

Overabundance of unhealthy food advertising targeted to children on Guatemalan television

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Summary

To assess, for the first time, the extent (by hour channel) and nature (e.g. persuasive marketing techniques (PMT) and health-related claims) of unhealthy food advertisements (ads) targeted at children (3–11 years) on the six most-watched television (TV) channels in Guatemala. We recorded 864 h of video on the six most popular channels featuring children's programmes. We classified food and beverage ads as permitted or non-permitted for marketing to children, according to the 2015 World Health Organisation (WHO) nutrient profile. Furthermore, we also analysed PMT (i.e. premium offers, promotional characters, brand benefit claims) and health-related claims. Most food ads (85%) were non-permitted to be marketed to children. Non-permitted food ads were six times more likely, either on weekdays or weekends, for all programme and channel categories compared with permitted food ads. There was no difference in the frequency of non-permitted food ads between peak and non-peak hours, weekend and weekdays or children and non-children programmes. PMT and health-related claims were present in all food ads (5.3 ± 1.9 techniques/claims per ad). There is a need to regulate food ads on TV channels featuring children's programmes in Guatemala as a result of a high frequency of non-permitted food ads and extensive use of PMT together with health-related claims.

Key words: food promotion, children obesity, food environment, obesity

INTRODUCTION

Childhood overweight and obesity are among the most critical challenges facing public health in the 21st century, being more prevalent in low- and middle-income countries ([World Health Organization, 2016b](#)).

Guatemala, an upper-middle-income country ([The World Bank, 2018](#)), currently struggling with the double burden of malnutrition ([Ramirez-Zea et al., 2014](#)). In 2015, 46.5% of children under 5 years was stunted ([Ministerio de Salud Pública, 2017](#)). Paradoxically in

2013, it was estimated that 13.6% of boys and 19.4% of girls aged 20 years or younger were overweight or obese ([Ng et al., 2014](#)).

Promoting unhealthy foods to children has been shown to influence their purchasing requests and food preferences ([Boyland et al., 2016](#)). There is also evidence confirming that persuasive marketing techniques (PMT), such as premium offers (e.g. discounts, games and collectables) and promotional characters (e.g. cartoons and celebrities), influence children's food preferences and

purchasing requests building brand loyalty (Boyland and Halford, 2013).

To reduce unhealthy food marketing towards children and stimulate member states to implement marketing restrictions, the WHO developed the Ending Childhood Obesity implementation plan. It includes a set of recommendations on the marketing of foods and non-alcoholic beverages to children (World Health Organization, 2017). The guideline consists of the implementation of the WHO nutrient profile (NP) model which classifies food advertisements (ads) as permitted or non-permitted to be marketed to children. It is the first NP model developed for common use among countries internationally (World Health Organization, 2015). The Pan-American Health Organisation (PAHO) subsequently developed a NP model (Pan American Health Organization, 2016), which has been used in research by a few countries (e.g. Mexico, Argentina) (Rincón-Gallardo *et al.*, 2016; Rovirosa *et al.*, 2017).

A few countries in Latin America (e.g. Mexico, Ecuador, Costa Rica, Chile) have set regulations that restrict unhealthy food advertising directed to children. In 2016, Chile amongst all, successfully implemented a comprehensive law on marketing to children under the age of 14 years in television (TV) and across other media platforms. The law restricts advertising of high energy-dense foods and beverages, including products with promotional characters and incentives, such as cartoons, animations and toys aimed at children (World Cancer Research Fund International, 2019). However, additional research on the impact of the current law regarding exposure and childhood obesity is needed. Nevertheless, in Guatemala, no regulation protects children from unhealthy and misleading food ads through any form of media. Some previous small-scale studies on unhealthy food marketing on food packages in Guatemala raised concerns about this issue (Chacon *et al.*, 2013; Letona *et al.*, 2014; Soo *et al.*, 2016).

Previous studies in Latin America have assessed the extent (by hour and channel) and nature (e.g. PMT and health-related claims) of food marketing to children on TV (Castillo-Lancellotti *et al.*, 2010; Rincón-Gallardo *et al.*, 2016; Rovirosa *et al.*, 2017), but there is no such evidence for Guatemala. Evidence is needed in Guatemala due to the ongoing nutrition transition (Ford *et al.*, 2017) and children's increased vulnerability to unhealthy food advertising (Norman *et al.*, 2018). It is essential to support the making of policies addressing food marketing to children with strong evidence (World Health Organization, 2016a). Hence, this study comprehensively assessed, for the first time, the extent and

nature of unhealthy food ads targeted at children on Guatemalan TV.

METHODS

Study design

We used the standardized methodology (training, sampling, recording and ads coding) of the International Network for Food and Obesity Non-Communicable Diseases Research, Monitoring and Action Support (INFORMAS) for monitoring the extent and nature of food advertising on TV (Kelly *et al.*, 2013). This methodology has been developed based on a review of previous studies (World Health Organization, 2016a) and has been implemented by >22 countries worldwide (Kelly *et al.*, 2019).

A total of six channels featuring children's programmes were selected: one national and five cable channels. Children's programmes were defined as those aimed at children between 3 and 11 years (73% of total programming) while non-children's programmes correlated to ages 11 and above. IBOPE Guatemala (Instituto Brasileiro de Opinião Pública e Estatística) provided audience ratings measured on children 3–11 years living in urban areas of five departments in Guatemala (Guatemala City, Suchitepéquez, Xela, Escuintla and Retalhuleu) between January and December 2015 (IBOPE, 2016). Based on the highest children audience ratings in Guatemala, we selected Disney Channel, Disney Jr, Nickelodeon and Channel 13. Of all national channels, Channel 13 was the only channel with programming targeted at children.

Cartoon Network and Discovery Kids were not part of the audience measured for Guatemala, but were chosen for their high popularity, being among the most-watched by children in Latin America (IBOPE, 2014). We classified the channels in three groups according to target age: (i) channels targeted at ages 3–16 years (Disney Channel, Cartoon Network and Nickelodeon), (ii) channels targeted at children aged 3–8 years (Disney Jr and Discovery Kids) and (iii) a family channel that included both children and adult programming (Channel 13).

Recording

We recorded 8 days per channel: four weekends (two Saturdays and two Sundays) and four weekdays (from Tuesday to Friday). For each day, we recorded 18 h of programming (from 6:00 to 24:00). They were captured using USB TV sticks (KWorld® Hybrid TV Stick UB445-U2; Zhonghe, China). As audience ratings may vary

during school periods and holidays, we excluded all public and school holiday periods.

All channels were intended to be recorded continuously for 2 weeks. However, due to technical difficulties with the equipment, we recorded 38% of all footage during the initial weeks. Missing or partial recordings were repeated the same day of the following weeks until all recordings were complete. It took six more weeks to complete a total of 864 h (144 h per channel).

Peak-viewing times

For channels with audience information (Disney Channel, Nickelodeon, Disney Jr and Channel 13), peak-viewing times were determined using yearly TV audience data from IBOPE. We defined peak-viewing times as the 3 h of a day with the highest proportion of children (aged 3–11 years) watching TV across the four channels on average. The overall peak-viewing hours were: 13:00–15:00 and 19:00–20:00.

Food ads coding

We defined food ads, according to the INFORMAS methodology, as spot ads including a food or beverage item for sale, broadcast between and during breaks in programmes. The item could be either from a food retailer or restaurant or not be directly shown in the ad (Kelly *et al.*, 2013).

Nutritional analysis

The WHO-NP (World Health Organization, 2015) was used to classify food ads into 17 food groups (e.g. savoury snacks, breakfast cereals, fresh fruits/vegetables). We obtained the nutritional composition of packaged products from labelling available in product websites, supermarket and food composition databases. When the nutritional information of a packaged product was not available, we used nutritional information of a similar product (e.g. chocolate milk drink branded Shaka Laka was not found; therefore, we used a similar chocolate drink from Hershey's).

After classifying into food groups, the WHO-NP defines foods and drinks as permitted or non-permitted to be marketed to children. A food product was classified as non-permitted if, according to its nutritional composition, had an excessive amount of at least one of the following: fat content, added sugar, total sugar, sodium and calories per 100 g; otherwise, the product was classified as permitted. Exemptions are made for specific food and drink products classified as permitted or non-permitted, regardless of their nutritional content. Those belonging to the candies, pastries, ice-creams, fruit

juices, energy drinks or processed meats categories are classified as non-permitted. Whereas those that belong to the fresh/frozen meat, poultry, fish or fruit, vegetables and legumes are classified as permitted. For any food coding ambiguities, for example, when multiple food products were shown in the same ad, we coded the one that was repeated the most. If two products appeared with the same frequency, we coded the first product shown.

PMT and health-related claims

We analysed the presence of PMT and health-related claims. An ad could contain one or more marketing techniques. All PMT and claims included have been used by previous studies (Kelly *et al.*, 2019) and were classified into four groups: (i) premium offers; (ii) promotional characters; (iii) brand benefits claims; and (iv) nutrition and health-related claims (World Health Organization, 2016a). The subcategories of each group, together with examples, are given in Supplementary Table S1.

Training

Training and standardization of the research team ($n=6$) were implemented following the INFORMAS methodology (Kelly *et al.*, 2013) and were adapted for Latin American contexts. In brief, training consisted of reading an operation manual and practising coding exercises for 2 weeks. Kappa coefficient was used to assure the inter-rater agreement between all research assistants for the 27 PMT variables (promotional characters, premium offers and brand benefit claims). We ensured standardization when the inter-rater agreement was between 0.81 and 1.00 (McHugh, 2012). During the coding phase, the leading researcher revised a random sample of 1 h from each research assistant at the end of every week to guarantee data quality.

Statistical analysis

Food advertising frequency was calculated as the average number of ads per hour per channel. Given the variations in advertising between weekdays and weekends, to derive estimates from combined weekday and weekend day data, data were weighted to take into account the unequal probabilities of selection and the number of weekdays and weekends in the sample. We used independent sample *t*-tests to assess differences in food ad frequencies between weekdays and weekends. Independent sample *t*-tests were also used to test differences in the frequency of non-permitted food ads per hour between peak/non-peak hours (for available

Table 1: Mean rates per hour of permitted and non-permitted food ads

	Non-permitted, ^b mean ± SD (<i>n</i> = 1715)	<i>p</i> ^a	Permitted, ^c mean ± SD (<i>n</i> = 293)	Total food ads, mean ± SD (<i>n</i> = 2841)
Days				
Weekday	1.9 ± 0.2	0.684	0.3 ± 0.1	3.1 ± 1.3
Weekend day	2.0 ± 0.2		0.3 ± 0.1	3.4 ± 1.3
Type of programme				
Children's programmes	1.6 ± 1.3	0.399	0.2 ± 0.4	2.4 ± 1.7
Non-children's programmes	1.2 ± 2.2		0.4 ± 0.7	0.9 ± 2.7
Channels classified per age				
Aimed at 3–16 years	2.4 ± 0.2		0.2 ± 0.1	3.1 ± 1.8
Aimed at 3–8 years	0.8 ± 0.1	<0.001	0.3 ± 0.1	1.8 ± 1.4
Aimed at families	3.0 ± 1.0		1.0 ± 0.2	6.7 ± 4.1
Time of the day ^d	(<i>n</i> = 1,230)		(<i>n</i> = 229)	(<i>n</i> = 2,145)
Peak hours	3.1 ± 1.0	0.304	0.1 ± 0.1	4.5 ± 0.7
Non-peak hours	2.2 ± 1.2		0.1 ± 0.1	3.1 ± 1.2

^aMultiple tests comparing the average of non-permitted food ads by different categories.

^bNon-permitted: food advertised that contains excessive amounts of energy, saturated fats, trans-fatty acids, free sugars or salt per 100 g.

^cPermitted: foods advertised without excessive amounts of energy, saturated fats, trans-fatty acids, free sugars or salt per 100 g (World Health Organization, 2015).

^dChannels with audience information: Disney Channel, Nickelodeon, Disney Jr and Channel 13. Peak hours were defined as the 3 h with the highest percentage of children (ages 3–11 years) watching TV during the day.

channels), weekend/weekdays and children's/non-children's programming. One-way analysis of variance (ANOVA) with Tukey's post-test was used to analyse differences in means between channel age groups. Finally, a *t*-test was conducted to compare differences in PMT between permitted and non-permitted food ads. All statistical analyses were performed using STATA 13.0 (College Station, TX, USA), and statistical significance was considered at $\alpha < 0.05$.

RESULTS

A total of 189 different food ads were registered and repeated one or more times during the hours recorded summing a total of 14 576 ads. Almost 20% (*n* = 2841) were food ads, with an average of 59.2 ± 1.2 per channel/day (3.3 ± 1.2 per channel/hour). There was no difference in the frequency of food ads between weekdays and weekends; therefore, we pooled all analyses for weekday and weekends. Food ads advertised by the family channel were two to three times greater per hour compared with channel age groups directed at ages 3–16 and 3–8 years (Table 1).

Permitted vs non-permitted food ads

The majority of food ads (70%) were classified into food groups according to the WHO-NP. The remainder (30%) were not classified using the WHO-NP because

(i) food products marketed were not part of the NP criteria (baby formulas, alcohol, coffee, nutritional supplements); (ii) nutritional information on the label was not sufficient and we did not find a similar product; and (iii) food ads were for food companies/brands but did not show any food.

Of all food ads, 85% (*n* = 1715) were non-permitted to be marketed to children. They were six times greater for all programme and channel categories, either on weekdays or weekends, compared with permitted food ads. There were no differences in the frequency of non-permitted food ads between children's and non-children's programmes, or weekdays and weekends, or peak and non-peak hours (for channels with audience ratings available).

As seen in Table 1, there was a significant difference between channel age groups as determined by one-way ANOVA [$F(2,51) = 9.7, p < 0.001$]. A Tukey's *post hoc* test showed that non-permitted food ads were significantly higher in the channel age group 3–16 years ($2.4 \pm 0.2, p = 0.009$) and family channel ($3.0 \pm 0.6, p < 0.001$) compared with channel age group 3–8 years (0.8 ± 0.1). There was no statistically significant difference between channel age group 3–16 years and family channel. The percentage of non-permitted food ads for channel age group 3–16 years was 94%, for channel age group 3–8 years it was 76% and for the family channel 74%.

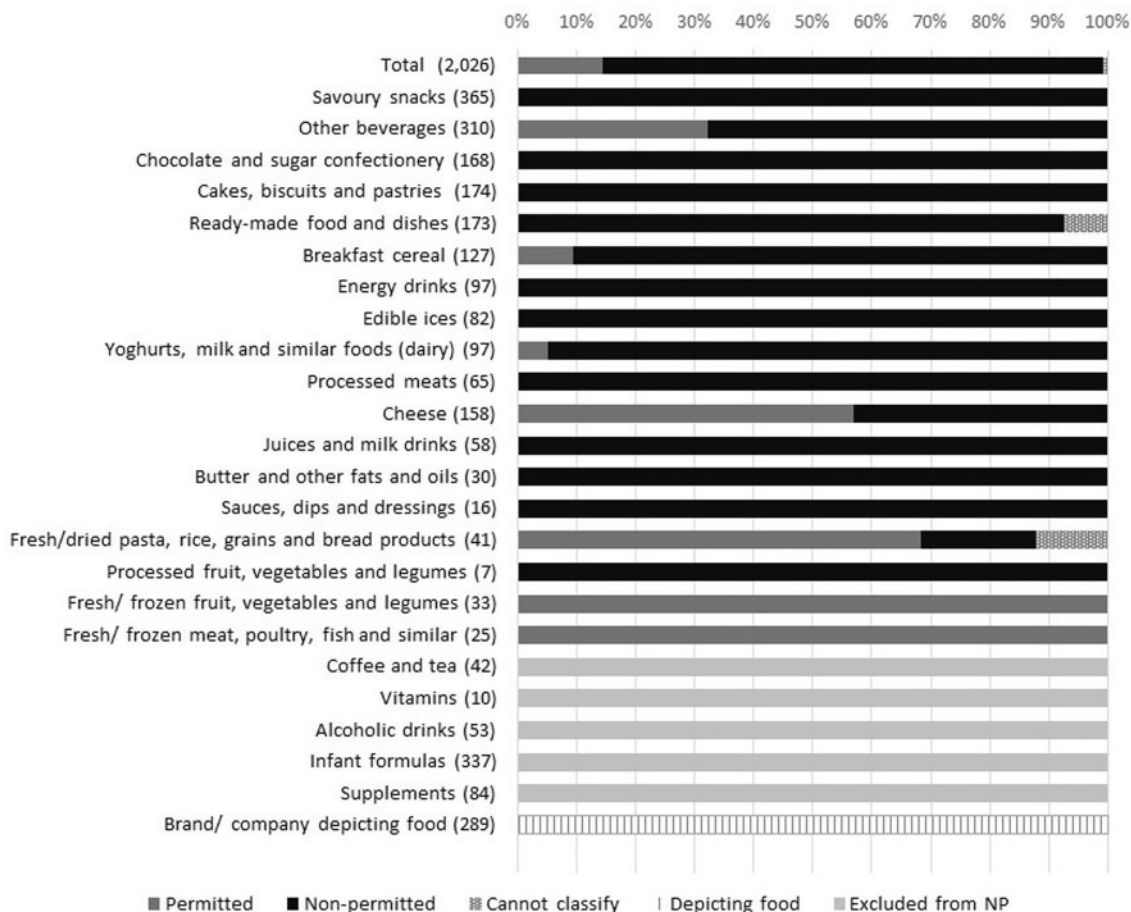


Fig. 1: Proportion of food ads classified as permitted or non-permitted according to WHO-NP categories ($n=2841$). NP = nutrient profile.

Food categories

Of all food groups advertised, the savoury snacks had the highest proportion (18%, $n = 365$). Besides, the five most frequently advertised food groups (savory snacks, soft drinks, sweetened drinks, chocolate and confectionery, and pastries) were all non-permitted and consisted of 50% of all food ads. Whereas, most advertised permitted food group was plain water (within 'other beverages' category) and accounted for 5% ($n = 100$) of total food ads. Furthermore, we found a relatively low percentage (11%) of fresh fruits, vegetables, legumes and water advertised (Figure 1).

Potential exposure

Across the four channels (Disney Channel, Nickelodeon, Disney Jr and Channel 13), according to ratings data, the average sum of children watching TV per hour was

of 5305 across the four channels. These children were exposed to 2.3 ± 1.2 non-permitted food ads per hour. During peak hours (13:00 to 14:59, and 19:00 to 20:59), the exposure was of 3.1 ± 1.0 non-permitted food ads per hour. However, the difference between peak and non-peak hours was not significant (Figure 2).

PMT and health-related claims

All food ads classified with the WHO-NP used PMT and health-related claims. An average of 5.3 ± 1.9 PMT and health-related claims were identified per ad. For channels aimed at ages 3–16 years, there was a significantly higher frequency of PMT in permitted food ads (8.6 ± 1.1 techniques per ad) compared with non-permitted ones (5.6 ± 2.0 techniques per ad, $p \leq 0.001$). On the contrary, the family channel used more PMT in non-permitted (4.8 ± 2.1 techniques per ad) compared

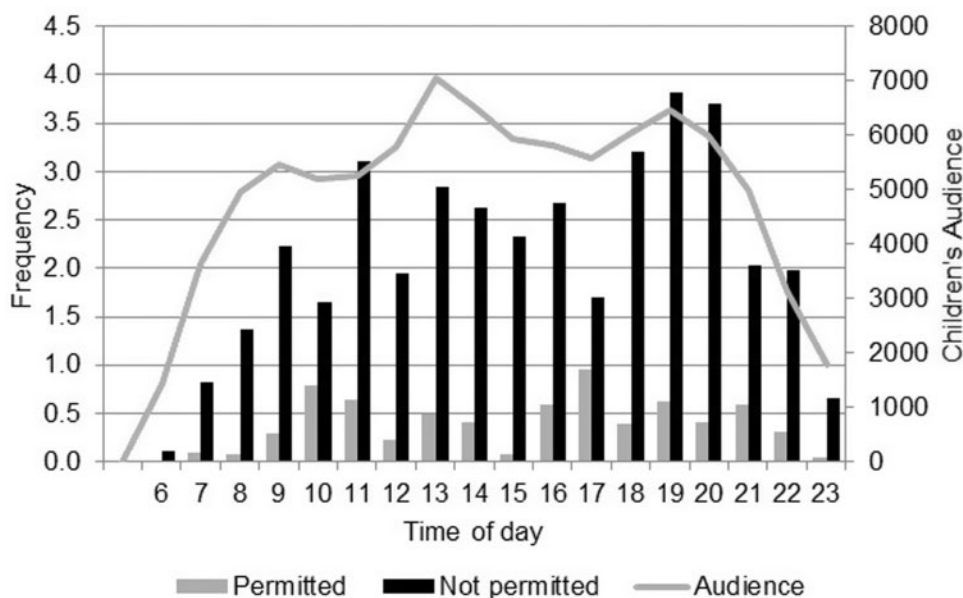


Fig. 2: Average frequency of food ads classified as permitted or non-permitted watched by children (3–11 years) per hour ($n = 1459$).

with permitted ads (3.9 ± 1.2 techniques per ad, $p \leq 0.001$).

DISCUSSION

According to the WHO-NP, the main finding of this study was most food ads from all channels were non-permitted to be marketed to children. Furthermore, they all used PMT and health-related claims. The high percentage (85%) of non-permitted food ads is consistent with other studies in which food ads were mostly unhealthy during children programmes (Castillo-Lancellotti *et al.*, 2010; Hingle *et al.*, 2015; Rincón-Gallardo *et al.*, 2016; Rovirosa *et al.*, 2017; Vilaro *et al.*, 2017). A recent meta-analysis showed that the marketing of these foods increases children's dietary intake and preference for energy-dense foods and beverages during or shortly after exposure to ads (Sadeghirad *et al.*, 2016). Furthermore, a cross-sectional study in the USA found associations between increases in advertising for unhealthy food ads and rates of childhood obesity (Miller *et al.*, 2008).

We found the same frequency of food ads on weekends compared with weekdays. This finding differs from other studies showing a higher frequency of food ads during weekends (Li *et al.*, 2016; Rincón-Gallardo *et al.*, 2016) or weekdays (Neville *et al.*, 2005; Vilaro *et al.*, 2017). Hence, regulations should be applied equally during weekdays and weekends.

In addition, the finding of the five most frequently advertised food groups (savory snacks, soft drinks, sweetened drinks, chocolate and confectionery, and pastries) is consistent with other Latin American countries like Mexico, Chile and Argentina (Castillo-Lancellotti *et al.*, 2010; Rincón-Gallardo *et al.*, 2016; Rovirosa *et al.*, 2017). Even though we found a low percentage of healthy foods advertised, it is relatively higher compared with evidence from other countries where none or a smaller percentage of these foods were advertised (Neville *et al.*, 2005; Li *et al.*, 2016; Rincón-Gallardo *et al.*, 2016).

Considering the same amount of non-permitted food ads were transmitted during peak and non-peak hours, policies and regulations should be focused on the restriction of food advertising regardless of peak hours. As opposed to regulations in Mexico, where only certain hours during children's programmes were regulated (World Cancer Research Fund International, 2019). Further evidence showed the pitfalls of the mentioned regulation, as the companies influenced children indirectly by marketing during non-children programmes which were also watched by children (i.e. soap operas and reality shows) (Théodore *et al.*, 2017).

This analysis indicates that food ads used an average of five PMT per ad. A similar finding from the USA was found in ads aimed at children (Vilaro *et al.*, 2017). According to Søndergaard and Edelenbos (Søndergaard

and Edelenbos, 2007), 'children are critical targets for marketing and branding activity, they have independent spending power, but also exert considerable influence over family purchases. Food and drink purchases are the categories over which children have particular influence'. Promotional characters are used to generate identity and facilitate a relationship between consumers and the brand. A study in Guatemala demonstrated that children were significantly more likely to prefer foods with packages showing licensed characters compared with those without them (Letona *et al.*, 2014). Children under 12 years of age generally lack sufficient understanding of PMT.

When comparing the frequency of PMT between permitted and non-permitted food ads, we found that they were used in both groups. This finding suggests that children are being persuaded towards both permitted and non-permitted food products. However, PMT associated with permitted food ads may not be effective if non-permitted ads continue to lead the food advertising environment. Children exposed to unhealthy food and beverages prefer the taste of products featuring popular characters compared with the same foods without the characters (Kotler *et al.*, 2012; Boyland and Halford, 2013). A systematic review demonstrated that PMT such as licensed characters influences food choices and intake, especially for energy-dense foods when compared with fruits or vegetables (Kraak and Story, 2015). Therefore, the marketing of unhealthy foods targeted at children is considered misleading (Graff *et al.*, 2012).

Health-related claims were also present in all permitted and non-permitted food ads. There is evidence that health-related claims might lead to positivity bias, which could influence consumers to perceive unhealthy foods with health-related claims healthier than if they were not present. Parents are more likely to buy foods and beverages if they display health-related claims regarding their nutritional quality. Hence, health claims on products of low nutritional quality distract parents from high levels of critical nutrients like added sugar (Chandon, 2013). However, evidence is still limited and mixed on the effects of health-related claims on unhealthy foods (Hamlin *et al.*, 2015).

Moreover, 1 out of 10 food ads did not directly depict foods. This type of ad escapes potential regulations as it is harder to regulate brands/companies as there is no agreement yet on the required criteria of ads directed to children that do not depict the food product directly. Still, they can be associated with unhealthy foods due to the brand logo. The brand of a food product is one of the factors that drive children's purchasing requests. The exposure to brands via ads during early childhood is

critical for the creation of emotional connections and brand loyalty. These connections can be established by 2–3 years of age (Boyland and Halford, 2013). Before children can read, some children already have requests for specific named branded products (Consumers International, 2004). Brand relationships formed by children early in life are thought to be more embedded than those formed during adulthood (Wicks *et al.*, 2009).

Consequently, the market is failing children by benefiting only food and beverage companies. The reasons are (i) children are clearly a vulnerable group in which their choices are affected by marketing; (ii) they do not have the capacity to make fully informed decisions about their food selection; and (iii) people tend to choose immediate gratification over potential long-term negative results (Swinburn *et al.*, 2011).

Several strengths of the study include the large sample size of food ads and, to our knowledge, this is the first study that analyses food ads in Guatemala. The number of hours recorded was relatively large (two to three times more) when compared with similar studies (Neville *et al.*, 2005; Castillo-Lancellotti *et al.*, 2010; Roviroso *et al.*, 2017; Vilaro *et al.*, 2017). In addition, the methodology used was previously validated and implemented internationally (Kelly *et al.*, 2013; Vandevijvere *et al.*, 2014; World Health Organization, 2016a). This methodology strengthens the monitoring of the extent and persuasive power of food ads in Guatemala and makes it comparable with other countries.

We also found certain limitations in the current study. We were not able to record days on a randomized fashion, which implies that selection bias might be present. However, we have no reason to think that the proportion of non-permitted food ads would differ among days given (i) the extremely high proportion of non-permitted food ads overall and (ii) the lack of any regulation of ad in the country. Another limitation is that there was no audience information on all channels; therefore, the results for the peak-viewing times may differ. Furthermore, the six selected channels were a portion of what children are exposed to, as children also could watch non-children's channels (Théodore *et al.*, 2017).

Likewise, children are exposed to other types of food marketing, such as on the internet, in-school marketing, product placements and kid's clubs, such as sports centres (Story and French, 2004). Further research in these areas would be needed to understand the extent of the power and nature of food marketing. The PAHO model was not applied as only minimally processed

products are classified as healthy (the model is too restrictive). For this reason, the WHO-NP was more suitable for this study, considering it is specifically designed to restrict the marketing of unhealthy foods to children. Finally, the nutritional analysis was performed only for the dominant food. Thus, healthier, less-dominant options may have been present in some ads but not classified.

CONCLUSION

Over time recorded, there were high levels of non-permitted food ads independent of peak/non-peak hours, weekend/weekdays and children/non-children's programmes in TV channels featuring children programming. Health-related claims and PMT were present in all food ads.

Due to the overabundance of non-permitted food ads found, Guatemala needs a comprehensive policy that restricts the marketing of unhealthy food and beverage ads directed to children. The policy should focus on the frequency and content of ads ([Organización Panamericana de la Salud, 2011](#)). To reduce the frequency, it should restrict the marketing of food and beverages that are high in saturated fats, trans-fatty acids, free sugars or salt regardless of hours, days or channels ([Garde and Xuereb, 2017](#)). In order to avoid the negative influence on children's food intake and preferences, this policy should also regulate the content of ads. Accordingly, a restriction of any marketing technique (i.e. premium offers, promotional characters and brand benefit claims) directed to children should be considered. The restriction would contribute to improving the food environment, which is distorted by marketing. The results of the current study should provide sufficient evidence for future policies to promote a healthier food environment on the TV.

Supplementary material

[Supplementary material](#) is available at *Health Promotion International* online.

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