

# Children, media and food. Food advertising aimed at children audience in Spanish TV

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## Case study

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## Abstract

Healthy living habits are the basis for optimal development in children and advertising can affect, positively or negatively, the maintenance of some of these habits. The analysis of food and drink advertising aimed at children during the enhanced protection zone is evidence of the growing problem of obesity in the child population generated through the food industry. The aim of this study is to assess the levels of compliance with the Code of Food and Drink Advertising to Children (Code PAOS). The methodology used was discourse and content analysis. For this purpose, a sample obtained through the recording, during 7 consecutive days, of the content of the advertising cuts in the television broadcast in Spain of three specialized and two generalist channels: Disney Channel, Neox and Boing, on the one hand, and Telecinco and Antena3, on the other. The reason for their choice is that they are the channels, within this segment, with the highest audience ratings. Specifically, the sample was obtained during week from the 12th to the 18th of December 2018.

The results reveal a systematic breach of this code that persuades the vulnerable conscience of children through a business network that far from promoting healthy living habits, they cause malnutrition in society. The immediate conclusion is that 9 out of 10 parts of the Food and Beverage Advertising (FBA) did not comply with any of the PAOS Code standards and that self-regulation by advertising companies seems insignificant.

## Background

The increase in cases of overweight is a reality that, in the case of obesity as a disease, we can even use the term "epidemic"[1, 2, 3]. In 2001, the World Health Organization (WHO) [4] coined the term "Globesity" for the first time to define the severity of the obesity pandemic in the world.

Estimates of the prevalence of obesity and/or overweight in Organization for Economic Cooperation and Development (OECD) countries and other emerging countries in children aged 5-17 years provide average values of around 22% [5]. One of every 5 children is ill with obesity in many countries, placing this value in one of every 3 in countries such as Greece, United States of America or Italy. On the contrary, overweight affects less than 10% in countries such as China, Korea or Turkey [6]. In this sense, certain predictive models used by the UK Foresight Report [7] have suggested that 55% of the British population could be obese in the United Kingdom by 2050. In the case of Spain, the data show that child obesity is around 14% and that overweight reaches figures of over 12%, according to data from the Ministry of Health and Consumer Affairs, from 2006 and until more recently, by the Ministry of Health, Social Services and Equality [8].

The WHO already described these diseases as the "Epidemics of the 21st Century" before entering the 21st century [9]. Thus, others authors [10] stresses that "in the last two decades childhood obesity has tripled in Spain: from 5% to an alarming 16.1%, which places the State in second place in Europe in terms of the prevalence of excess weight among children between 6 and 12 years old". In this regard, it should be noted that since 2016 there has been a reduction of 3 points in overweight compared to previous years, which would confirm some stabilization, in addition to the reversal of the propensity [8].

The current regulations focused on the prevention of childhood obesity in the United States and Europe are limited in scope: they start from a, more or less lax, regulation in relation to the codes of broadcasting images in the media and the promotion of other types of healthy lifestyle initiatives. Self-regulation itself is not effective [11, 12] and other measures should be taken so that minors are really protected against abusive campaigns by advertisers, such as the adoption of a system of statutes that uses a nutritional profile model to restrict the exposure of unhealthy products or imposing a legal ban on any type of food and drink advertisement aimed at minors.

In this context, we can affirm that media, in general, and advertising, in particular, can be one of the factors responsible of promotion of unhealthy eating and lifestyle [13, 14].

A wide range of ultra-processed foods is available in the Spanish market and its advertising is highly aggressive: consumers and receivers of an excessive amount of advertising stimuli, many of them aimed at children, who represent a more sensitive and vulnerable group.

This does not mean that the media are the only and direct cause of this epidemic, but it is a factor to be considered. In this sense, the protection and regulation of these groups, whose irascibility and vulnerability is greater than in the adult public, should be the priority. Because we start from the idea that advertising can generate representations that involve unhealthy image patterns and/or behaviors [15], which can thus directly affect children's self-esteem and the construction of their own children's body image. When the children are targeted by these campaigns, there are clearly appreciable consequences. Thus, there is evidence that food advertising can influence eating behavior [16, 17, 18, 19]. Children are the social group most sensitive to the negative consequences of the media, becoming, in many cases, dependent on the consumer market [20].

Numerous studies have shown that the reduction in exposure to children's advertising can be beneficial for the health of children [21, 22, 23, 24, 25, 26]. Thus, it is especially noteworthy the fact that children present a certain lack of cognitive resources to correctly decode the messages received [27, 28, 29, 30]. In fact, a study conducted between 2008 and 2012 showed non-compliance with the Code of Advertising for Food and Beverages Directed to Children (PAOS code) increasing from 50% in 2008 to 88.2% in 2012. In the reinforced buffer zone, this breach of the code rose from 43% to 86%.

Some investigations [31, 32] showed how advertisements were inserted within the children's time zone and that they used non-conventional advertising techniques such as sponsorship, distribution of samples or gifts when buying products, such as sponsorship, distribution of samples or gifts when buying products such as toys. Subsequently, research by the European Union itself showed that children who did not watch TV at lunch were less likely to be overweight than those who did [33].

So, the question arises: Is it permissible to subject this weak and immature group to such many stimuli? Why don't we work to rigorously optimize certain codes and legislations?

Whether for capitalist doctrine, or for other adjacent reasons, advertising agencies and other marketing systems, many food companies fix their target market, their target, in the children's public, posing minors as prescribers and consumers, although not necessarily as buyers. This practice is not mere exaltation of the norm between economic principles but is the fruit of utilitarianism where healthy food and the educational factor are put before packaged food, ultra-processed and easy to use for the general public. Thus, the attraction of infant food brands starts from the behavioral psychology of young children.

Faced with this situation, a certain obligation arises on the part of the authorities to regulate the self-fulfillment of certain ethical norms, as well as the legal obligation to take action against unfair companies against the consumer.

These deontological principles of advertising, voluntary, are constituted by a set of rules by which companies and entities are governed in the development of their activity in order to ensure ethical guidelines.

Multimedia groups have also become aware of the health problems of children and some conglomerates, such as A3Media (in the case of Spain), carried out in 2012 a campaign called 'El Estirón' (The stretched) which targeted children with childhood obesity. The campaign consisted of advertisements on the following channels: Antena 3, Neox, Nova and Nitro and on the radio stations Onda Cero and Europa FM. Some famous personalities took part in the campaign, giving advice on how to lead a healthy life.

### **1.1 European Food Safety Authority (EFSA) and Spanish Agency for Consumption, Food Safety and Nutrition (AECOSAN)**

At the European level, EFSA is an independent body funded by European budgets, whose operation is outside the European Commission. It is responsible for advising governments on the existence of food risks and emerging epidemics or pandemics. This task is implemented in European legislation and policies with the company contributing to consumer protection and the welfare state.

Its objective is to safeguard public safety within the industry and among its tasks are priorities such as the collection and promotion of scientific research, advice, dissemination and development of actions on food safety, cooperation with international bodies and building confidence in the food safety system.

In the case of Spain, there is the primary and co-regulatory care of the AECOSAN. This is one of the main bodies which is attached to the Ministry of Health, Social Services and Equality through the General Secretariat of Health and Consumer Affairs.

This gave rise to the PAOS Code (Code of Coregulation of Food and Beverage Advertising aimed at Minors, Prevention of Obesity and Health) [34], framed in the need for welfare, a need that concerns the child public in the promotion of a healthy diet, as opposed to an "advertising food" based on processed products.

The PAOS Code was reinforced in 2009 through a collaboration agreement with the main television operators in Spain so that television companies undertook to require that advertisements for food and beverages aimed at children under 12 years of age or that are broadcast in the reinforced protection bands for children, comply with the rules established in the PAOS Code.

In 2012 the Ministry of Health, Social Services and Equality and AECOSAN (Spanish Agency for Consumption, Food Safety and Nutrition) signed a new PAOS Code. The Spanish Federation of Food and Beverage Industries (FIAB), the Association for the Self-Regulation of Commercial Communication (Self-control of advertising), the distribution sector (ANGED, ASEDAS and ACES), the hotel industry (FEHR) and catering (FEHRCAREM) participated.

As a result of this updating of the PAOS Code, in addition to being applied to advertising for beverages and food aimed at children under 12 years of age, the code now also applies to advertising broadcast on the Internet, and the age of application is extended to 15 years.

Recently, a study carried [35] analyzed the monitoring of the PAOS code in the Boing channel in Spain. The results of this research concluded that certain points of this code were not being complied with, so the NAOS strategy, the 'Strategy for Nutrition, Physical Activity and the Prevention of Obesity' (a plan whose aim is to reverse the trend in obesity prevalence through the promotion of healthy, in line with the World Health Organization or the European Union) was not being implemented.

## **Hypothesis And Objectives**

Fraudulent or unethical use of advertising can harm the health of the most vulnerable. In this sense, the starting hypotheses for this research are:

1. Advertising for unhealthy food and drink promotes unhealthy eating habits, encouraging abusive consumption of products that are harmful to children and consequently to society.
2. Children's advertising is not adapted to the clear language that messages addressed to children up to 12 years old should be transmitted. This leads to values and sensations that can confuse children, so advertising for unhealthy food products can generate eating disorders or unhealthy habits in children, such as overweight or obesity.

These brands encourage scientific "research" by means of payments to support their false characteristics and to give the reason to lies with manipulated market studies. The strong implication of the governments in the problem that concerns us is proven, due to a lax legislation and favoring of the private companies.

Through this favoring of governments with private companies, in which there is no legislation in force regarding advertising aimed at children under 12 years of age, we have verified the existence of conflicts of interest and influences with a merely lucrative purpose.

Bearing in mind the above hypotheses, the general and specific objectives are:

- To contrast the advertising rigor of the PAOS code with the advertising actions of the agencies within the Spanish area of action in order to comply with it. In order to reach clear conclusions, the main brand techniques will be identified.
- To analyze the values of the companies that sell the products, their relevant physical characteristics in their promotion or whether they are harmful to children's health products and nutritionally inadequate.
- To assess the existence of professional ethics in this advertising sector.

## Case Presentation

The main lines of action of this AECOSAN and NAOS Strategy are distributed into three pillars: health protection, prevention and promotion of health and the follow-up, monitoring and evaluation of health.

This framework for action is found within AECOSAN, prioritizing measures in favor of children and adolescents such as the NAOS Strategy, which includes a multitude of initiatives and self-regulation codes such as the one we are responsible for analyzing in this research - PAOS Code.

The NAOS Strategy (Nutrition, Physical Activity and Prevention of Obesity), therefore, is defined as: the strategy whose goal is to reverse the trend in the prevalence of obesity through the promotion of a healthy diet and the practice of physical activity, and thereby substantially reduce the high morbidity and mortality rates attributable to noncommunicable diseases.

Within this strategy there are initiatives in the area of nutrition such as: working groups with the respective councils of the Autonomous Regions, collaboration with international organizations (WHO-Europe and European Commission) and associations of professionals and scientific societies along with a multitude of publications and tools, such as the NAOS Pyramid and the Plan for the Promotion of Healthy Living Habits (HAVISA PLAN).

The first of the campaigns used by the agency is the NAOS Pyramid in which we are shown the recommendations for consumption of different foods in parallel with the recommended physical activity. On the other hand, there is the HAVISA Plan, which is: "A communication campaign on television that gives visibility to messages and legends aimed at promoting healthy eating and regular physical activity, in line with the NAOS Strategy.

Finally, being the measure that drives this research we find the PAOS Code: "this is applied as a code of co-regulation that allows reducing the selling pressure on children and improve the quality and content of all kinds of advertisements for food and beverages aimed at minors".

## Methods

In order to focus the research, we start from the descriptive hermeneutic method. To this end, and based on a review of secondary sources, we have carried out a cross-sectional study of food and beverage advertising aimed at children under 15 years of age on television in Spain.

The sample was obtained through the recording during 7 days -week from the 12th to the 18th of December 2018- of television transmission by specialized channels at national level aimed at the child population and two general channels with higher ratings and share in the current panorama -Disney Channel, Neox, Boing, Telecinco and Antena3- [36].

Currently, there is a protected timetable from 6 a.m. to 10 p.m., although there is also a time slot where protection is even more reinforced. The reinforced timetable includes mornings from Monday to Friday -8:00 to 9:00 hours and from 17:00 to 20:00 hours- and Saturdays, Sundays and public holidays -from 9:00 to 12:00 hours-, time fractions that were analyzed.

It is precisely through Law 7/2010, of 31 March, General Law of Audiovisual Communication [37], in its article 7, the person in charge of establishing said schedule and by which the appropriate contents are defined in the broadcasting of those programs classified as recommended for children under 13, excluding totally from the reinforced protection schedule the broadcasting of programs classified for adults over that age. On the other hand, the time slot from 6:00 to 8:00, regulated as protected time, was excluded within the analysis period due to the absence or scarcity of a child audience. On the other hand, the last time slot -20:00 to 22:00- was also excluded from the analysis period in spite of being the last peak of child audience in the national territory since it is not regulated as a reinforced protected time slot, moving away from the line of this investigation.

These advertisements were classified by 6 researches (3 principal investigators, supervisors; 3 secondary investigators, support), according to their compliance with the PAOS Code and its ethical standards at three different levels: compliant, non-compliant and uncertain [31, 38]. Using this classification, and based on its visualization by the researcher, the sample was typed, and these data were tabulated in an Excel table. Compliance with each standard was evaluated considering that they were in full compliance with the PAOS Code when none of the requirements or standards were circumvented, i.e., they are considered non-compliant if some of the standards internal to each standard are not met. Those whose compliance lacks consensus by external and impartial investigators and experts will be considered of uncertain compliance.

Previously, a classification of the total number of spots broadcasted was established and they have been analyzed by days of the week, by television channels (general and specialized), by types of products, by product categories and by duration of the spot.

The scope of application of the norms of the code considers addressees of the advertising piece according to their age, due to the vulnerability of the minor forces to overprotect him and to give him a special protection before the stimuli of the current economic system and the market economy.

This is why the food and beverage sectors aimed at children should not be exempted from special caution in the issuance of their advertising messages from compliance with the PAOS Code.

The rules of this Code are applied to advertising and promotion of food and beverages made by companies adhered to it and are aimed at children up to 15 years in audiovisual and print media, the latter being outside the investigation.

The labeling and packaging of these products were exempt from being regulated by this code since they will be governed by the legislation that is applicable. Those under the age of 15 in their use of the Internet were also excluded from this study as they are not part of the line of research followed.

Therefore, three fundamental criteria must be considered in order to consider that the commercial message is aimed at children less than 12 years of age in audiovisual media:

- I. Food products are those that are promoted objectively mainly to the public under 15 years of age.
- II. Advertising designed in such a way that, due to its content, language and/or images, it is objective and suitable for attracting special attention or interest is aimed at children up to the age of 15.
- III. Advertising broadcast in audiovisual media or in a medium objectively aimed mainly at this public is aimed at children up to the age of 15.

#### 4.1 Legal aspects to consider

The points that safeguard the children and adolescent's safety within the PAOS code [34] and, therefore, its ethical standards in relation to food regulation in advertising can be seen in table 1:

**Table 1 - PAOS Code principles and ethical standards related to the regulation of food in advertising**

Principle	Content
Principle of legality	The advertising complies with the legislation in force
Principle of loyalty	The advertising conforms to good faith and good commercial practices.
Education and nutritional information	Bad habits and sedentary lifestyles will not be promoted; healthy habits and varied diet are promoted.
Presentation of products	Promoted products do not mislead minors, do not lie about their benefits and are realistic without exploiting their imagination with special effects.
Product information:	Product information presents characteristics in a clear way to simplify understanding.
Sales pressure:	Advertising does not exploit children's inexperience, nor does it encourage them to persuade their parents. Product's benefits must be inherent in its use.
Support and promotion through characters and programs:	Advertising does not exploit children's confidence by using charismatic characters.
Advertising Identification	Ads targeting are clearly separated from information programs.
Comparative Presentations	Ads comparisons among brands or products are clearly understandable to children.
Promotions, sweepstakes, contests, and children's clubs	No unrealistic expectations are generated about the chances of winning the announced contest/award.
Security	The ads avoid violent scenes, inappropriate use of the product or encourage children to enter strange places or interact with strangers.
Processing of personal data	These are procedures to recognize children and not be used outside the exchange of products-services.
Viral Marketing	Companies that carry out viral marketing campaigns do not capture data from third party recipients.
Protection against inappropriate content	Advertising companies do not display inappropriate content on partner websites, nor should there be any content that causes any harm, either physical or mental, to the child.

*Source: Own elaboration*

Within each of these principles, a total of 32 standards are broken down, specifying the specific aspects regulated by this code of self-regulation.

Similarly, it should be noted that this code considered ethical standards established at European and international level on the advertising of food and beverages [39-50].

## Results

Throughout the study period, approximately 300 food and beverage advertising pieces were identified, 177 of which were aimed at children under 15 years of age and were therefore collected to study them. Table 2 shows some features of Food and Beverage Advertising (FBA) aimed at children under 15 in Spain in 2018: 67.2% were broadcast on school days and 32.8% on Saturdays and Sundays; Boing with 42.94% of total broadcasts was the most frequent channel for transmission of food and drink advertisements aimed at girls; 70.62% of the products advertised were food and of these 83.05% were products belonging to the category of non-essential foods; finally the only advertising format was commercial spots with a duration of less than 21.7 seconds in 55.93%.

**Table 2 - Classification and typing of data obtained in Spain, 2018**

Characteristics of food and drink advertisements aimed at the child population	n	%
Analyzed days		
Monday to Friday	119	67.20
Saturday and Sunday	58	32.80
TV channels		
Generalists (n= 25)		
Telecinco	12	6.78
Antena 3	13	7.35
Specialized (n= 152)		
Boing	76	42.94
Neox	39	22.03
Disney Channel	37	20.90
Products types		
Food	125	70.62
Beverage	52	29.38
Product categories <sup>[1]</sup>		
Essential	0	0
Not essential	147	83.05
Miscellanea	30	16.95
Spot duration		
Less than 21.7 (sec.)	99	55.93
More than 21.7 (sec.)	78	44.07

Source: Own elaboration

Table 3 shows the level of compliance with each ethical standard in the PAOS Code. The ethical standard that shows the highest rate of non-conformity with the code is principle number V. Information on products, only 6.78% are in compliance given that standard 9, language understandable to this public, in a clear, legible and prominent manner and careful overprints in size and length of stay were not suitable using terms and texts unconnected with this public leaving the mere recreation of visual stimuli the attention-catching factor inciting impulsive consumption. It is also worth mentioning another of the ethical norms with a lower compliance rate with respect to the code, such as the IV. Products presentation, due to there is a continuous non-compliance being only 10.17% of the commercial pieces according to the standards. Specifically, four of the standards of standard IV stand out:

- adoption of special caution in the making and dissemination of FBAs - food and beverage advertisements - to children under 12 years of age in order to ensure that the presentations do not lead to errors about the product;
- not to induce errors about the benefits derived from the use of the product;
- must not mislead by suggesting that the food product promoted has particular characteristics that the rest of the products in the sector do not have;
- precautions should be taken not to exploit the imagination of children under the age of 12, avoiding the use of fantastic elements, such as animations or cartoons, and the generation of unattainable expectations that exploit their vulnerability and innocence.

**Table 3 - Compliance with the PAOS Code and its ethical standards in Spain, 2018**

Ethical standards	Compliant		Not compliant		Uncertain	
	n	%	n	%	n	%
I. Principle of legality	85	48.02	51	28.81	92	51.98
II. Principle of loyalty	177	100	-	-	-	-
III. Nutrition education and information	72	40.68	36	20.34	69	39
IV. Presentation of the products	18	10.17	65	36.72	98	55.37
V. Product information	12	6.78	74	41.8	100	56.5
VI Sales pressure	54	30.5	71	40.11	52	29.38
VII. Support and promotion through characters and programs	149	84.18	28	15.82	-	-
VIII. Identification of advertising	177	100	-	-	-	-
IX. Corporate Presentations	177	100	-	-	-	-
X. Promotions, raffles, contests and children's clubs	74	41.81	103	58.19	-	-
XI. Security	63	35.59	77	43.5	37	20.9
XII. Processing of personal data	148	83.62	23	13	29	16.38
XIII Viral Marketing	154	87	-	-	23	13
XIV Protection against third parties for inappropriate content	154	87	-	-	23	13

Source: Own elaboration

On the other hand, it is not only surprising the low level of compliance of the previous standards, since there are high percentages of uncertainty in their compliance with rates of 56.5% and 55.37%, respectively, in the order set forth above, but also the non-conformity indices of standards X and XI, the first of which stands out to a greater extent. Standard X. Promotions, sweepstakes, contests and children's clubs, with 58.19% of non-compliance with the code violates the following standards on a recurring basis:

- An advertising message including a promotion must be designed in such a way that it clearly shows the advertised product and not just the promotional object. In this sense, as regards compliance or not with the principle of legality, there are two different versions of the spot, Cola Cao Music Boom, whose broadcast is repeated quasi-alternatively and where there is non-conformity and uncertain compliance with that rule. It does not fully comply with the contract that links it to the incipient 2020 Plan to Support Base Sports due to the absence of the logo in a time less than 50% of the duration of the spot.



Characteristics of FBA aimed at children	Global Code Compliance			
	Yes		No	
	n	%	n	%
<b>Analyzed days</b>				
Monday to Friday	18	10.2	101	57.1
Saturday and Sunday	0	0	58	32.8
<b>Tv channels</b>				
Generalists (n=25)				
Telecinco	5	2.8	7	3.9
Antena 3	7	3.9	6	3.4
Specialized (n=152)				
Boing	0	0	76	42.9
Neox	6	3.4	33	18.6
Disney Channel	0	0	37	20.9
<b>Types of products</b>				
Food	18	10.2	107	60.5
Beverage	0	0	52	29.4
<b>Product categories</b>				
Essential	0	0	0	0
Not essential	18	10.2	129	72.9
Miscellaneous	0	0	30	16.9
<b>Spot duration</b>				
Less than 7 (seg.)	0	0	99	55.9
More than 21.7 (seg.)	18	10.2	60	33.9

Source: Own elaboration

Through the data obtained and tabulated, the following cases were given: the FBA transmitted from Monday to Friday – school days– versus those broadcast on Saturday and Sunday are 57.1% vs. 32.8%, the rate of non-compliance by television channels between specialized and generalist channels was 82.4% vs. 7.3%, the typology of products is significantly higher in food versus drink (60.5% vs. 29.4%), in the case of the product category and its importance to the healthy development of the infant is 72.9% vs. 16.9% between the non-essential and miscellaneous categories, given that there were no advertising pieces concerning a nutritious product and, therefore, essential, finally on the duration of the piece 55.9% had a duration of less than 21.7 seconds compared to 33.9% whose duration was longer.

## Conclusions

Including all the data collected, we can conclude that nearly 9 out of 10 FBA parts did not comply with any of the PAOS Code standards. It should also be noted that the standards with the highest levels of incompatibility with this code are those that attempt to safeguard the vulnerability and innocence of children by exposing pieces with clarity and simplicity of information to the recipient who escapes their intellectual level and of understanding by inhibiting their scarce critical vision. Non-compliance with the PAOS Code was substantially greater in the case of specialized channels as opposed to generalist channels because of their greater frequency of pieces that violate their innocence, these channels being directed at their intellectual development, the backbone of which is correct nutrition.

Self-regulation by those companies that make commercial pieces aimed at minors seems insignificant, with children being the main victims. On the other hand, since the state measures of voluntary adhesion are supposed to be of a lax condition, this implies the need to print a greater legislative rigidity and to integrate all those agencies and advertisers whose target are minors.

Non-compliance with this code is continuous, given that two situations occur: Firstly, the non-adherence to the PAOS Code, which prevents the establishment of a review of the spots in order to 'reduce the prevalence of obesity and overweight and its consequences, both in the area of public health and its social repercussions', an objective that is shared with global organizations such as the WHO and, secondly, the existence of conflicts of interest, which are latent when, on reviewing recent campaigns and an evaluation of a multitude of products, we see how associations whose purpose is to guarantee and safeguard the health of the population, promote food that is clearly detrimental to our health.

Through the Higher Sports Council, whose function is to promote modernization and innovation in all areas of the sports system, a strategy was created to awaken interest in sport among children and young people, known as the ADB 2020 Plan [55]. This plan aimed at supporting grassroots sport and increasing the number of practitioners established a communication strategy seeking to generate greater impact and visibility through participation in spots with a number of promoting brands, in this case reference is made to the brand Cola Cao and its spot *Cola Cao - Music Boom*. According to a recent study launched by the American Heart Association called 'Added Sugars and Cardiovascular Disease Risk in Children' [56], the mission of the added sugars is to increase the palatability of the food and its conservation, this added sugar being an addiction to the product. Some of the conclusions we can draw about this study are:

- The increase in suffering from cardiovascular diseases due to the consumption of added sugars.
- Consumption should be limited to less than 25 grams of added sugars per day.
- Weight loss in children who modify their diet by replacing sugary drinks with sweetened or caloric ones.

The incongruity of promoting sporting activities and in turn encouraging the intake of ultra-processed foods with a zero nutritional profile is contrary to the supposed healthy impulse carried out through the ADB Plan. The practice of sports must be adequately accompanied by an optimal supply of nutrients

seeking to maximize performance, and not based on free sugars whose physiological response is the main cause of the world's largest pandemic, childhood obesity.

Through the data provided by the WHO [57] it is indicated how the rates of childhood obesity for the year 2022 will surpass those of underweight, unless certain trade policies are modified at an international level and their recommendations are respected. In addition, the former Director-General of the World Health Organization, Margaret Chan, in her opening address to the 3rd Meeting of the Commission to End Childhood Obesity [58], delivered the following words:

"Childhood obesity does not arise from lifestyle choices made by the child. It arises from environments created by society and supported by government policies. The argument that obesity is the result of personal lifestyle choices, often used to excuse governments from any responsibility to intervene, cannot apply to childhood obesity".

It is also interesting to note that the consumption of the amounts currently ingested of ultra-processed foods with low nutritional intake and high glycemic load pose a potential risk given the misinformation that exists about the harmfulness of this matter. All of this is sheltered under the mantle of the emerging obesogenic society that supposes a strong genetic influence that carries the "weapon" and, consequently, causes our diet to pull the "trigger" [59].

On the other hand, according to recent studies [53, 54, 60, 61], the intake of sugary beverages, such as the one sponsored by the Higher Sports Council, demonstrates an evident positive association between their consumption and the growing incidence of metabolic diseases, such as type 2 diabetes.

Obesity is increasing in epidemic proportions worldwide and, above all, with a higher incidence in children and adolescents. It is therefore imperative to devise strategies to curb these constantly growing rates, as this is a target with a greater vulnerability than adults, given their cognitive immaturity, which becomes more noticeable the younger their age range. This means that, being exempt from the development of their capacities, they passively decode messages [62], increasing children's preferences for those advertising brands that promote nutritionally poor products [63].

Given the above, the latent persuasive capacity of advertising can be observed how it generates certain stimuli in brain regions of cognitive control towards high-calorie and ultra-processed foods in young children both normal weight and obese [64] and that the accumulated exposure to television advertising, which is composed of 33.2% of food spots mostly insane, are positively linked to food choices of high-calorie products, energy and low level [65]. We understand that this reality, shown by numerous studies, invites reflection on the importance of early education for children when it comes to properly selecting healthy food choices, and how harmful it is to use children's vulnerability as a business strategy for children's health.

It is also observed how the results of the present study consisting of direct observation reported a perspective free of suspicions of how the advertising companies and the organizations that endorse them were not exempt from conflicts of interest, and it is that these facts are becoming increasingly evident as stated by the former WHO Director General, Margaret Chan [66]:

"Efforts to prevent non-communicable diseases run counter to the commercial interests of powerful economic agents".

Based on research published in the British Medical Journal, we are aware of another of the main advocates of the endemic world nutritional crisis, the so-called liquid caramel, a term coined by Dr. Chan, to refer to the business giant of non-alcoholic sugary beverages and which is referred to in other article [67]. By means of this article, the procedures followed by this company to generate a good brand image and the benefits that this represents for the general population are made known, deflecting any suspicion that its consumption could cause any ailment or diseases such as obesity, blaming any consequence to the inactivity of the population consuming this kind of products. Likewise, it is possible to emphasize how, by chance, many studies that do not demonstrate the causality between obesity and the consumption of sugary drinks are financed by those companies that commercialize them, originating advertising *infocination* [68]. In relation to the manifest discordance between experts in nutrition and the market offer, the gestation of these conflicts of interest is even more palpable, highlighting not only the use of financing studies as a communication strategy for these brands, but also through the overprinting in packaging or insertions of flies within the advertising piece with the logo of medical entities, whose purpose is to induce consumers to a false belief in a healthy product (Bollycao, Colacao and Puleva cases, supported by entities that prostitute their values for an economic purpose, such as SEDCA -the Spanish Society of Dietetics and Food Sciences-, SEPEAP -the Spanish Society of Paediatrics Extrahospitalaria and Primary Care-, and the AEP -the Spanish Association of Paediatrics-, respectively).

Another case that leaves the existence of this conflict of interests latent is the campaign that was recently launched by McDonald's with the endorsement of two alleged opinion leaders in the food sector for devoting themselves to it and for being one of the image of the talent show "Masterchef", Samantha Vallejo, as well as Teresa Valero, nutritionist and director of information and scientific dissemination of the Spanish Nutrition Foundation (FEN). Both leaders promote the product Happy Meal in the advertising piece "Happy outside, happy inside", contributing that this is a "super balanced and healthy food". The controversy generated after the launch of the campaign finally forced to withdraw the spot immediately and with the issuance of a statement by the agency involved ensuring that its intention with this project "was to convey the need to improve and expand the balance, variety and moderation in the supply of restaurant chains, we understand that may have generated confusion" [69].

This systematic incongruence to which we refer, based on praising products of dubious quality and origin, cost the foundation part of its reputation when it is supposed nature lies in promoting research and knowledge of the different parcels of nutrition and highlighting the role of the food industry in improving the nutrition of the people [70]. This question has been early replied by other researches [71].

Once we have carried out this exercise of transparency whose only motive is economic, we will take as a reference the recommendations of the WHO [16] to focus on the nutritional aspects of the campaign of McDonald's 'Happy outside, happy inside'. This business giant provides through its website a nutritional calculator where you can quantify the calories, macronutrients and micronutrients ingested through any of the products they offer in their establishments.

Specifically, we examined the Happy Meal menu –hamburger, potatoes, orange juice and a small ice cream– following the World Health Organization's dietary guidelines to complete a healthy and balanced diet for children.

Figure 1 shows how, through the Happy Meal menu, half the calories to be ingested by an average child or adult are reached, supported by the recommendations of this international organism, established around 2000 calories and more than doubling the consumption of added sugars daily. The daily values (DV) established by WHO define this menu as highly energetic, with a poor lipidic profile, a high surplus in sodium, a null contribution of fiber and a very low protein quality, of uncertain origin, being especially worrying the association of medical entities that supposedly endorse the habits of healthy life and that try to improve the nutrition of the Spaniards with companies whose nutritional offer is a nonsense for the Spanish society.

It is worrying how health professionals who, as prescribers and social interveners, with the aim of promoting proposals based on scientific evidence, modifying their environment and guiding them in the choice of healthy habits, not only do not support the code of self-regulation but also fail to comply with their own code of ethics and Royal Decree 1907/1996 [43] with the aim of health and by which any kind of advertising or promotion of products is prohibited.

Finally, another example of a hidden conflict of interest is the promotion of one of the categories of Bimbo products, specifically BollyCao. In this case, by the mere fact of fortifying its product with iron it receives the seal of the Spanish Society of Dietetics and Food Sciences (SEDCA) and, therefore, its endorsement, being BollyCao a clear example of ultra-processed food of high energy density and poor both in nutrients and in the quality of its ingredients.

This is why it is worrying how the vulnerability of children is harmed by an excessive eagerness to increase the capital of companies without taking into account the effects they have on this population. The failure to declare conflicts of interest is something that is emphasized but not analyzed in the PAOS Code, a code which is incapable of limiting children's exposure to advertising for unhealthy foods and beverages and which is far from examples of measures taken on other continents, such as that in figures 2, 3 and 4.

It is evident how the animated and fantastic reclamation disappears as well as measures like the black warning stamps take a strong prominence of the packaging, helping to limit and warn the parents and instructing them by means of recommendations for portions.

It is surprising, in line with the above, how, of the 177 advertising pieces collected and divided into 11 spots, only one (10.2%) complies with the children's advertising self-regulatory code (PAOS) although with two of the rules analyzed and categorized as of uncertain compliance, corresponding to the spot of the Suchard Christmas campaign "being together is extraordinary".

This assumption occurred repeatedly in all the advertising pieces, assuming one of the main limitations of the study, subjectivity. Some of the standards were complex to analyze and, in order to reduce the error, and increase the reliability of the investigation, an attempt was made to reach a consensus in those cases in which doubts arose. Once consensus was reached, the category to which it belonged was defined; otherwise uncertain compliance is resorted to. Another limitation we found is the lack of representativeness of the sample and the date on which such data was collected, given that we assume that it was a period that could have been contaminated by the context –winter period– and the boom in purchases of children's leisure products and their constant promotion in the medium analyzed. However, and despite the limitations, we believe that the object of study is representative and that the repetition of the FBA on the different television channels was of great help, having been an arduous and highly laborious task, although executed with great professionalism and enthusiasm.

## Discussion

The medium analyzed is one of the main advocates of advertising and specifically of the sector to which we refer, food and beverages aimed at children. The need to educate the present and future parents of the world, arousing in them a critical capacity in the face of the numerous stimuli to which we are subjected on a daily basis, is totemic or even vital in order to improve the horrifying rates of childhood obesity in Spain, as shown by a recent study carried out by the World Health Organization's European Childhood Obesity Surveillance Initiative [72], with rates of around 40% of the child population suffering from obesity. The tangible consequences that the dietary guidelines of large corporations and the invaluable help of public bodies provoke in infants those diseases that will accompany them in later years of their lives.

Advertising in populations deprived of the necessary judgement instigates that our diet is based on more than 30% on the acquisition of energy from ultra-processed foods [73]. Of course, blaming infants for being in their stage of primary development is not established in this article, what is requested is a lesser laxity of the institutions towards the corporations causing the epidemic of the 21st century that help us to cease this nutritional crisis that plagues us, and from which it is difficult to escape when more than 60% of beverage and food advertisements are aimed at children and almost 70% of those advertisements are for unhealthy products, all according to the report of the Organization of Consumers and Users (OCU) of 2017, "child advertising, unhealthy advertising" [74].

This Code is inserted by the Spanish Ministry of Health and Consumption in the NAOS Strategy [75] to reduce the prevalence of obesity, although leaving latent as a lax regulatory approach, is unable to limit and control the exposure of advertising that violates a multitude of rules and standards.

Perhaps, the difficulty of identifying the advertising commercial objectives and its persuasive intentions, already demonstrated [76], does not seem to be enough to take measures that allow these communication strategies to affect this public.

From this point of view, any advertising that subjects early audiences to mercantile stimuli, due to the harmful consequences that these will have for their health, could be considered deceptive.

The evidence shows a food industry that, far from having qualms about the work they perform, encourages public health entities and political officials to boost their economic growth, corrupting them and causing them to oppose public legal regulation [77, 78].

The influence of the food industries and their continuous exposure is especially notable in Spain, where the measures implemented can do nothing more than palliate their effects and promote a voluntary code of self-regulation that disregards the recommendations of international bodies such as the WHO.

In addition, most of the products advertised in Spain that openly declare that they are healthy products or with a high nutritional value do not correspond to reality, inducing to error those innocent children and ignorant parents, producing an imminent need to regulate those advertising claims used as a claim and that falsify the quality of the product, forcing to displace from our diet healthy foods for any organic process and for the prevention of diseases.

It is for this reason that the trend of the current self-regulation code, in force since 2005, is far from presenting flattering data regarding its usefulness. Likewise, it is essential to carry out a substantial improvement of this, to restrict the huge overexposure to which children are subject to unhealthy products or with null nutritional profiles and essentially to question each agent involved in this process, if the desire for profit prevails over the code of ethics of each profession and its own ethics. We cannot allow the sugar mafias [79] and ultra-processed food mafias to act as the tobacco companies did, delaying the taking of measures to alleviate this global dietary crisis [80, 81].

## Declarations

### Ethics approval and consent to participate

Not applicable

### Consent for publication

We, the authors, give our consent to the publication of the information, data, analysis and treatment of them in the text.

### Availability of data and material

All data have been extracted by the authors and are available to them.

### Competing interests

The interest of this work lies in the desire to highlight objective data that are influential in child feeding.

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### Authors' contributions

All the authors have participated in the collection of data, its analysis, the writing of the text and the drawing of conclusions.

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### **Ethical Statement**

Dear colleagues,

the article titles "Children, media and food. Food advertising aimed at children audience in Spanish TV"

The authors of the manuscripts guarantee that the work submitted to the journal is original and does not contain fragments of other authors' works or fragments of their own previously published works. In addition, the authors confirm the veracity of the data, that is, that they have not been altered to confirm the hypotheses.

The authors are committed to ensuring that the materials consulted are the most current and relevant within the field in which the research has been carried out, and that we have considered all the different currents of thought that exist.

In the authorship of the work, the authors guarantee that we have included all the people who have made a significant scientific and intellectual contribution in the conceptualization and planning of the work, while at the same time we have participated in the interpretation of the results and the writing of the article. However, we authors are organized hierarchically according to our level of responsibility and roles. All authors accept responsibility for this paper.

Besides, this work has been carried out within the framework of the R+D+i project Research Challenges, Media representation of (un)healthy body image. Development of a prevention tool for children from 5 to 8 years old. My body likes me' (CSO2014-58220-R). General Directorate of Scientific and Technical Research. Sub directorate General of Research Projects. Ministry of Economy and Competitiveness.

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## **Abbreviations**

ACES: Association of Spanish Supermarket Chains

ADB 2020 Plan: Support Plan for Grassroots Sport

AECOSAN: Spanish Agency for Consum, Food Security and Nutrition

AEP: Spanish Association of Paediatrics, respectively

AHA: American Heart Association

ANGED: National Association of Large Distribution Companies

ASEDAS: Spanish Association of Distributors, Self-Service and Supermarkets

AUTROCONTROL: Association for the Self-Regulation of Commercial Communication

DV: Daily Values

EFSA: European Food Safety Authority

FEHR: Spanish Federation of the Hotel Industry

FEHRCAREM: Association of Modern Restaurant Chains

FEN: Spanish Nutrition Foundation

FIAB: Spanish Federation of Food and Beverage Industries

FBA - Food and Beverage Advertisements

HAVIS PLAN: Plan for the Promotion of Healthy Living Habits

NAOS Strategy: Nutrition, Physical Activity and Prevention of Obesity.

OCU: Organization of Consumers and Users

OECD: Organisation for Economic Co-operation and Development

PAOS Code: Code of Advertising for Food and Beverages Directed to Minor Children

SEDCA: Spanish Society of Dietetics and Food Sciences

SEPEAP: Spanish Society of Paediatrics Extrahospitalaria and Primary Care

UK: United Kingdom

USA: United States of America

WHO: World Health Organization

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## Tables

**Table 1 - PAOS Code principles and ethical standards related to the regulation of food in advertising**

Principle	Content
Principle of legality	The advertising complies with the legislation in force
Principle of loyalty	The advertising conforms to good faith and good commercial practices.
Education and nutritional information	Bad habits and sedentary lifestyles will not be promoted; healthy habits and varied diet are promoted.
Presentation of products	Promoted products do not mislead minors, do not lie about their benefits and are realistic without exploiting their imagination with special effects.
Product information:	Product information presents characteristics in a clear way to simplify understanding.
Sales pressure:	Advertising does not exploit children's inexperience, nor does it encourage them to persuade their parents. Product's benefits must be inherent in its use.
Support and promotion through characters and programs:	Advertising does not exploit children's confidence by using charismatic characters.
Advertising Identification	Ads targeting are clearly separated from information programs.
Comparative Presentations	Ads comparisons among brands or products are clearly understandable to children.
Promotions, sweepstakes, contests, and children's clubs	No unrealistic expectations are generated about the chances of winning the announced contest/award.
Security	The ads avoid violent scenes, inappropriate use of the product or encourage children to enter strange places or interact with strangers.
Processing of personal data	These are procedures to recognize children and not be used outside the exchange of products-services.
Viral Marketing	Companies that carry out viral marketing campaigns do not capture data from third party recipients.
Protection against inappropriate content	Advertising companies do not display inappropriate content on partner websites, nor should there be any content that causes any harm, either physical or mental, to the child.

Source: Own elaboration

**Table 2 - Classification and typing of data obtained in Spain, 2018**

Characteristics of food and drink advertisements aimed at the child population	n	%
Analyzed days		
Monday to Friday	119	67.20
Saturday and Sunday	58	32.80
TV channels		
Generalists (n= 25)		6.78
Telecinco	12	7.35
Antena 3	13	
Specialized (n= 152)		42.94
Boing	76	22.03
Neox	39	20.90
Disney Channel	37	
Products types		
Food	125	70.62
Beverage	52	29.38
Product categories <sup>[1]</sup>		
Essential	0	0
Not essential	147	83.05
Miscellanea	30	16.95
Spot duration		
Less than 21.7 (sec.)	99	55.93
More than 21.7 (sec.)	78	44.07

Source: Own elaboration

**Table 3 - Compliance with the PAOS Code and its ethical standards in Spain, 2018**

Ethical standards	Compliant		Not compliant		Uncertain	
	n	%	n	%	n	%
I. Principle of legality	85	48.02	51	28.81	92	51.98
II. Principle of loyalty	177	100	-	-	-	-
III. Nutrition education and information	72	40.68	36	20.34	69	39
IV. Presentation of the products	18	10.17	65	36.72	98	55.37
V. Product information	12	6.78	74	41.8	100	56.5
VI Sales pressure	54	30.5	71	40.11	52	29.38
VII. Support and promotion through characters and programs	149	84.18	28	15.82	-	-
VIII. Identification of advertising	177	100	-	-	-	-
IX. Corporate Presentations	177	100	-	-	-	-
X. Promotions, raffles, contests and children's clubs	74	41.81	103	58.19	-	-
XI. Security	63	35.59	77	43.5	37	20.9
XII. Processing of personal data	148	83.62	23	13	29	16.38
XIII Viral Marketing	154	87	-	-	23	13
XIV Protection against third parties for inappropriate content	154	87	-	-	23	13

Source: Own elaboration

**Table 4 - Frequency of norms and ethical standards of the PAOS Code breached by FBA aimed at children in Spanish TV ads in 2018**

	Ethical rules Ethical standards	1	2	3			4					5	6					7		8	9	10					11		12					13	14		
		-	-	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31			
Spots	n (spots)																																				
1	51	X									X	X										X	X		X	X											
2	9						X	X	X	X	X			X			X				X	X															
3	6			X							X														X	X											
4	18																																				
5	30			X								X	X			X						X															
6	20						X	X		X				X		X					X	X	X		X	X											
7	9						X		X					X																							
8	23						X			X											X	X		X				X									
9	3								X					X																							
10	1						X				X							X																			
11	7						X			X	X					X																					
TOTAL	177	1	-	2	-	-	4	3	3	4	-	5	1	1	4	-	3	-	-	-	3	4	3	1	3	3	1	-	-	-	-	-	-	-	-	-	

Source: Own elaboration

Table 5 - Overall compliance with the PAOS Code of FBA aimed at children in Spain in 2018, according to FBA characteristics

Characteristics of FBA aimed at children	Global Code Compliance			
	Yes		No	
	n	%	n	%
<b>Analyzed days</b>				
Monday to Friday	18	10.2	101	57.1
Saturday and Sunday	0	0	58	32.8
<b>Tv channels</b>				
Generalists (n=25)				
Telecinco	5	2.8	7	3.9
Antena 3	7	3.9	6	3.4
Specialized (n=152)				
Boing	0	0	76	42.9
Neox	6	3.4	33	18.6
Disney Channel	0	0	37	20.9
<b>Types of products</b>				
Food	18	10.2	107	60.5
Beverage	0	0	52	29.4
<b>Product categories</b>				
Essential	0	0	0	0
Not essential	18	10.2	129	72.9
Miscellaneous	0	0	30	16.9
<b>Spot duration</b>				
Less than 7 (seg.)	0	0	99	55.9
More than 21.7 (seg.)	18	10.2	60	33.9

Source: Own elaboration

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[1]

[1] 'Essential products' are considered those These are those frequently used dietary products that help the physical and mental the child's development; 'not essential products' are those with low, poor or no-nutritional value; 'miscellaneous' are those products which, although not strictly essential for human development, have an average nutritional value and whose moderate intake is not considered harmful [51-54].

## Figures

<b>Figure 1. Nutritional value of Happy Meal</b>	
<b>925 kcal.</b>	
<b>33.5 g</b> <b>Fats (52% DV)</b> Saturated fats: 11.5 g (172% DV)	
<b>125 grams</b> <b>Carbohydrates (45,5% DV)</b> Sugars: 55.5 g. (200% DV)	
<b>25,7 g</b> <b>Proteins (34% DV)</b>	
<b>3.14</b> <b>Salt (62.8% DV)</b>	

Source: Own elaboration

Figure 1

Nutritional value of Happy Meal

<b>Hechos Nutricionales</b>		
Tamaño de la Porción		
	1 pieza	
	por porción	% IR*
<b>Energía</b>	<b>933 kJ</b> 223 kcal	<b>11%</b>
<b>Grasa</b>	<b>8,4g</b>	<b>12%</b>
<b>Grasa Saturada</b>	<b>1,7g</b>	<b>8%</b>
<b>Carbohidrato</b>	<b>31,5g</b>	<b>12%</b>
<b>Azúcar</b>	<b>18,3g</b>	<b>20%</b>
<b>Fibra</b>	<b>1,3g</b>	
<b>Proteína</b>	<b>4,8g</b>	<b>10%</b>
<b>Sodio</b>	<b>0,14mg</b>	

\* Ingesta de referencia de un adulto medio (8400 kJ / 2000 kcal)

**Producto de bollería. INGREDIENTES:** Harina de trigo, agua, azúcar, grasas y aceites vegetales (palma, girasol), levadura, jarabe de glucosa y fructosa, cacao desgrasado en polvo (1,5%), pasta de avellana, gluten de trigo, emulgentes (lecitina de girasol, E 471 (trigo), E 475, E 481 (trigo)), proteína de la leche, suero de leche en polvo, sal, conservadores (E 200, E 202, E 282), aromas, estabilizantes (E 412 (trigo), E 401, corrector de acidez (E 334), sales minerales (hierro) (trigo) y agente de tratamiento de la harina (E 300) (trigo). Puede contener trazas de huevo y sésamo.



Source: [Bollycao.es](http://Bollycao.es)

Figure 2

Figures 2, 3 y 4. Bollycao nutritional values, ingredients and packaging



Source: [Nestle.com](http://Nestle.com)

Figure 3

Figures 5, 6 y 7. Chocapic packaging in Spain (left), Chocapic packaging in Chile and nutritional labelling measures (down)