-content"), a format not yet presented in the articles available in the literature and that may represent a possible improvement of the nutritional traffic lights model.

The new proposal maintains all the mandatory nutritional information already on the current label, however, with some modifications in its presentation that could facilitate its understanding.

In addition, it also suggests adding information not required by the current legislation that would be important to consumer health. Table 1 shows the proposed modifications for the new labeling, which was represented by Figure 1 and Figure 2, whose

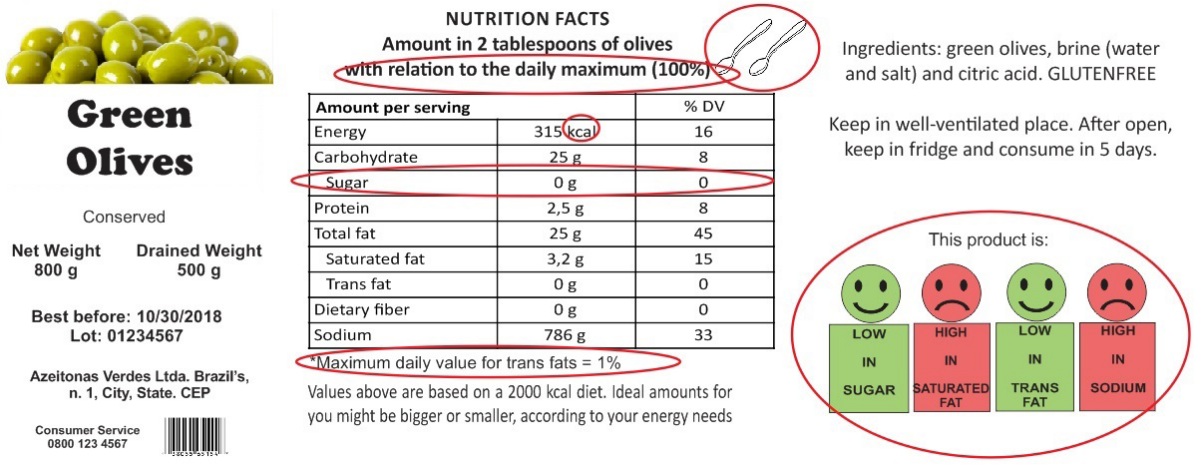

Figure 1. Example of olives food labeling following proposed label.

Table 1. Proposed alteration in nutritional information and presentation of food label. Goiânia, GO, 2016.

	CURRENT LABEL	PROPOSED LABEL
Energy Value	Presented in kcal and kJ	- Present only in "kcal", due to the lack of use of the term "kJ" by the Brazilian population in general.
Sugar	Is not on the label in a compulsory way	- Obligatory presentation of the total sugar content as a subitem of the carbohydrate content in the nutritional table, based on the DV established by the Pan American Health Organization (Organização Pan-Americana da Saúde, 2016) Nutrition Profile Model: <10% of the TEV (50 g). - Design with sad expression (red), serious (yellow) or happy (green), classifying the serving's sugar content, following values established by nutritional profile model of the Pan American Health Organization (Organização Pan-Americana da Saúde, 2016): • High (red) = higher than 10% of DV • Medium (yellow) = between 5 and 10% of DV • Low (green) = lower than 5% of DV
Saturated fat	On the label: VD < 10% do TEV = < 2.,2 g/day (World Health Organization, 2003; Brasil, 2008)	- Drawing with sad (red), serious (yellow) or happy (green) facial expression, classifying the saturated fat content of the serving, following the values established by the Food Guide (Brasil, 2008): • High (red) = higher than 10% of the DV • Medium (yellow) = between 5 and 10% of the DV • Low (green) = lower than 5% of DV
Trans fat	Mandatory trans-fat level in the product on the label, however, with unspecified DV.	- Insertion of the DV suggested by the Food Guide for the Brazilian Population (Brasil, 2008): <1% of TEV (2 g). - Drawing with sad expression (red) or happy (green), classifying the trans fat content serving, following values suggested by the nutrition model of the Pan American Health Organization Profile (Organização Pan-Americana da Saúde, 2016): • High (red) = higher than 1% DV • Low (green) = lower than 1% of VD
Sodium	On the label: maximum 2 g/day = 5 g of salt (World Health Organization, 2003; Brasil, 2008).	• Drawing with sad expression (red), serious (yellow) or happy (green), classifying the serving's sodium content, following values established by the nutritional profile model of the Pan American Health Organization (Organização Pan-Americana da Saúde, 2016): • High (red) = if the ratio of sodium (mg) to energy (kcal) of the serving is equal to or higher than 1: 1 • Medium (yellow) = if the ratio of the sodium content (mg) to the energy value (kcal) of the serving is lower than 1: 1 and higher than 1: 2 • Low (green) = if the ratio of the sodium content (mg) and the energy value (kcal) of the serving is lower than 1: 2
Serving	Presented in writing with home measures.	- Discriminate more clearly so that the consumer understands that the nutritional information refers to that serving, not to the whole product, and to insert a figure representing the serving (home measure) mentioned.
Non-compulsory information	Some brands present recipes, suggestions to purchase other products from the same brand, unnecessary drawings and the like.	- Determine non-mandatory information to allow the font size displayed on the label to be increased.

DV: Daily Value; TEV: Total Energy Value.

changes were highlighted in the image. The cutoff points defined for the classification of sugar, saturated fat, trans fat and sodium in the labeling proposed by this study are based on the excess quantity ratings defined in the Nutrient Profile Model developed by OPAS (Organização Pan-Americana da Saúde, 2016).

3 Results

A total of 980 consumers were interviewed regarding the Current Label (Group A) and the Proposed Label (Group P). The socio-demographic and health data of the study population, according to the groups, are shown in Table 2.

The groups were homogeneous in all parameters and the total sample (n = 980) was predominantly female (57.1%, n = 560), mean age was 38.2 ± 13.9 years, with completed high school (46.4%), family income of 2 to 4 minimum wages (33.4%), no diagnosis of chronic disease (84.8%) and Body Mass Index of 25.6 ± 4.7 kg / m^2 .

The analysis of the sociodemographic variables in relation to the answers provided by the participants is shown in Table 3. There was no association between overweight, reading and understanding of Current and Proposed Labels in any of the groups ($p > 0.05$). Regarding all the answers obtained, the Proposed Label had more "yes" answers in all questions ($p < 0.05$).

Regarding the reading and understanding of the label, some participants in Group A commented that they only read the

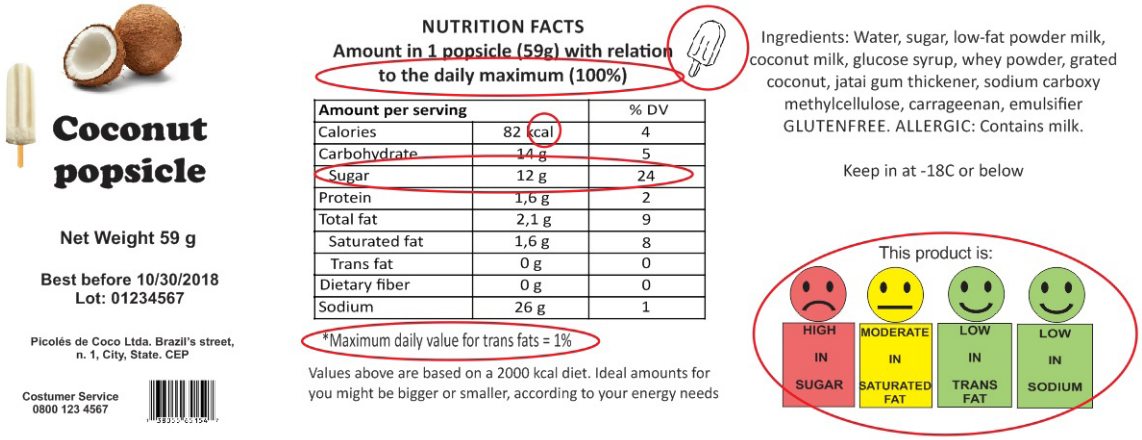

Figure 2. Example of popsicle food labeling following proposed label.

Table 2. Sample characterization, according to study group. Goiânia, GO, 2016 (n = 980).

	Group A		Group P		p*
	n	%	n	%	
Sex					
Female	266	54.3%	294	60.0%	0.518
Male	224	45.7%	196	40.0%	0.411
Schooling					
Illiterate	13	2.7%	12	2.4%	0.921
Complete Primary School	76	15.5%	51	10.4%	0.396
Complete High School	222	45.3%	233	47.6%	0.800
Undergraduate	142	29.0%	143	29.2%	0.922
Postgraduate	37	7.6%	51	10.4%	0.203
Income					
< 2 MW	129	26.3%	138	28.2%	0.764
≥ 2 e < 4 MW	168	34.3%	159	32.4%	0.698
≥ 4 e < 6 MW	79	16.1%	84	17.1%	0.812
≥ 6 MW	114	23.3%	109	22.2%	0.904
Has a diagnosed disease					
Yes	75	15.3%	74	15.1%	0.962
Cardiovascular disease	*37*	*49.3%*	*39*	*52.7%*	*0.788*
Diabetes	*9*	*12.0%*	*10*	*13.5%*	*0.873*
Respiratory disease	*8*	*10.7%*	*6*	*8.1%*	*0.702*
Others	*21*	*28.0%*	*19*	*26.4%*	*0.624*
No	415	84.7%	416	84.9%	0.981
Age (years)					
> 18 and < 60	439	89.6%	462	94.3%	0.329
≥ 60	51	10.4%	28	5.7%	0.078
BMI (kg/m²)					0.983
< 25	242	49.3%	256	52.2%	0.712
≥ 25	248	50.6%	234	47.8%	0.655

expiration date and that the nutritional information was very technical and confusing and the letters too small, which is why the current label is difficult to understand.

Already among the consumers of Group P, many made comparative statements with the memories of the current labels, claiming that they would read the Proposed Label more frequently because it is easier for comprehension, even among illiterate Brazilians, because it has more explicit information, bigger letters and the presence of colorful designs that attract attention and arouse curiosity.

As for sodium and sugar content, some of the participants who reported knowing whether the product had "high", "medium" or "low" content provided subjective responses conflicting with reality, with Group A having a higher proportion of wrong responses and, in these cases, the percentage of hypertensive and diabetic patients was also higher in Group A.

Table 3. Consumer's perception on Current and Proposed Labels. Goiânia, GO, 2016 (n = 980).

	Current Label (n = 490)		Proposed Label (n = 490)		p*
	n	%	n	%	
Read label[(a)]					
No	225	45.9%	33	6.7%	0.009
Yes	265	54.1%	457	93.3%	0.029
Understand information[(b)]					
No	313	63.9%	15	3.1%	<0.001
Yes	177	36.1%	475	96.9%	0.014
Claim they know sodium content[(c)]					
No	170	34.7%	27	5.5%	0.013
Yes	320	65.3%	463	94.5%	0.028
Additional subjective responses	*105*	*32.8%*	*126*	*27.2%*	*0.296*
Conflicting subjective responses	*18*	*17.1%*	*2*	*1.6%*	*0.019*
Hypertense	*2*	*11.1%*	*0*	*0%*	*0.043*
Claim they know sugar content[(d)]					
No	287	58.6%	34	6.9%	0.002
Yes	203	41.4%	456	93.1%	0.018
Additional subjective responses	*78*	*38.4%*	*126*	*27.6%*	*0.175*
Conflicting subjective responses	*16*	*20.5%*	*3*	*2.4%*	*0.008*
Diabetic	*2*	*12.5%*	*0*	*0%*	*0.048*
Think label assists with the choice[(e)]					
No	311	63.5%	12	2.5%	<0.001
Yes	179	36.5%	478	97.5%	0.033

*Chi-square test. [(a)]Reading: Intragroup – lower in participants with completed primary school (p=0.043) (Group A); no statistical difference (Group P) / Among groups – higher in every sociodemographic variable of Group P (p<0.05). [(b)]Comprehension: Intragroup – no statistical difference (Group A and Group P) / Among groups – higher in every sociodemographic variable of Group P (p<0.009). [(c)]Sodium content: Intragroup – higher among women (p=0.047) and participants with completed high school or higher (p=0.039) (Group A); no statistical difference (Group P) / Among groups – higher in every sociodemographic variable of Group P (p<0.05), except when age was equal to or older than 60 years, in which there was no difference (p=0.816). [(d)]Sugar content: Intragroup – higher among women (p=0.042) (Group A); higher among participants with completed high school or higher (p=0.039) (Group P); no statistical difference (Group P) / Among groups – higher in every sociodemographic variable of Group P (p<0.018). [(e)]Assistance: Intragroup – no statistical difference (Group A and Group P) / Among groups – higher in every sociodemographic variable of Group P (p<0.003).

Of the 37 participants who reported having a diagnosis of cardiovascular disease in Group A, 14 (37.8%) reported not knowing the sodium content of the product. Among the 39 interviewees with cardiovascular disease in Group P, five (12.8%) did not know how to respond, a statistically lower percentage than Group A (p = 0.033).

Of the nine participants who reported having diagnosed diabetes in Group A, 5 (55.6%) reported not knowing the sugar content. But among the 10 interviewees with diabetes in Group P, only 1 (10.0%) did not know, a statistically lower percentage than that found in Group A (p = 0.004).

About the assistance provided by the label at the time of purchase, the most frequent comments from Group A were: "it is difficult to understand", "information is not clear", "the letters are very small", "not everyone understands the terms", "It should be more direct and specific" and "It could have the most summarized and simplified information". Already in Group P, many opted to make comparisons of the Proposed Label with the Current Labels, using memory. The statements were that the Proposed Label "would make it easier, as many do not know how to interpret the table", "spend less time looking for quantities", "draw attention", "become more attractive", "is much easier and clearer information", "good presentation "and" clearer and more interesting".

4 Discussion

The results found in this research demonstrate a great complexity in the instrument currently used to present the nutritional information of food products to the Brazilian population. As much as the food label has as main function to give autonomy to the consumer and allow him to better choose the food that he will acquire, the information is presented in a very technical way and only reaches a small part of the population.

When questioned about the reading of the Proposed Label, respondents felt it was significantly easier than the Current Label, since consumers claimed that the information in the form of drawings and colors, in a simplified and brief manner, draw the attention of the consumer which, consequently, becomes a reason for the more frequent reading of nutritional information.

Bix et al. (2015), conducted "eye tracking" to assess the interaction of US consumers with food labels and found that colored packs increased the likelihood that the consumer will read nutritional information by providing faster detection. According to Miller & Cassady (2015), the method of *eye tracking* is increasingly used in research to verify the association between labels and food choices. According to the authors, this methodology consists in observing the frequency in which the nutritional information of the label is consulted.

This study found that individuals with lower schooling had less frequent reading habits. This may be due to the complexity with which the information is presented in the current labels, making the less educated consumer disinterested in reading the label. On the other hand, when the Proposed Label was presented to Group P, many participants mentioned how the current label is presented and stated that the colors and designs of the proposed model would attract more attention and enable the habit of reading the label's nutritional information was more frequent, even among the illiterate population.

When it comes to nutritional status, eutrophic individuals had the same odds of practicing the reading habit and understanding the labels than overweight or obese individuals, which indicates that being overweight is not a risk factor for lower reading and interpretation of the labels studied.

Research has been carried out around the world with the aim of thinking of a food label reformulation so that they are better understood by consumers and the main focus of discussions is centered on a more didactic format with nutritional information presented through color and drawings. In addition, the presentation of key information in the form of classifications may allow the consumer to detect a healthier alternative by analyzing the nutrients of the food (Hodgkins et al., 2015).

The National Food and Nutrition Policy brings in its seventh guideline the discussion of "Food Control and Regulation" and assumes that the current nutritional labeling is presented in an excessively technical way and this may be a factor contributing to misinterpretations regarding information nutritional (Brasil, 2013). In fact, the present study demonstrated contradictory responses between what some consumers believed to know and what they actually knew, since many of the participants who analyzed the current label believed they knew the sodium or sugar content of the food but actually made a wrong judgment. On the other hand, the Proposed Label provided a more correct interpretation compared to the current label, since the percentage of contradictory responses in Group P was statistically lower.

The excess of technical language of the current label and consequent inadequate food choices can be considered a contributor to the onset and aggravation of chronic diseases such as obesity, diabetes mellitus and cardiovascular disease (Brasil, 2013; Lewis et al., 2009; World Health Organization, 2003). Miller et al. (2015), evaluated the decision of consumers regarding the food they believed to be healthier and concluded that individuals with less knowledge are misled, especially with regard to the sodium and fats content in industrialized foods. This data was observed in the present study, since the less educated Group A respondents reported a less frequent reading habit and had fewer affirmative answers regarding the sodium content of the Current Label compared to consumers with a higher education level.

The percentage of consumers who made misleading claims about the sodium and sugar content of the Proposed Label was significantly lower than the percentage found in the Current Label. These data reinforce that, when presented in a more didactic way, nutritional information is more likely to be understood and, consequently, leads to a lower probability of misleading consumers into their food choices.

In the analysis of sociodemographic variables and comparison between groups, all affirmative responses were more frequent in Group P, which indicates that the Proposed Label provided greater comprehension to the consumers of this study.

Already in the intragroup analysis, Group A showed differences in reading and comprehension of sodium content according to schooling and also in the understanding of sodium and sugar content according to gender, while Group P showed a difference in the understanding of the sugar content according to schooling. The differences related to gender and schooling are discussed by some authors. Miller & Cassady (2015), attribute the lowest interest in the food label and the greater difficulty in interpreting nutritional information at the lowest educational level, which was observed in the present study. Gender-related differences can be attributed to the greater interest and concern of women with their health, unlike the male population, which is generally less adept to disease prevention attitudes (Schraiber et al., 2010).

The importance of improving Brazilian food labels in order to reach the population in a more homogeneous way is an action discussed in the National Food and Nutrition Policy. Through this document, the Ministry of Health lists this factor as one of the objectives for the coming years, since more understandable food labels allow the population to have the right to autonomy in the choice of food (Brasil, 2013).

Robert & Khandpur (2014), argue that the development of simple and accurate nutrition labeling is a global public health goal, since its outreach can be an important way of dealing with some eating-related diseases. The importance of this global objective was reinforced by the answers obtained regarding the sodium and sugar content presented in the Current Label of this study. Among the hypertensive and diabetic patients in Group A, more than 30% provided negative answers in these questions, reflecting that the sodium and sugar contents presented in the Current Label are not able to provide a satisfactory understanding, especially to the hypertensive or diabetic consumer.

Thinking about a way to present nutritional information in a way that facilitates consumer choices has become an increasingly necessary action. Researchers from a study of individuals from five countries in the Americas found that more than 80% of respondents would like food labels to indicate "high", "medium" and "low" sodium content for greater understanding and ease of choice of the product (Claro et al., 2012). The use of these classifications in the Proposed Label reflected in statistically more frequent affirmative responses compared to the Current Label, which may indicate a better understanding of the nutritional content of foods.

Temple & Fraser (2014), also argue that labels with "high", "medium" and "low" labels represented by colors, such as the traffic light method, are promising to facilitate the interpretation of label nutritional information in the United States and Canada. The use of traffic lights on food labels has also been studied and discussed in some European countries. In recent years, the Portuguese Society of Hypertension (SPH) has been seeking strategies to reduce salt intake in the population and to reduce mortality from cardiovascular events. The body suggests that all packaged foods present nutritional information in color,

indicating green for products with low sodium content, yellow for moderate sodium content and red for high sodium content, aiming for greater control of arterial hypertension in country (Sociedade Portuguesa de Hipertensão, 2016).

According to Antúnez and collaborators (2013), this action seems to be efficient. The researchers performed "eye tracking" to assess consumer attention regarding the presence of traffic lights for sodium content on the bread label and concluded that its inclusion caught the attention of consumers and facilitated the processing of the information presented.

The traffic lights system was initially developed by the *Food Standards Agency* (FSA) as a way to help consumers make healthier choices. This color system suggests classification not only of the sodium content of industrialized foods, but also of sugar and fats, and can be presented in addition to the nutritional table already present in the packages (Food Standards Agency, 2007). Following this line, the label proposed by the present study kept the mandatory nutritional information that today compose the Brazilian label and used the presentation of the nutritional traffic lights suggested by the FSA. In addition, the proposed labeling added the classification for the levels of sodium, sugar, saturated fat and trans-fat also in facial expressions to further facilitate consumer understanding in the interpretation of the presented values.

Nutritional traffic lights is a methodology that has been discussed and applied in several countries around the world for its simple and didactic presentation (Temple & Fraser, 2014; Sociedade Portuguesa de Hipertensão, 2016; Antúnez et al., 2013). However, it was also chosen to enrich the classification of nutrients using facial expressions, which reinforce the classification of "high", "medium" and "low", whose use has not yet been discussed by the available articles in the literature, which confers to this form of presentation a differential of the label proposed by this study.

The imbalance in nutrient supply and excessive caloric intake are addressed in the Food Guide for the Brazilian Population as a consequence of the increase in the consumption of ultra-processed foods and reduction of in natura food intake in Brazil, which reinforces that the classification of the labels would become important in informing the population about sugar, saturated fats, trans-sodium fats in the food, and minimizing imbalance of nutrients by inappropriate food choices (Brasil, 2014).

The formulation of policies and regulations that prevent the indiscriminate consumption of unhealthy foods is defined as an important goal of the Pan American Health Organization (OPAS) and one of the ways discussed refers to the presentation of food labeling. The criterion for inclusion of a classification with acceptable amounts of sugar, sodium, total fats, saturated fats and trans fats, considered by the body as "critical nutrients", is based on the WHO nutrient intake targets for the prevention of obesity and chronic diseases related to food (Organização Pan-Americana da Saúde, 2016).

Classification in the form of color and facial expressions could make it easier to consult the label on processed foods, since the Brazilian Food Guide suggests that it is ideal to opt for products with a lower sodium and sugar content (Brasil, 2014). In addition, the claims provided as additional comments to the positive responses reflect that more didactic labeling could improve the level of understanding and thus provide the consumer with the right to autonomy, as discussed in the National Food and Nutrition Policy (Brasil, 2013).

5 Conclusion

In view of the results, it is concluded that the proposed labeling provided greater understanding and facilitated the interpretation of nutritional information when compared to the current labeling. These data may reinforce the need to reformulate food labeling, which needs to be discussed in depth by the authorities so that the format chosen is able to reach the population more homogeneously. Thus, it is expected that health agencies will devise actions and put into practice the changes necessary for the consumer to exercise their right to autonomy in healthy food choice.

The regional character of this study and the collection of data in seven supermarkets may be limiting factors, however, the sample size and the distribution of the collection fields throughout the city could give greater representativeness of the studied population.

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