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Abstract

Food advertising targeted at children is associated with the development of unhealthy eating habits and childhood obesity. In Spain, where 1 in every 3 children suffers from overweight, a voluntary regulation mechanism has been adopted to control such advertising, despite evidence of its ineffectiveness. This study's stated objective was to evaluate the grounds for implementing a policy that would ban the advertising of energy-dense, nutrient-poor (EDNP) food and beverages targeted at children in Spain, incorporating an ethical perspective in the analysis. Using a bibliographic search of various databases, we reviewed the evidence for answering the 7 questions posed by Walton et al's ethical evaluation framework, drawn up on the basis of the Nuffield Council on Bioethics Stewardship model. The results show that the proposed intervention is cost-effective, minimally intrusive, promotes healthy environments, acts on a vulnerable population, helps children lead healthy lifestyles, reduces social health inequalities, increases parents' individual freedom of choice and enjoys the support of scientists, health professionals and consumers alike. Accordingly, we feel that the time has come for food advertising directed to children in Spain to be statutorily regulated, by banning the promotion of EDNP products.

Key words: Ethics, food advertising, obesity, children, self-regulation, statutory regulation.

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ETHICAL EVALUATION OF A PROPOSED STATUTORY REGULATION OF FOOD ADVERTISING TARGETED AT MINORS IN SPAIN

INTRODUCTION

Childhood obesity is associated with emotional, psychosocial and musculoskeletal disorders, oxidative stress and chronic inflammation processes, increased risk of early appearance of liver disease, type 2 diabetes and other cardiovascular risk factors, such as hypertension and dyslipidaemia. Furthermore, the persistence of obesity in adult life is contributing, to an important degree, to the current epidemic of non-communicable chronic diseases (cardiovascular diseases, cancer, depression, arthrosis), with the ensuing reduction in life expectancy (Ng et al., 2013).

According to the ALADINO study (Pérez-Farinós et al., 2013), conducted in 2011 on Spanish children aged 6 to 9 years, using International Obesity Task Force criteria (Cole et al., 2000), 24.2% presented with overweight and 11.3% with obesity. Although some studies indicate that the prevalence of childhood obesity has stabilised in recent years in Spain (Sánchez-Cruz et al, 2013), the figures continue to be very high (Agencia Española de Seguridad Alimentaria y Nutrición, 2013), rendering it essential to stay on the alert and take an in-depth look at preventive strategies.

Through its influence on the consumption of energy-dense, nutrient-poor (EDNP) products, intensive food and beverage advertising targeted at children can be assumed to be making a major contribution to the current epidemic of childhood obesity (Zimmerman et al., 2010; Kelly et al., 2015; Cairns et al., 2013). Consumer groups as well as nutrition and public health experts have therefore highlighted the need to regulate food advertising directed to children, and in 2007 agreed on the so-called Sydney Principles that should govern such regulation (Swinburn et al., 2008). The World Health Organisation (WHO) endorsed these principles in 2010, urging governments to implement policies aimed at reducing the impact on children of the promotion of food and beverage products high in

fat, sugar and/or salt (HFSS), through regulation -preferably of a legal or statutory nature- of the power and frequency of exposure to this type of advertising (World Health Organization, 2010). In 2012, the WHO issued a document to guide States, both in the development, implementation and monitoring of such policies, and in evaluation and research in this field (World Health Organization, 2012).

Most countries that have regulated food advertising targeted at children have opted for self- or co-regulation mechanisms, focusing particularly on television advertising (Mathews, 2007; Hawkes, 2007). Even so, there are countries such as Quebec, Norway and Sweden, which have opted for statutory regulations and banned advertising directed to children aged 12-13 years, or the United Kingdom, which has prohibited HFSS-food and -beverage advertisements on channels targeted at the child population, and on the remaining channels during the broadcasting of programmes of special interest to children. HFSS products are identified by reference to a purpose-designed, nutritional profile drawn up by the Food Standards Agency (Food Standards Agency, 2011), according to which food and beverages are divided into healthy and unhealthy (HFSS).

In recent years, many studies have highlighted the ineffectiveness of self- or co-regulation systems when it comes to reducing children's exposure to HFSS-food advertising (Hawkes et al., 2011 a; Galbraith-Emami et al., 2013). This has led experts and institutions to call, with even greater insistence, for the implementation of statutory rules that regulate food advertising targeted at children (Raine et al., 2013; European Commission, 2014). In Spain, however, which has television time slots that afford enhanced protection for children (Boletín Oficial del Estado, 2010), the 2011 Food Safety & Nutrition Act (Ley de Seguridad Alimentaria y Nutrición) (Boletín Oficial del Estado, 2011) lays down that public authorities are to foster the development of voluntary regulation systems and that the competent authorities are to encourage the conclusion of co-regulation agreements with authorised economic operators and providers of audiovisual commercial communication services, in order to establish codes of conduct governing commercial food and beverage communications directed to children under the age of 15.

Within the framework of the Strategy for Nutrition, Physical Activity and Prevention of Obesity (Estrategia para la Nutrición, Actividad Física y Prevención de la Obesidad/NAOS) (Agencia Española de Seguridad Alimentaria, 2005 a) in 2005 Spain passed the so-called PAOS code of self-regulation of food advertising targeted at children aged under 12 years (Código de Corregulación de la Publicidad de Alimentos y Bebidas Dirigida a Menores, Prevención de la Obesidad y Salud) (Agencia Española de Seguridad Alimentaria, 2005 b). This code lays down the ethical principles for the drawing-up, execution and dissemination of advertising messages of the businesses that voluntarily endorse it, and establishes the mechanisms for control and application of the rules through the medium of Autocontrol (association of the leading advertising agencies, news and advertising media tasked with managing the Spanish self-regulatory commercial communication system). However, the PAOS code regulates neither the nutritional value nor the broadcasting frequency of the products advertised. The fact that all of Spain's national and regional television channels pledged commitment to the PAOS code in 2009 means that its rules are applicable to all television food and beverage advertisements targeted at children, regardless of whether or not the manufacturer of the product in question has formally subscribed to it. In 2012, in response to the 2011 Food Safety and Nutrition Act, the PAOS code was broadened to include Internet advertising directed to children aged under 15 years (Ministerio de Sanidad, Servicios Sociales e Igualdad, 2012; Royo-Bordonada, 2014). Nevertheless, the PAOS code is not applied by some of the television programmes having the largest child audiences (Busquet et al., 2009), due to these being targeted at the general public or being broadcast at prime time. In addition, a study which assessed the PAOS code's application has highlighted its low compliance rating and inability to reduce children's exposure to the advertising of EDNP products (Romero-Fernández et al., 2010; Romero-Fernández et al., 2013).

In view of the above, it would seem reasonable to propose that statutory regulations be implemented in Spain to protect children from the pernicious effects of exposure to EDNP food and beverage advertising. Nevertheless, there are those who oppose this type of regulation on the grounds that advertising is not clearly linked to obesity (Beales et al., 2013) and is more likely to be attributable to the problem of sedentarism and physical inactivity (Cox et al., 2012; McClellan, 2003). Along these same lines, there are authors who contend

that the energy balance model does not adequately explain the current epidemic of childhood obesity (Martínez-Vizcaíno et al., 2013; Bleich et al., 2011). Even so, nobody challenges the scientific evidence of the pernicious effect of food advertising on children's eating habits. Others reject regulation, claiming that it would amount to a restriction on market freedom and individual freedom of choice (ten Have et al., 2011; Katz, 2011). There is a school of thought which argues that health policies should be information-, education- and welfare-oriented but should never be prohibitive or coercive (Hense, 2002). Accordingly, the aim of this study was to evaluate the possible justification for implementing a statutory regulation policy in Spain which would prohibit EDNP food and beverage advertising targeted at children, incorporating an ethical perspective into the analysis. To this end, we used the ethical evaluation framework developed by Mat Walton et al. on the basis of the Nuffield Council Bioethics Stewardship model, which poses 7 guideline questions to evaluate public health policies, incorporating ethical considerations in the review of the evidence.

MATERIAL AND METHODS

Based on the Nuffield Council Bioethics Stewardship model, Mat Walton et al. have developed an ethical framework for evaluating public health policy evidence, which assesses to what extent such policies affect the physical health, psychosocial wellbeing, equality, informed choice, social and cultural values, privacy, responsibilities and freedom of individuals (ten Have et al., 2013). Through the application of the following seven questions, which constitute the guidelines for the search and review of scientific evidence, the ethical framework analyses the model's principles of substance (questions 1-3) and procedure (questions 4-7):

- 1) Will the action reduce the risks of ill health?
 - a) Is the issue sufficiently important to warrant the proposed action?
 - b) What is the quality and certainty of the evidence for the cause?
 - c) Is there evidence that shows the effectiveness of the proposed action?
 - d) Is this action the least intrusive and costly while still achieving the aims?
- 2) Will the action create environmental conditions that sustain good health?
- 3) Will the action affect children and other vulnerable people?
- 4) Will the action do more than provide information and help people overcome addictions and live healthier lives?
- 5) Are there inequalities in access to health? If yes, will the action potentially reduce inequalities?
- 6) Will the action attempt to coerce adults to lead healthy lives and reduce individual freedom of choice?
- 7) Do the actions require a democratic decision-making process and/or public consultation? If yes, are any viewpoints known to date? (Walton et al., 2012)

A classic review of the scientific evidence might undervalue certain relevant aspects from an ethical perspective, such as the necessary attention to equity, the protection of vulnerable groups, social and cultural singularities, the importance of environmental conditions, and the values relating to the procedure referred to in questions 4 to 7 of the ethical framework. To facilitate the incorporation of these ethical evaluation-related

elements, the review was conducted without strict adherence to the scientific evidence-grading criteria developed for evaluation of the effectiveness of interventions in the clinical sphere, by drawing up a narrative review of the studies included (Mays et al., 2005).

Search strategy

To answer the 7 questions of Walton's ethical framework, we conducted a bibliographic search in the following databases, i.e., PubMed, Web of Science, Scopus, Cochrane Plus Library and Google Scholar, using the following descriptors and key words in the title or abstract:

Group 1: advertising/legislation and jurisprudence, food publicity, product publicity control, food marketing, beverage marketing, food advertising, marketing, television, mass media, social media, social marketing.

Group 2: nutrition policy, regulation, initiatives, policy making, government programmes, public policy, intervention, policy strategies, state policies, regulatory developments, regulating food marketing, legislation, food, marketing/legislation and jurisprudence.

Group 3: child nutrition science, child nutritional physiological phenomena, child nutrition, food and beverages, food industry, food habits, nutritional value, fast food, unhealthy food, unhealthy habits, unhealthy behaviour, high-energy food, nutrient-poor food.

Group 4: paediatric obesity, overweight, obesity/prevention and control.

Group 5: child and adolescent.

The search was limited to papers published in English and Spanish, from 1 January 2010 to 1 June 2015. Alerts were created in the databases to maintain the search up to date. Some papers were discarded after reading the title or abstract for not being applicable to our study. Others were discarded due to the fact that their findings were included in review papers included in the study. Figure 1 shows the number of papers yielded by this search strategy. The bibliography of the papers retrieved was reviewed for the purpose of identifying new relevant publications.

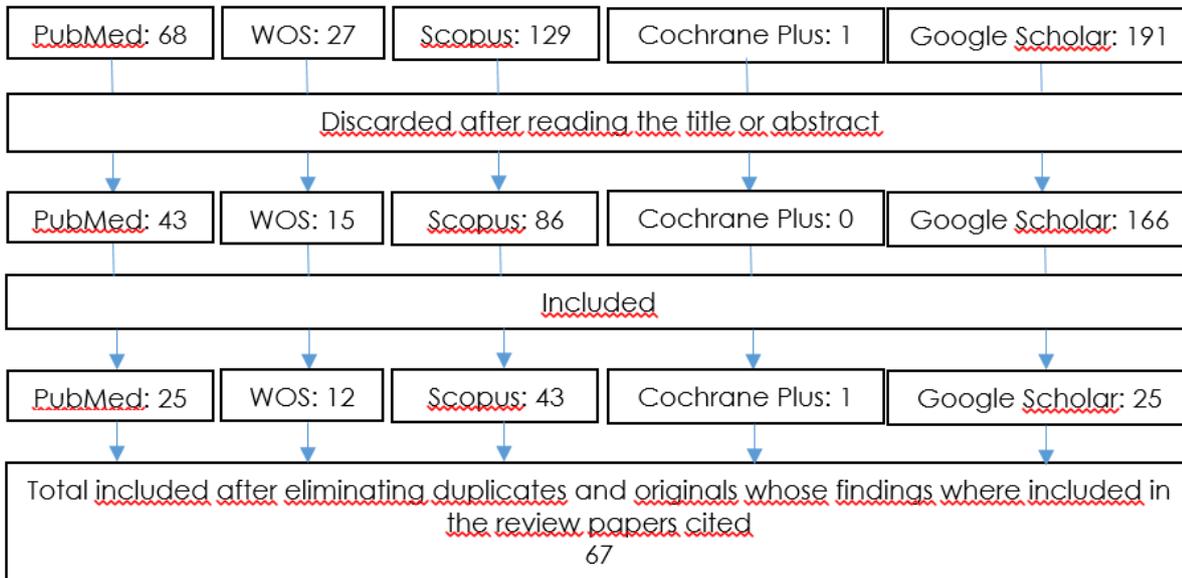


Figure 1: Bibliographic search strategy and results.

RESULTS

1) Will the action reduce the risks of ill health?

a) Is the issue sufficiently important to warrant the proposed action?

After two decades of sharply rising prevalence of childhood obesity in Spain, the series of national health surveys indicates a trend towards stabilisation in recent years, except in adolescents from the most underprivileged social classes (Miqueleiz et al., 2014). Notwithstanding this, the most recent, nationally representative studies consistently show that childhood overweight figures remain very high, affecting around a third of Spanish children (Valdés-Pizarro et al., 2012; Sánchez-Cruz et al., 2013; Pérez-Farinós et al., 2013).

In 2012, the food and beverage sector allocated 2,558.4 million euros to advertising, investing more than any other sector in this regard, with 15.1% of the total amount (Asociación de Marketing de España, 2013): indeed, 39% of all advertisements broadcast by television pertain to food products, and 56% of those broadcast during children's viewing

time include no reference to the nutritional properties of the product advertised (Fernández-Gómez et al., 2014).

Food advertising in Spain is mostly devoted to HFSS-food and -beverage promotion (Royo-Bordonada et al., 2015; Kelly et al., 2010). In a 2008 study into television advertising directed to children in Spain, 60% of the food advertisements were for HFSS products, with this proportion increasing to 71% during the time slot designated for enhanced protection (Romero-Fernández et al., 2013). Broken down by category, 100% of the breakfast cereals and 80% of the beverages were HFSS. Another more recent study, the most comprehensive ever conducted in Spain into food advertising targeted at children, analysed the advertisements broadcast on the 5 television channels enjoying most popularity among children during a period of 7 days; 23.7% of these advertisements were for food products, with a mean of 5.7 advertisements per hour of broadcast time, and 64% were for HFSS products, rising to 69% during the time slot of enhanced protection for children (Organización Española de Consumidores y Usuarios, 2014).

b) What is the quality and certainty of the evidence for the cause?

There is plentiful, solid evidence indicating the direct relationship between the time that children spend watching television and the tendency to buy and consume HFSS products, to the detriment of other healthier ones, such as fruit and vegetables, and to develop obesity (Boyland et al., 2013; Boyland et al., 2011; Scully et al., 2012; Costa et al., 2012; Cox et al., 2013; Jordan, 2010; Pettigrew et al., 2013; Falbe et al., 2014; Andreyeva et al., 2011; Boulos et al., 2012; Monasta et al., 2010; Carson et al., 2012; Cairns et al., 2013) . This relationship is consistently observed from the age of 2 years onwards (Ford et al., 2012).

A number of mechanisms have been described whereby advertising can be assumed to exert its pernicious influence on children's eating habits. Firstly, through an immediate inducer effect on viewers to consume food and beverages that are accessible while watching television, whether or not these are the products being advertised at the time and regardless of the sensation of hunger (Harris et al., 2009 b). The use of attractive models eating snacks between meals, and the association between positive emotions and this

behaviour would partly go to account for the unconscious consumption induced by advertising. Secondly, advertising influences food preferences, buying habits (including requests to parents), and children's food consumption patterns (World Health Organization, 2013; Dovey et al., 2011). Furthermore, this influence is long-lasting, with it having been observed that time of exposure to television food advertising is a predictor of eating habits five years later in an adolescent and young population (Barr Anderson et al., 2009). Despite the fact that television and parents influence children's food preferences separately (Harris et al., 2009 a), the influence that parents can bring to bear is unable to counteract the harmful effect of advertising because children continue to choose the products advertised more frequently, even when they are advised by their parents to choose healthier alternatives (Ferguson et al., 2011). Thirdly, parents tend to choose EDNP products for their children more often in cases where nutritional marketing or promotion by famous sports personalities is used, since they mistakenly perceive these products as being healthier or more nutritional than they really are (Boulos et al., 2012; Dixon et al., 2011).

The first evidence that pointed to a possible direct relationship between television food advertising and childhood obesity (Chandon et al., 2010) came from ecological, population-based correlation studies, such as those undertaken in the USA, Australia and several European countries (Lobstein et al., 2005). Some longitudinal studies have reported a positive association between children's time of exposure to television commercial content and body mass index (Andreyeva et al, 2011; Zimmerman et al., 2010). In addition, similar clinical trials which used interventions to limit children's television viewing time, achieved significant reductions in obesity figures associated, not with changes in physical activity, but rather with reduction in calorie intake (Robinson, 1999; Epstein et al., 2008). Based on this type of evidence, it has been estimated that television advertising might account for 16% to 40% of childhood obesity (Goris et al., 2010; Veerman et al., 2009).

c) Is there evidence that shows the effectiveness of the proposed action?

Whereas self-regulation has shown itself ineffective when it comes to reducing children's exposure to food advertising in Spain (Romero-Fernández et al., 2010; Romero-Fernández et al., 2013), one study conducted in the United Kingdom before and after the application of

the 2007 statutory provisions which prohibited HFSS-food advertising on children's programmes, found that children aged 4 to 15 years saw 37% fewer HFSS-food and -beverage advertisements (Rayner et al., 2005) in 2009 than in 2005, and detected a 41% decrease in spending on child-themed unhealthy food and drink advertising from 2003 to 2007 (Department of Health, UK Government, 2008).

A study undertaken in Quebec in 1990, after the banning in 1980 of advertising targeted at children, observed that English-speaking children in Montreal reported having more HFSS products, such as breakfast cereals, available at home than did their French-speaking counterparts, a difference related to exposure to food advertising by American cross-border channels (Goldberg, 1990). Another more recent study found that the policy of banning advertising directed to children in Quebec has been associated with a reduction of 88 million dollars per year in fast-food consumption. Moreover, the consumption of HFSS foods declined among children in Quebec, where the prevalence of childhood obesity is one of the lowest in Canada, despite the fact that in this area children lead more sedentary lifestyles than in other areas of Canada (Dhar et al., 2011).

Using mathematical models, some authors have estimated that a statutory ban on fast-food advertising would reduce the prevalence of obesity by 14% to 18% (Chou et al., 2008; Veerman et al., 2009). However, the complexity of tackling obesity and its multifactorial nature, which cannot always be comprehensively addressed in these types of studies, means that their conclusions should be approached with caution.

d) Is this action the least intrusive and costly while still achieving the aims?

Numerous studies show that less invasive initiatives, such as self-regulatory codes, are not effective in terms of reducing child-population exposure to HFSS-product advertising or the latter's influence on children's eating preferences (Hawkes, 2005; Bhatnagar et al., 2014; Craig et al., 2011; Galbraith-Emami et al., 2013; Ronit et al., 2014), not even where advertisers are required to insert messages about or images of healthy meals into these types of advertisements (Boyland et al., 2015; Grow et al., 2014). In Spain, the PAOS code, governing food advertising directed to children, limits neither the broadcasting frequency

nor the nutritional quality of the products advertised. Furthermore, the degree of non-compliance shown by companies committed to observing the code was 49.3%, very similar to the figure of 50.8% of companies not committed to observing it (Romero-Fernández et al., 2010).

In Germany, not only did the percentage of HFSS-food advertisements targeted at children fail to decline, but it in fact rose from 88.2% to 98.2% after the entry into force of a self-regulatory code (Effertz et al., 2012). In Canada too, children's exposure to television advertising of HFSS foods was likewise observed to increase after the introduction of a self-regulatory code.

Eliminating EDNP-food-product advertising targeted at children has been shown to be one of the most cost-effective measures to prevent obesity. In a comparative analysis of possible interventions to prevent obesity in Australia, this measure was one of the dominant ones, where the estimated health benefits were accompanied by a net reduction in costs to society (Potvin et al., 2014).

2) Will the action create environmental conditions that sustain good health?

In line with the evidence cited above, statutory regulation of food advertising directed to children will create suitable environmental conditions for achieving a good state of health in Spain, since such advertising is mostly of HFSS products and exerts a strong influence on children's food-consumption preferences and guidelines. Nonetheless, a recent study shows that exposure of children to television advertisements of HFSS products remained stable in the UK, despite good adherence to restrictions on this type of advertising, as a consequence of an increase in advertising pressure during programmes and time slots not subject to regulation (Adams et al., 2012). Hence, to create the most favourable environmental conditions for a good health status, regulation should not only envisage the use of tools, such as nutritional profiles (Department of Health. United Kingdom Government, 2011), to discriminate between healthier and less healthy products. It should also envisage a wider definition of advertising targeted at children -not merely in relative

audience terms as until now but in absolute audience terms- for programmes broadcast on generalist channels having a large child audience (Harris et al., 2013).

3) Will the action affect children and other vulnerable people?

Children show a special sensitivity or relative immaturity when it comes to taking decisions, something that makes them an easily influenced and highly vulnerable population group vis-à-vis advertising (Pomeranz, 2010). Until the age of 5-6, children are unable to identify advertising on television, until the age of 7-8 they are unable to discern the commercial aim of such advertising, and at the age of 12 the majority of them are still unaware of its persuasive intent (Carter et al., 2011). The ability to identify Internet advertising (i.e., to distinguish what is from what is not advertising) is acquired much later. Children aged 10-12 years continue to experience difficulty in recognising something like 1 out of every 4 Internet advertisements, whereas adults can easily identify these (Blades et al., 2013). Furthermore, eating habits are acquired in childhood and, once formed, are very resistant to change (Birch et al., 1998).

Fully aware of the above, food and advertising industries devote enormous financial resources to food advertising targeted at children (Bakir et al., 2010), using persuasive marketing techniques purpose-designed for the child audience (Aschemann-Witzel, et al. 2012; Booth, 2014), especially prizes, an emotional appeal to taste and fun, and the use of personalities of special interest to children, such as cartoon characters, actors, presenters and elite sportsmen and women (Jenkin et al., 2014; Castonguay et al., 2013; Bragg et al., 2013). It is obvious, therefore, that the introduction of statutory regulations to limit HFSS-food advertising and the use of persuasive marketing techniques targeted at children will benefit an especially vulnerable population of this nature.

4) Will the action do more than provide information and help people overcome addictions and live healthier lives?

There are physiological and epigenetic factors which determine children's natural preference for EDNP food products and sometimes influence the development of addictive

behaviours with respect to these types of products (Luca et al., 2010). Many studies have shown the properties of sugar for generating habituation or dependence in human beings (Lustig et al., 2012). Sugar-rich products act on the brain through various mechanisms that affect the hormones, ghrelin and leptin, regulators of appetite, satiety and body weight, and the dopaminergic reward circuit, impelling the individual to increasingly higher consumption of this nutrient. Through its influence on food preferences (Boyland et al., 2011), HFSS-food advertising might boost this type of dependent behaviour in especially predisposed children. It thus follows that regulation of food advertising directed to children will foreseeably contribute to the prevention of addictive eating behaviours.

5) Are there inequalities in access to health? If yes, will the action potentially reduce inequalities?

In Spain, as in other countries in the region, children belonging to the underprivileged social classes display worse eating habits and higher overweight and obesity figures (Valdés-Pizarro et al., 2012; Bibeau et al., 2012). In the European Healthy Lifestyle in Europe by Nutrition in Adolescence (HELENA) study, which included four European countries (Belgium, Greece, Hungary and Spain), girls whose mothers had a low educational level had a 3-fold higher risk of consuming EDNP food and beverages than those with a high educational level, and adolescents having a low socioeconomic level had a higher risk of consuming EDNP food and beverages while watching television than did those having a high socioeconomic level (Rey-López et al., 2011). In the USA, Afro-American children have been observed to be more exposed than Caucasians to HFSS-food and -beverage advertising. Furthermore, perception of the advertising received varies across different ethnic groups (Baskin et al., 2013).

Regulation of advertising is a population-based intervention that affects all social groups equally, and so those who will foreseeably benefit most from it will be the most underprivileged groups, i.e., those most affected by food advertising and its consequences, with the measure thus potentially serving to reduce health inequalities.

6) Will the action attempt to coerce adults to lead healthy lives and reduce individual freedom of choice?

Application of a statutory regulation to control the advertising of unhealthy foods targeted at children neither forces adults to ensure that their children lead healthy lifestyles nor reduces their freedom of choice. To the contrary, food advertising directed to children is associated with reiterated requests to their parents to buy EDNP products, with it having been shown that this pressure influences parents' decisions when it comes to buying certain HFSS products, against their better judgement (Marshall et al., 2007; Kaur et al., 2006). Accordingly, the proposed regulations would increase, rather than reduce, parents' individual freedom of choice. Furthermore, with certain measures, such as eliminating the promotion of EDNP products by elite sports personalities and athletes, and/or using nutritional marketing techniques, would also avoid the pernicious influence exerted by these types of advertising techniques on the adult population, undermining their ability to choose, freely and responsibly, whatever they consider best for their children (Dixon et al., 2011). Accordingly, one could argue that the proposed intervention will also enhance parents' freedom of choice by freeing them of direct negative influences.

7) Do the actions require a democratic decision-making process and/or public consultation? If yes, are any viewpoints known to date?

Before introducing a statutory regulation to control food advertising targeted at children, it would be advisable, as with many other public health policies, to have the support of the majority of groups affected by the measure and of society as a whole (Chung et al., 2012). If parents are informed about the effects that EDNP-product advertising has on their children, instead of excluding them from the debate as has often been the case, we would probably help them mobilise to form an effective force which would lobby for strategies designed to limit children's exposure to this type of advertising (Dietz, 2013). It would likewise be advisable to sound out consumer organisations, scientists and health professionals for their opinions about public health policies for regulating food advertising directed to children (Dorfman et al., 2012; Dutton et al., 2012).

In Spain, the proposed intervention has the support and backing of public health professionals, scientific societies, groups of experts such as the Spanish interdisciplinary cardiovascular prevention committee (Royo-Bordonada et al., 2011), and the country's main consumer organisations (Ocu-salud, 2014).

DISCUSSION

The results reported above show that application of statutory regulations in Spain to ban EDNP-food and -beverage advertising targeted at children would be justified on the following grounds:

- Childhood obesity, associated with unhealthy eating habits, is an important public health problem in Spain (1a).
- There is solid scientific evidence of the causal relationship between exposure to HFSS-product advertising and the development of unhealthy eating habits, and to a lesser extent, obesity (1b).
- There is scientific evidence of the effectiveness of the proposed measure (1c).
- The intervention:
 - o is minimally invasive and is among the most cost-effective (1d);
 - o will help create a healthy environment (2);
 - o will target a vulnerable population, such as children, and particularly those in the lowest socioeconomic strata (3);
 - o will help children lead healthier lifestyles (4);
 - o will serve to reduce social health inequalities (5);
 - o is not a coercive measure at an individual level, nor does it decrease the availability of any product, so that it will neither force adults to ensure that their children lead healthy lifestyles nor reduce their freedom of choice. Indeed it will increase their freedom of choice by freeing them of negative influences beyond their control (6);
 - and,
 - o enjoys the support of important groups of health professionals and Spanish consumer organisations (7).

Notwithstanding the above, the food and advertising industries continue to oppose this type of regulation strenuously, something that should come as no surprise, given that their priority goal of maximising economic benefits is directly linked to increasing the consumption of the products advertised, most of which are EDNP (Ludwig et al., 2008). The arguments used to reject regulation are of two types (Katz, 2011). On the one hand, manufacturers endeavour to question the evidence of the pernicious effects of food advertising, biasing scientific findings, and shift the focus towards other risk factors of childhood obesity, such as sedentarism, thereby diverting the attention of scientists and

health professionals from the negative health impact of their products (Beales et al., 2013; Bes-Rastrollo et al., 2013; Varela-Moreiras et al., 2013). Furthermore, they appeal to individual freedom, claiming that what one eats or sees on television comes within the scope of personal freedom of choice, and that legal restrictions in this regard amount to an exercise of the sort of unjustifiable paternalism that is typical of the nanny state (Hawkes, 2003). In the case of advertising directed to children, the freedom of parents would thus be at stake, with parents being seen, from this angle, as the persons who are exclusively responsible for the eating habits of their children. Nevertheless, the scientific evidence does not support view that eating habits constitute a free and independent choice on the part of individuals. Indeed the opposite is true, in that individuals' are subject to the influence of powerful environmental factors beyond their control, related to mass production and distribution, and the wide availability and intensive advertising of HFSS products, which seriously compromise the physiological and psychological mechanisms that regulate satiety and appetite (Hill et al., 2003). These effects are particularly notable in children, thanks to the powerful influence of various marketing techniques used in the promotion of food and drink targeted at this population sector during a crucial period of personality development and acquisition of habits (Booth, 2014; Jenkin et al., 2014). Hence, individual responsibility for personal eating behaviours cannot be divorced from collective responsibility. This in turn entails the need to create environmental conditions that would allow individual responsibility to be exercised, where a choice could be made free of negative influences and barriers to the adoption of healthy options, which ought to be easily accessible by all persons, regardless of their social class or condition (Brownell et al., 2010; Puyol, 2014).

Insofar as the proposed measure is a law which affects children, it should also be borne in mind that the results of cognitive research show that children under the age of 12 have difficulty in identifying advertising and being aware of its commercial objectives and persuasive intent (Graff et al., 2012). Up to this age, children lack the necessary cognitive maturity to be sceptical about commercial messages and the claims that these contain, which they judge to be true, fair, accurate and balanced, when in reality this is not always the case. Consequently, all advertising targeted at children under the 12 can be considered misleading per se. From this standpoint, it could be argued that the proposed regulation is not only legitimate but also constitutes a measure which the authorities are

duty-bound to take, in order to protect children, an especially vulnerable segment of the population, from undue influence that affects their eating habits, with pernicious consequences for their present and future health.

Confronted by the strength of the evidence, the food industry has no qualms about putting pressure on public health officials and policy-makers to oppose public statutory regulation (Harris et al., 2009 c; Moodie et al., 2013); and with notable success to date, seeing as the application of self-regulatory systems constitutes the dominant trend at an international level, though in recent years a growing number of countries are leaning towards statutory regulation systems (Hawkes et al., 2011 b). The undue influence of food industries and advertising is especially noteworthy in Spain, where the health authorities which implemented the NAOS strategy endorsed some of the arguments commonly put forward by these private corporations to justify and promote self-regulation of food advertising targeted at children in 2005 (Neira et al., 2005; Neira et al., 2006). Seven years later, despite abundant evidence of the lack of effectiveness of self-regulation and appeals by the WHO and groups of experts and consumers, both national and international, in favour of statutory regulation, the Spanish health authorities have yet again committed themselves to voluntary regulation. The new PAOS code, in breach of the WHO recommendations, continues to ignore the frequency of exposure to or nutritional quality of the products advertised, so that it is powerless to reduce children's exposure to EDNP food and beverages, even in the hypothetical case of a high degree of adherence and compliance. Furthermore, on restricting its application in audiovisual and printed media to children under the age of 12, it contravenes the provisions of the Food Safety & Nutrition Act which lays down that advertising directed to children up to 15 years of age should be regulated, by permitting, for example, that television food advertising targeted at children over the age of 12 may make use of well-known public celebrities who enjoy a high degree of popularity among the child audience (Royo-Bordonada, 2013).

The Stewardship model has been questioned as a reference for ethical analysis in public health, on the grounds that it overvalues the principle of autonomy, which occupies a central position, and is based on a simplistic view of John Stuart Mill's harm principle

(Dawson et al., 2008). The ethical perspective in public health calls for a broader vision of the harm principle that takes into consideration the environmental conditions for a healthy life and, above all, should be based on a series of values, such as the common good, social justice, solidarity and trust, which capture the essence of public health (Angus, 2011). Nonetheless, the ethical framework based on the Stewardship model takes into account the environmental conditions for a healthy life (questions 2 and 4), accords great importance to vulnerable populations, such as children (question 3), addresses inequalities (question 5) and closely examines actions to foster the trust of the population targeted by the public health measures (question 7). Accordingly, we feel it to be a useful tool -at least as a point of departure- for addressing some of the ethical aspects of the proposed measure from a public health perspective. At all events, the application of alternative ethical frameworks for public health (Lee, 2012), which considered a wider range of values pertaining to public health, would enable our analysis to be complemented and reinforced.

In view of our results, we feel that the time has come for food advertising targeted at children in Spain to be statutorily regulated. The aim of this type of regulation is to reduce the pernicious impact of food advertising on children's health. To achieve this, such regulation should not only take into account the power of advertising (marketing techniques), as has been the case until now, but also, and more importantly, prevent children from being exposed to the advertising of EDNP food and beverages characterised by being high in fat, sugar and/or salt. In order to be effective, the proposed measure should be capable of identifying products of poor nutritional quality, using suitably designed nutritional profiles for the purpose, and should cover all the advertising channels, with special emphasis laid on Internet and television as the dominant media. Furthermore, there should be a total ban on all media targeting the child public. In the case of media targeted mostly at an adult public, such as generalist television channels, the ban should affect any EDNP food product that can be regarded as being directed to children, by reason of the product itself, the marketing techniques used, or being broadcast during a children's programme, regardless of the time slot and whether or not the majority of the viewing audience is made up of children at that particular point. There is a certain degree of international consensus as to the fact that this type of regulation ought to protect young

people aged under 16 or 18 years of age. Lastly, it should be borne in mind that there are solid arguments that would justify the banning of all types of advertising directed to children under the age of 12.

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