

Food promotion in supermarket promotional circulars: an analysis of the cover and internal content

Promoção de alimentos em encartes de supermercados: uma análise da capa e do conteúdo interno

Promoción de alimentos en insertos de supermercados: un análisis de la portada y el contenido interno

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Abstract

Objective. To analyze food promotion on the cover and inside pages of supermarkets circulars. **Methods.** Promotional circulars data were collected from five supermarket chains in Rio de Janeiro (Brazil) in August 2019. Food was categorized according to the NOVA classification: fresh food or minimally-processed food (FF/MPF), processed culinary ingredients, processed food, and ultra-processed food (UPF). The density of the food groups on the cover and inside pages of circulars was calculated, and the comparison was performed using paired T-test or paired Wilcoxon test, depending on the normality and homogeneity of the data distribution. **Results.** A total of 59 circulars were analyzed and 7665 foods were identified, of which 55.6% UPF and 27.7% FF/MPF. FF/MPF are more present on the cover while the UPF are more present on the inside pages of the circulars. **Conclusion.** The cover of circulars does not reflect the entire contents. On the cover, foods with better nutritional profile are more present than inside of the circulars. It is necessary to develop government programs that regulate the promotion of foods in supermarkets circulars.

Keywords: Food environment; Marketing; Ultra-processed foods; Food advertising; Food retail.

Resumo

Objetivo: Analisar a promoção de alimentos na capa e nas páginas internas de encartes de supermercados. **Métodos:** Foram coletados os dados de encartes promocionais de cinco redes de supermercados do Rio de Janeiro nos meses de agosto e setembro de 2019. Os alimentos foram categorizados em quatro grupos, de acordo com o sistema de classificação NOVA, em: alimentos in natura ou minimamente processados (AIN/MP), ingredientes culinários processados, alimentos processados e alimentos ultraprocessados (AUP). Foi feito o cálculo da densidade dos grupos de alimentos na capa e no interior dos encartes, sendo realizada a comparação por meio do teste T pareado ou o teste de Wilcoxon pareado, dependendo da normalidade e homogeneidade da distribuição dos dados. **Resultados:** Foram analisados 59 encartes e identificados 7665 alimentos anunciados, sendo 55,6% AUP e 27,7% AIN/MP. Na capa, os AIN/MP são mais anunciados do que os AUP (13 alimentos AIN/MP vs 10 AUP). Já no interior dos encartes, a densidade de AUP é mais que o dobro dos AIN/MP (11,6 vs 5,0). **Conclusão:** A capa dos encartes não reflete o seu conteúdo. Na capa, AIN/MP são mais promovidos que aqueles de menor qualidade nutricional. Mas, os AUP têm maior

destaque no interior. Faz-se necessário desenvolver programas governamentais e legislações que estimulem a promoção de alimentos saudáveis e restrinjam a promoção excessiva de AUP em supermercados.

Palavras-chave: Ambiente alimentar; Marketing; Alimentos ultraprocessados; Publicidade de alimentos; Varejo de alimentos.

Resumen

Objetivo: Analizar la promoción de alimentos en la portada y páginas interiores de los insertos de los supermercados. **Métodos:** Los datos fueron recolectados de insertos promocionales de cinco cadenas de supermercados de Río de Janeiro en agosto y septiembre de 2019. Los alimentos fueron categorizados en cuatro grupos, de acuerdo con el sistema de clasificación NOVA, en: in natura o mínimamente alimentos procesados (AIN/MP), ingredientes culinarios procesados, alimentos procesados y alimentos ultraprocessados (AUP). Se calculó la densidad de los grupos de alimentos en la tapa y en el interior de los insertos, y la comparación se realizó mediante la prueba T pareada o la prueba de Wilcoxon pareada, según la normalidad y homogeneidad de la distribución de los datos. **Resultados:** se analizaron 59 insertos y se identificaron 7665 alimentos publicitados, siendo 55,6% AUP y 27,7% AIN/MP. En la portada se publicitan más AIN/MP que AUP (13 alimentos AIN/MP vs. 10 AUP). Dentro de los insertos, la densidad de AUP es más del doble que la de AIN/MP (11,6 frente a 5,0). **Conclusión:** La portada de los insertos no refleja su contenido. En portada se promocionan más las AIN/MP que las de menor calidad nutricional. Pero, las AUP son más prominentes en el campo. Es necesario desarrollar programas de gobierno y legislación que fomenten la promoción de alimentos saludables y restrinjan la promoción excesiva de UPF en los supermercados.

Palabras clave: Ambiente alimentario; Marketing; Alimentos ultraprocessados; Publicidad de alimentos; Venta al por menor de alimentos.

1. Introduction

Currently the world food system is strongly determined by the industrial processing of food (Monteiro et al., 2019; Monteiro et al., 2021, 2016). This influence is even more visible in low- and middle-income countries, which are experiencing an accelerated transition in eating patterns. This transition is characterized by the substitution of foods and dishes prepared from fresh foods or minimally-processed food (FF/MPF) by patterns that are increasingly based on ultra-processed foods (UPF) (Crovetto & Uauy, 2012; Juul & Hemmingsson, 2015; Martins et al., 2013; Moubarac et al., 2014).

The UPFs are industrial formulations, mostly ready for consumption, which have undergone several stages of processing and several industrial substances are added to their composition, making them of low nutritional quality (Monteiro et al., 2019). Most of them have high energy density, high content of fats, sugars, dyes, additives, and low content of fibers, vitamins, and minerals (Louzada et al., 2015; Martínez Steele et al., 2017). The scientific literature, including a systematic review and meta-analysis, reveals a direct association between the consumption of UPF and non-communicable chronic diseases (Askari et al., 2020; Chen et al., 2020; Lane et al., 2021; Levy et al., 2021; Mendonça et al., 2016; Pagliai et al., 2021; Schnabel et al., 2019; Srour et al., 2019).

National surveys and time series on food sales indicate a widespread trend of increased consumption of UPF, to the detriment of FF/MPF, such as fruits and vegetables. This trend is seen in different countries (Crovetto & Uauy, 2012; Martins et al., 2013; Monteiro et al., 2013; Moubarac et al., 2014; PAHO, 2019). Worldwide, the sale of UPF increased by 43.7% between 2000 and 2013. Specifically in Latin America, the sales of such foods increased by almost 50% and maintained a stable share of more than 16% of the total world market (Martins et al., 2013).

Supermarkets are major food outlets, especially for UPF. Almost two-thirds of the calories of UPF purchased by Brazilians come from supermarkets (Machado et al., 2017). In the last century, the food market faced a considerable transformation. Initially, it was formed by small corner stores, and currently, they are global chains (Stanton, 2018). These establishments have been described as having unprecedented and disproportionate leverage in the food system, with important repercussions on public health in different nations (Pulker et al., 2018). They are also recognized as influencing the behavior and purchasing decision of consumers, and the various marketing strategies employed are important tools for this purpose (Hawkes, 2009, 2008).

Producers and sellers broadly use promotional strategies to attract consumers and raise sales (Gedenk, 2019; World Health Organization, 2022). Promotional circulars are a classic marketing strategy and have the ability to reach the most varied consumer profiles (Cameron et al., 2015; Charlton et al., 2015; Tan et al., 2021). This strategy increases the purchase of targeted items and is so effective at stimulating demand that it is difficult to find a supermarket that does not use it (Burton et al., 1999).

Several studies have shown that supermarket circulars promote food which are inconsistent with the guidelines for healthy eating of their respective countries (Camargo et al., 2019; Charlton et al., 2015; Ethan et al., 2013; Hendriksen et al., 2021; Jahns et al., 2016, 2014; Martin-Biggers et al., 2013; Mendes et al., 2021; Ravensbergen et al., 2015; Vandevijvere and Van Dam, 2021). Many provide an analysis based on the circular as a whole (Camargo et al., 2019; Martin-Biggers et al., 2013; Mendes et al., 2021; Ravensbergen et al., 2015; Vandevijvere & Van Dam, 2021), or only on the first page (Jahns et al., 2016, 2014). To date, only three studies have compared the promotion of food on the cover versus the internal content. All three studies suggest that the cover advertises a higher proportion of healthy foods compared to the circular as a whole (Camargo et al., 2019; Charlton et al., 2015; Vandevijvere & Van Dam, 2021). However, the local sociocultural peculiarities of the investigated supermarkets, together with the different methodological approaches and classifications of food employed, make these results still incipient for conclusions on the subject. Mendes et al., (2021) highlight that the foods promoted on the first page of the circular are more noticed by consumers, therefore it is necessary to develop studies on this subject. Therefore, the present study aims to analyze the promotion of food on the cover and internal pages of supermarket promotional circulars.

2. Methodology

The study was descriptive with a cross-sectional design and quantitative approach. Data from promotional circulars of five large supermarket chains located in the metropolitan region of Rio de Janeiro (RJ) in the months of August and September 2019 were assessed.

The selection criteria of supermarket chains was based on data on annual gross revenue and the popularity of the chains according to the Brazilian Supermarket Association (ABRAS) and the Supermarket Association of the State of Rio de Janeiro (ASSERJ), respectively (ABRAS, 2019; ASSERJ, 2018). The four chains with the highest revenues were selected, considering the national ranking, and one popular chain in the State of RJ was also included.

Regarding the circulars, all printed versions with three or more pages were considered eligible, to ensure content that represented their interior, conveyed by the selected chains and that were valid for the metropolitan region of RJ during the research period. Printed circulars, when available in online version, could also be collected through the website, supermarket chain applications and/or direct consumer communication channels such as WhatsApp®. Circulars that were only transmitted online and those that promote exclusively culinary preparations from the chain delicatessen were excluded. The frequency of the circulars varied according to each chosen chain.

Only food item data were extracted from the circulars, being obtained through the description and images of the products. The information was organized in a spreadsheet that included trade name, brand, total number of pages, and the number of the page on which the product was advertised. All foods and beverages were classified according to the NOVA classification system that takes in consideration the nature, extent, and purpose of industrial processing of products to categorize them into four groups: Fresh food or minimally-processed food, processed culinary ingredients, processed foods, and ultra-processed foods (Monteiro et al., 2019).

The first stage of database processing consisted of categorizing food according to the NOVA classification, based on the coding already used in the list of foods of the Household Budget Survey (Pesquisa de Orçamentos Familiares - POF) of 2008-2009 and 2017-2018 (IBGE, 2020, 2011). Doubts and inconsistencies were discussed and resolved in expert panels held periodically throughout the data entry and processing step. A conservative criterion (Steele et al., 2016) was applied in case of a

disagreement and a lower degree of processing was allocated to the product.

The data were presented as crude frequencies (n) and proportions (%) for categorical variables and as median (Md), interquartile range (IR), represented by the 25th and 75th percentiles, mean (\bar{x}), and standard deviation (SD), for continuous variables.

The density of food groups on the cover and inside the circulars was calculated, according to the NOVA classification, using the equations proposed by Camargo et al. (2019):

$$\text{Food group density (cover)} = \frac{\text{number of foods on the cover}}{1}$$

$$\text{Food group density (inside)} = \frac{(\text{number of foods inside} - \text{number of foods on the cover})}{(\text{Number of circular pages} - 1)}$$

The paired t-test or the paired Wilcoxon test was used to compare the food densities on the cover and inside the circulars, depending on the normality and homogeneity of the data distribution. These tests are appropriate given the dependence of the variables (of the cover and the interior) within the same booklet. The Kruskal-Wallis test was used to compare the circulars of the different supermarket chains. Normality was assessed with the Shapiro-Wilk test. Data analysis was performed using the statistical program Stata® version 12.0 (StataCorp., 2011), setting a significance level of 5%.

The assessment and approval by a Human Research Ethics Committee was not necessary, as the object of study does not involve humans, according to the guidelines recommended by the Brazilian National Health Council (Brasil and Conselho Nacional de Saúde, 2012).

3. Results

A total of 59 promotional circulars were evaluated. The number of circulars pages ranged from 3 to 22, depending on the supermarket chain. A total of 7665 foods were identified, most of which came from supermarket chain A circulars (n=3016; 39.3%). The circulars had a mean of 8.8 pages (SD= 6.1). Chain E ($\bar{x} = 12.4$; SD=10.3) and chain D ($\bar{x} = 3.4$; SD=14) presented the highest and lowest mean number of pages per circular, respectively (Table 1).

The density of food on the cover was significantly higher than the density inside in all circulars. However, there were differences in the density patterns of the circulars among the supermarket chains evaluated (p<0.001). The C chain circulars presented much lower food density on their pages than the others, both on the cover (Md=5.0; IIQ (4.0-8.0)) and inside (Md=8.3; IIQ (7.6-9.8)). Supermarket chain A showed the largest difference in food densities on the cover and inside, and chain B presented a higher density on the cover compared to the inside pages of the circular. The other chains had a higher density of foods advertised inside the circulars compared to the cover, with the exception of chain B that did not present a significant difference between the cover and inside pages. (Table 1).

Table 1. Characterization of the number and proportion of food circulars in five Brazilian supermarket chains. Rio de Janeiro, 2019.

Supermarket chains	Circulars		Foods		Number of pages	Food density cover		Food density interior	
	n	%	n	%	Md (IR)	Md (IR)	p ^a	Md (IR)	p ^a
A	22	37.3	3016	39.3	8.0 (4.0-8.0)	32.0 31.0-36.0		22,0 17.3-23.1	
B	3	5.1	1154	15.1	12.0 - ^b	31.0 30.0-32.0		30,3 30.1-36.1	
C	13	22.0	881	11.5	8.0 7,0-12,0	5.0 4.0-8.0	<0.001	8,3 7.6-9.8	<0.001
D	8	13.6	918	12.0	4.0 - ^b	26.0 24.0-28.0		30,3 29.7-32.0	
E	13	22.0	1696	22.1	12.0 4.0-2.0	11,0 3.0-16.0		13,8 10.4-22.7	
Total	59	100	7665	100	8.0 4.0-12.0	30.0 15.0-32.0		22,0 14.8-30.1	

Footnotes N= total number; %= percentual; Md=median; IR= interquartile range.

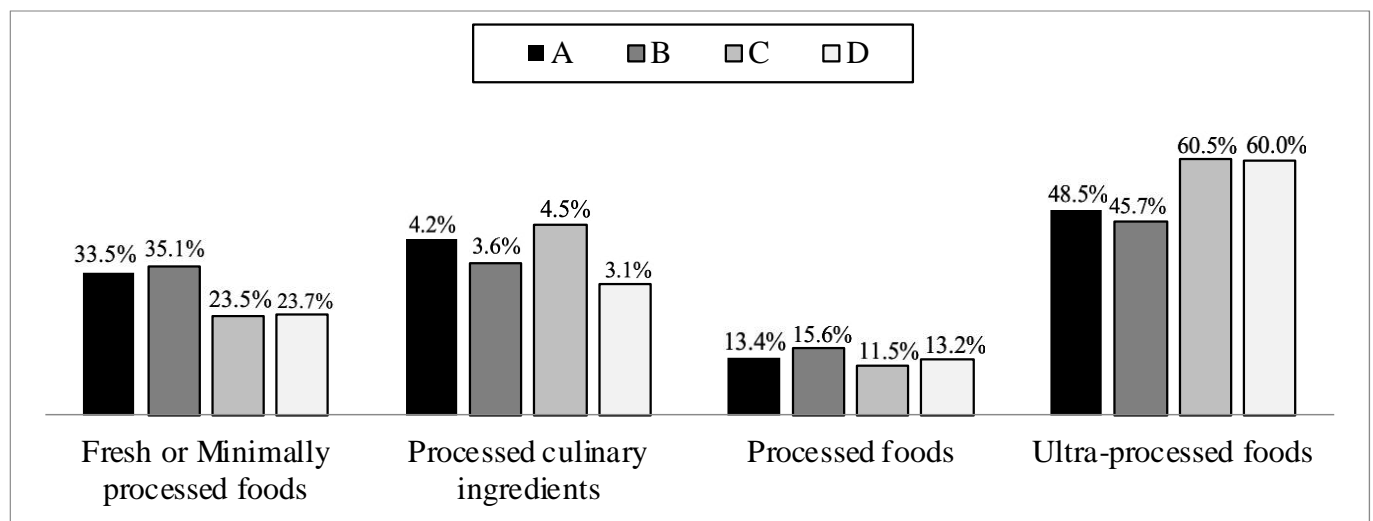
^a p values are based on Kruskal Wallis test.

^b no variation, all circulars had the same number of pages

Source: Authors

Most of the foods advertised in promotional circulars were UPF (55.6%), followed by FF/MPF (27.7%). Processed foods (13.0%) and processed culinary ingredients (3.7%) were the least advertised (Data not presented). The presence of culinary ingredients and processed foods in the circulars was similar in all supermarket chains, ranging from 2.4% to 4.5% and 11.1% to 13.4%, respectively. However, the FF/MPF and the UPF displayed a greater amplitude of variation according to the supermarket chains. The frequency of FF/MPF ranged from 16.4% to 35.1%, corresponding to chains B and C, respectively. Regarding UPF, their frequency in the circulars ranged from 45.7% to 70.1% (chain C and chain B, respectively) (Figure 1).

Figure 1. Proportion of foods advertised in circulars of five supermarket chains according to the NOVA classification system. Rio de Janeiro, 2019.



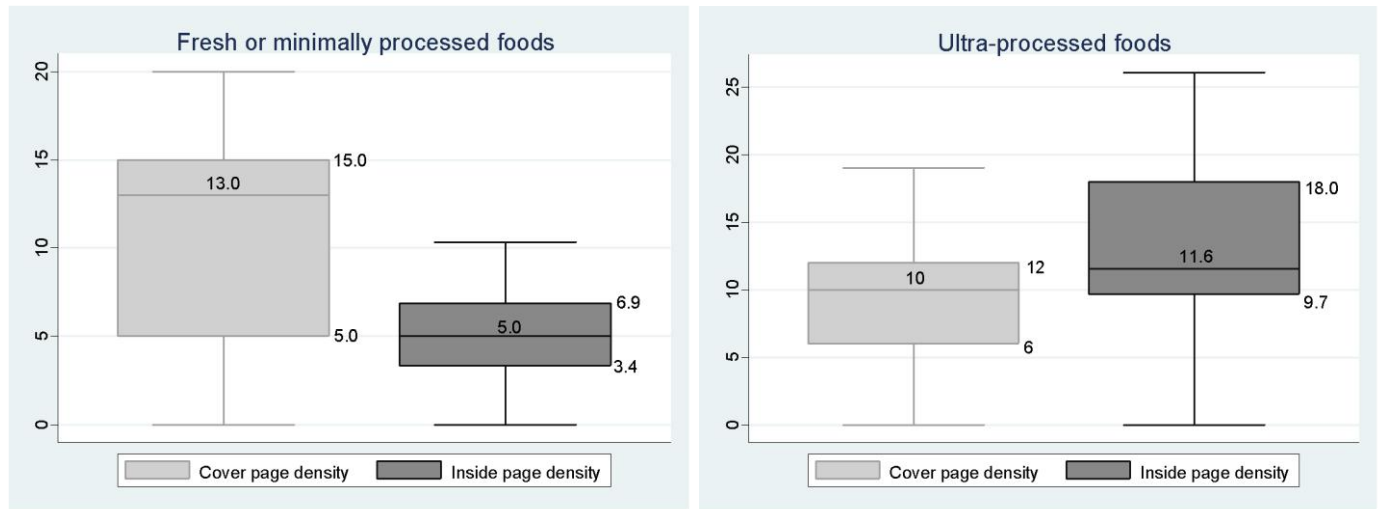
Source: Authors.

FF/MPF are more present on the cover (13.0 FF/MPF on the cover vs 5.0 per inside page), while the UPF are more present on the inside pages of the circulars (10.0 UPF on the cover vs 11.6 per inside page). This difference was statistically

significant ($p < 0.01$) for the total number of circulars evaluated (Figure 2).

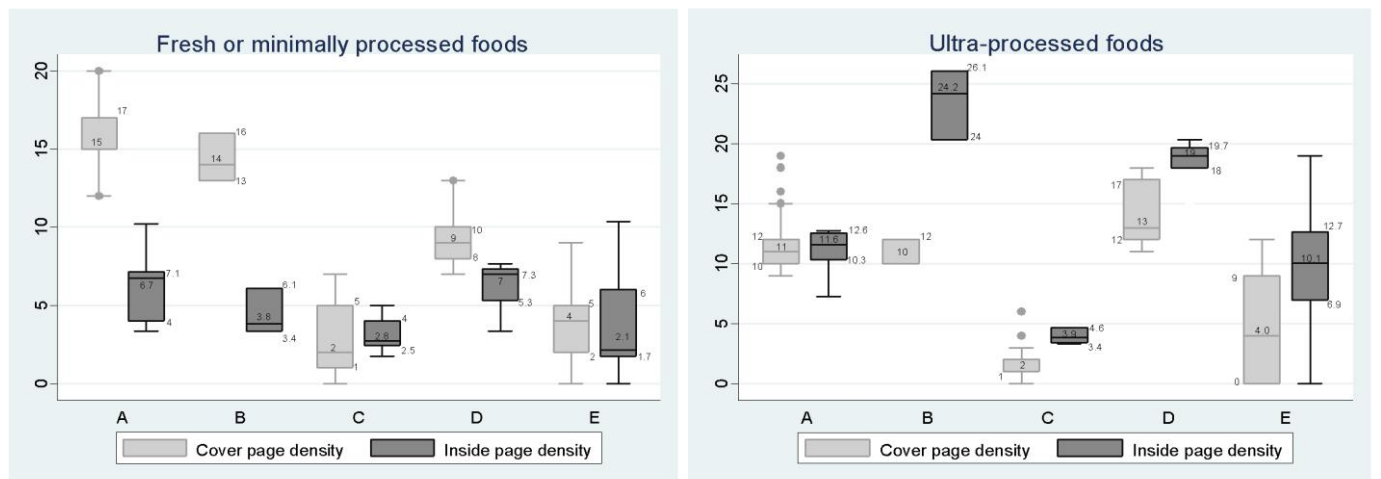
The analyses stratified by supermarket chains also showed similar results, except for chains C and E. Chain E did not show significant difference between the density of FF/MPF on the cover and inside pages ($p = 0.1554$). However, the circulars of chain C presented a higher density of FF/MPF on the inside pages than the density of these foods on the cover. For the analyses regarding the density differences of UPF between cover and inside pages, all chains presented the same pattern, significantly higher density of UPF in the inside pages compared to the density in the covers (Figure 3).

Figure 2. Density of fresh foods or minimally processed foods and ultra-processed foods on the cover and inside pages of supermarket circulars. Rio de Janeiro, 2019.



Source: Authors.

Figure 3. Density of fresh foods or minimally processed foods and ultra-processed foods on the cover and inside pages of circulars according to supermarket chains. Rio de Janeiro, 2019.



Source: Authors.

Some chains present very marked differences between the cover and the inside pages of the circulars, greater than 100% in the densities of FF/MPF (Chains A and B) and in the densities of UPF (Chains B and E) presented. It is noteworthy that the circulars of chain B showed lower variability in the density of FF/MPF and UPF, both on the cover and inside, showing a greater

standardization of these circulars, compared to those of the other chains.

4. Discussion

The results indicate that the FF/MPF are more present on the covers, while the UPF are more present in the internal pages of the circulars. This finding corroborates other studies on the subject, which also show that covers tend to include a higher proportion of healthy products than the inside of the circulars (Camargo et al., 2019; Charlton et al., 2015; Vandevijvere and Van Dam, 2021). A possible explanation is that items that make up the basis of the population's diet, such as cereals, milk, meat, and eggs, belonging to the FF/MPF group, are more allocated in the covers of the circulars because these foods are consumed daily and tend to be purchased daily and, therefore, are considered items of interest to the consumer. Woo et al., (2022) found that the first page of circulars is the most important place, with more visibility to the consumers.

Different patterns of circulars, related to supermarket chains, were visible in the results. Different promotional dynamics are found for each supermarket chain, with no pattern in relation to the number of circulars, food, and pages. While some chains adopt only traditional circulars with a longer period of validity of offers, others opt for a greater number and variety of circulars with offers for a given category of products (e.g., vegetables and fruits, butcher, bakery). Evidence in the scientific literature unequivocally shows that the central objective of decisions made by supermarket operators is to encourage consumers to buy more and, in their chains (Dawson, 2013; Hawkes, 2008).

The supermarkets with the highest food densities per page were the A, B, and D chains, popular chains that adopt traditional type circulars (covering a wide category of products, food, and non-food). However, chain C presented the lowest food density when compared to the other chains, both on the cover and inside. The C chain is characterized by a profile aimed at attracting a target audience of greater purchasing power. We noticed that the circulars of this chain are different from the others. Less visual pollution prevails in the circular patterns of chain C, that is, each promotional item presents a larger image and more dedicated space between the items. The covers of the C chain's circulars deserve special mention. With a graphic layout that most resembles a gastronomy magazine, approximately two thirds of the space is used for sophisticated culinary preparations, whose recipes are presented on next pages, where in due course, the ingredients inserted in the culinary preparation originates the section of promotional products linked to the recipe. In addition, the products advertised in these circulars are more selected, including prime meats, extra virgin olive oil, salami, cheeses, and imported wines, among others. On the other hand, chain A stood out for the high and wide difference in food density on the cover when compared to the pages inside the circulars. Considering that chain A is aimed at a target audience with less purchasing power, this chain may have opted for a booklet pattern with higher volume of advertised foods, adopting this strategy to attract the attention of its customers, who tend to be more sensitive to price-dependent decision-making.

Compared to the other chains, chain C promotes more FF/MPF in the circulars and promotes the least UPF. In a study conducted in four supermarket chains in Australia by (Cameron et al., 2015), it was found that supermarkets aimed at a target audience with greater purchasing power, have a greater variety of products in their stores, and foods from all food groups are advertised in their circulars, especially FF/MPF. Following the same trend, another study conducted by (Charlton et al., 2015) with circulars collected from 12 countries, identified that unhealthy foods are advertised more frequently in supermarket circulars located in less-favored neighborhoods. In this case, considering the vulnerability of economically disadvantaged classes, the role of the State in food advertising is undeniable, as it is the responsibility of this implementation of public policies that support the retail sector. Establishing tax incentives for retailers that promote healthier eating environments and shopping habits can be an interesting initiative, as it can be an effective tool to encourage healthier eating in the population.

As in the present study, the literature on the subject has also shown that unhealthy foods, represented here by the UPFs, are advertised more frequently in promotional circulars as a whole, representing approximately half or at least one third of the

foods (Camargo et al., 2019; Cameron et al., 2015; Charlton et al., 2015; Ravensbergen et al., 2015). The excessive promotion of these foods shows how much supermarkets stimulate and, consequently, contribute to habits that contradict the guidelines for an adequate and healthy diet. Specifically in Brazil, the Food Guide for the Brazilian Population indicates that the consumption of UPF should be avoided due to the negative impacts on the health of the population and the environment (Brazil et al., 2014). Importantly, in the circulars evaluated here, approximately one in four foods advertised are FF/MPF. A result that reinforces how much this group, which should be the basis of food, is not the target of promotional strategies of Brazilian supermarkets.

One possible limitation of the study is that the sample obtained within two months of collection may not reflect the same pattern of circulars throughout the year. Nevertheless, care was taken to select months that did not have long holidays and festive periods, to minimize the effects of changes in the pattern of circulars related to these dates.

As positive points, we emphasize that this study presents information on a little investigated subject in middle-income countries, such as Brazil. A review in the literature showed that this is the second study on the promotion of food in supermarket circulars, focusing on the differences between the cover and internal content, taking the entire Latin American continent. We also note that the present study collected information from five major supermarket chains in the country, aimed at audiences with different socioeconomic profiles and with different patterns of promotional circulars.

5. Conclusion

One can conclude that Brazilian supermarket circulars display a high promotion of UPF compared to the other groups and that the cover does not reflect the entire content of the circular. On the cover page, healthier foods are more present compared to those of lower nutritional quality. However, the latter have greater prominence along the inside of the circulars. Therefore, the covers of the circulars lead the consumer to believe that FF/MPF are also promoted by the supermarket chains, when the UPF represent more than half of all the advertised foods.

Given these results and the previous knowledge of the influence of retailers on the acquisition and food consumption of the population, the need to develop government programs that stimulate the promotion of healthy foods in supermarkets is evident, as well as the urgency for the development of legislation that oversees the marketing strategies used.

It is suggested that future studies investigate the use of marketing strategies related to the types of food advertised, as well as evaluate the influence of seasonality on price fluctuation and food promotions in the circulars.

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