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More than a Nuisance: Implications of Food Marketing for Public Health Efforts to Curb Childhood Obesity

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Abstract

Fifteen years ago, public health experts urged industry, governments, and advocates to take action to dramatically improve the unhealthy food-marketing environment surrounding children in order to address the global childhood obesity crisis. Since then, research has confirmed that food marketing to children has far-reaching negative effects on their diets and health, takes advantage of adolescent vulnerabilities, and contributes to health disparities. In addition, digital marketing has profoundly changed young people's engagement with brands. Moreover, reliance on industry self-regulation as a solution has proven ineffective. Government-led policies have been more successful, but they remain limited in scope and challenging to adopt and implement. New approaches are necessary to increase public and policy maker awareness that food marketing is more than a nuisance, that it threatens the long-term health of children and adolescents worldwide, and that meaningful governmental action is urgently required to curtail industry's negative impact on young people's well-being.

INTRODUCTION

Marketing: all activities that create, communicate, and deliver products to consumers, including advertising, product development, market research, packaging, and retail placement

Advertising: a form of paid communication that uses media (including television, print, radio, digital forms) to promote a company's products

Since the early 2000s, public health experts have identified unhealthy food marketing as a significant contributor to alarming increases in rates of childhood obesity worldwide (44). Early comprehensive reviews of the literature concluded that child-directed food advertising almost exclusively promoted energy-dense nutrient-poor foods and negatively affected children's food preferences, requests to parents, food choices, and consumption (16, 49). These reviews identified important research gaps and highlighted the urgent need for regulations to substantially reduce the onslaught of unhealthy food and beverage marketing aimed at children.

In recent years, researchers have made enormous progress in documenting the extent and impact of food marketing to children. Public health and children's rights organizations, including the World Health Organization (WHO) and UNICEF, call for government regulations of food marketing to children (including adolescents) as a prerequisite to address the crisis of poor diet and obesity among young people (31, 101, 104). Yet progress in implementing effective regulations remains frustratingly slow while obesity rates continue to climb.

In this article, we present global data on children's dietary quality, including overconsumption of calorie-dense nutrient-poor foods; summarize current research and emerging trends in child-directed food marketing; and provide potential policy solutions. Finally, we discuss how the public health community can assist governments to take meaningful action to restrict unhealthy food marketing to children (including adolescents).

THE GLOBAL CRISIS OF OBESITY AND POOR DIET

Controlling alarming rates of childhood obesity is a worldwide public health priority (100). High intakes of unhealthy foods and beverages in children's diets, especially sugar-sweetened beverages (SSBs) and other ultraprocessed foods (i.e., industrialized food and beverage products that typically contain additives and high levels of added sugar, sodium, and/or saturated fat), are key contributors (100). In the United States, SSB intake has declined in recent years but remains the top source of added sugar in children's diets (77). Moreover, ultraprocessed food intake is increasing, particularly for Black and Hispanic youth, and now accounts for about two-thirds of children's dietary intake (97). Globally, SSB intake among children remains high, particularly in Latin America and high-income countries (66). In some regions, children consume 51g per day of added sugar from SSBs (66). Sales and intake of ultraprocessed foods are also increasing across the globe, with especially high consumption in Latin American countries (21, 66). Considerable research shows the association of SSBs with adverse health outcomes in children, including overweight/obesity risk and dental caries (9), and an array of health impacts across the life cycle, including weight gain, type 2 diabetes, and cardiovascular disease (60, 96). Similarly, rapidly advancing research on ultraprocessed foods shows its linkage with obesity risk in children (22), as well as weight gain in adults (37) and other adverse cardiometabolic outcomes (68).

WHY FOOD MARKETING IS MORE THAN A NUISANCE

These troubling dietary patterns may not be surprising given that food companies spend massive amounts to market SSBs and ultraprocessed foods worldwide. US food, beverage, and restaurant (i.e., food) companies spend $14 billion per year to advertise in all media; and more than 80% of these expenditures promoted fast food, SSBs, candy, and ultraprocessed snacks (88). Moreover, children remain a primary target market. Food companies do not publicly reveal their marketing strategies; however, according to proprietary US industry data collected by the US Federal Trade Commission, companies spend $1.8 billion annually on all forms of marketing directed to children under age 18 (92). Fast food, carbonated beverages, and breakfast cereals accounted for

72% of these expenditures. Traditional media (primarily TV) represented 39% of the total, while premiums and other types of promotions (e.g., product placements, cross-promotion licensing fees, sponsorships, philanthropic marketing) represented another 40%. In-school marketing contributed 8%, and newer (i.e., digital) media represented a small (7%) but growing proportion of spending on child-directed marketing.

Fewer data are available for other countries, but content analyses of child-directed food marketing, including studies from 20 high-income and 17 low- or middle-income countries, show highly similar results (101). These studies examined primarily TV (49% of studies) and/or digital advertising (18%). Most child-directed marketing (50–93%) promoted unhealthy food and beverages, led by SSBs, candy, fast food, breakfast cereals, and sweet/salty snacks. This marketing was prevalent in schools and other places where children gather and occurred more frequently during children's TV programs and viewing times. Moreover, creative strategies that disproportionately appeal to children, including celebrity/sports endorsements and brand and licensed characters, were used more often to promote unhealthy foods.

Negative Effects on Children's Diets

Research has advanced understanding of how food marketing negatively impacts children's diets, including through increased positive associations, liking, preferences, purchase intentions, and requests to parents for advertised brands (11, 54, 84). Proving direct effects of exposure to media that reaches a large population and occurs over a long period of time is difficult (95). However, experimental studies provide strong evidence of a causal link between children's exposure to food marketing and food-related behaviors, including preferences, choices, and consumption (65). Research demonstrating effects of food-advertising exposure on subsequent unhealthy food consumption is especially robust (4, 12, 80). A meta-analysis estimated that children consume ~60 additional calories after less than 5 min of food-marketing exposure (79).

Moreover, recent research has largely addressed important gaps in the literature highlighted in earlier reviews (16, 49). For example, previous research focused primarily on TV advertising exposure with young children (<12 years). Subsequent research has shown that digital marketing and product packaging, including licensed characters and logos, similarly affect diet-related behaviors (4, 11, 12, 55, 61, 65, 84). Recent research also shows that food marketing affects diet-related behaviors of adolescents up to 18 years old (4, 11, 65, 67, 79, 80, 84), with no significant differences between younger children and adolescents (4, 11, 67, 80).

Difficulties in Resisting Harmful Marketing Influence

Research also demonstrates numerous impediments to children's ability to resist, or defend against, the influence of unhealthy food marketing (44). The earliest research on children as consumers (49, 51) assumed a conscious rational path from marketing exposure to persuasion (62). These theories posited that children develop the cognitive ability to recognize and effectively counteract persuasive attempts (i.e., advertising literacy) by ~12 years of age (49, 51). Younger children cannot resist the effects of unwanted or harmful persuasive messages in marketing, making marketing to this age group inherently unfair and deceptive.

However, more recent studies show that adolescents' more-developed ability to recognize and potentially defend against persuasive attempts does not protect them from the effects of unhealthy food marketing. Advertising literacy continues to increase throughout adolescence (67) and does not reach adult levels until approximately age 16 (111). A recent meta-analysis confirmed that exposure to ads for unhealthy products (including food, tobacco, and alcohol) by children up to age 18 increased positive attitudes about these products and that greater advertising literacy did

Premiums: free or low-cost products provided with purchases of other products, such as toys with fast-food kids' meals or cereal boxes

Product placements: advertising that features brands within other entertainment content, including television, movies, music, and video/online games

Cross-promotions: the use of one product or brand (e.g., toy, movie, sporting or music event) to promote another brand

Sponsorships: payments to align brands with another organization through signage and branded promotional materials, including events, sports organizations, and media properties

Philanthropic marketing: marketing that promotes a product while supporting a charitable cause, including through donations and sponsorships

In-school marketing: all marketing that occurs in schools, including branded signs and curricular materials, branded fundraisers, and branded product sales

not protect against these effects (67). Moreover, current theories of consumer behavior (53) identify an emotional route to persuasion that bypasses conscious processing. Extensive and repeated exposure to food marketing in the form of entertaining and rewarding messages creates positive associations with highly advertised brands and products (40).

Licensed characters: a type of cross-promotion using popular children's entertainment characters to promote a food brand

Digital marketing: all marketing that occurs online and on mobile devices, including paid advertising, company-owned media, and earned media

The ability to effectively resist the development of positive associations with marketed products created through this emotional route requires (*a*) awareness, conscious attention to the marketing stimulus; (*b*) understanding, how one is affected and how to defend against it; (*c*) ability, including cognitive capacity and available resources to defend against it; and (*d*) motivation, the desire to resist (40). Because it is so difficult to resist, emotional marketing is also highly effective at influencing adults' preferences and purchases for a wide variety of products (8). However, given the vast numbers of unhealthy food-marketing messages that adolescents encounter daily, the billions that companies spend to ensure their marketing will appeal to them, and the lifelong unhealthy food-related preferences and behaviors resulting from this marketing, the WHO has recommended that adolescents, as well as younger children, should be protected from exposure to unhealthy food marketing (102).

Recent research also shows that adolescents may be even more susceptible to influence from unhealthy food marketing compared with younger children (46). Adolescents' brain development is characterized by heightened sensitivity to rewards, less-developed abilities to inhibit impulsive behavior, and outsized importance of peer relationships and social affiliation and standing (18). Therefore, resisting highly tempting appeals and peer pressure to consume popular products is difficult at this age. Enhanced reward-related learning also makes adolescents more susceptible to developing long-term positive associations with unhealthy products through repeated exposure to emotionally rewarding cues in food marketing. Brain imaging studies have confirmed that exposure to unhealthy food commercials activates brain regions associated with attention, reward processing, emotional responses, and habit formation (107) and that reward-related neural responsiveness in adolescents predicts higher calorie intake (33) and weight gain (108). Adolescents who exhibited greater responsiveness to fast-food commercials for salads consumed more unhealthy (but not healthy) food following exposure (32, 33) (also see the sidebar titled Ultraprocessed Foods and Potential for Addiction).

Increased Exploitation of Children's Vulnerabilities

Food marketing has also changed dramatically with the rise of digital marketing. In recent years, children's exposure to TV food advertising has declined while time spent on mobile devices now

ULTRAPROCESSED FOODS AND POTENTIAL FOR ADDICTION

Enhanced reward-related learning during adolescence also increases children's risk for developing substance use disorders (18), and highly advertised ultraprocessed foods can be classified as addictive substances (32). Calorie-dense foods in the form of highly refined carbohydrates and/or added fats, including sugary drinks, sweet/savory snacks, candy, and pizza, meet the scientific criteria established by the Surgeon General in 1988 to classify tobacco products as addictive (32). These products can trigger compulsive use, alter mood, trigger strong urges or cravings, and induce compulsive consumption despite satiety. Ultraprocessed foods also contain additives not found in real foods that enhance taste, smell, and texture to heighten their addictive potential. Scientific evidence increasingly demonstrates the substantial long-term negative health impact of diets dominated by ultraprocessed foods (22, 68). Growing evidence that these products can be addictive increases the need for governments to protect children (including adolescents) from marketing that is specifically designed to hook them on junk food (46).

exceeds traditional TV viewing (78, 103), so food companies have pioneered powerful digital marketing techniques that now reach children virtually anywhere anytime (19). In addition to presenting traditional ads on websites, companies embed their brands into advergames, company-sponsored mobile applications (apps), and social media (19, 103). Social media platforms (e.g., YouTube, Instagram, TikTok, Snapchat) are the most popular online platforms for children (78), where they engage with and share company- and user-generated posts on food-brand accounts that spread virally through peer networks (55). Branded posts often feature youth-oriented sports and music celebrities, while popular child influencers post videos embedded with branded food messages (19). Increasingly immersive live-stream gaming platforms (e.g., Twitch, Facebook Gaming) now offer brands traditional video and static ads, product placements within games, gaming channels sponsored by food brands, partnerships with streamers to actively promote food brands, and direct engagement with viewers in chat rooms, simultaneously (73).

Advergames: online games with branded content integrated into game play

Mobile applications (apps): company-sponsored apps, including games, ordering, and loyalty programs, that are downloaded by users

Marketing for unhealthy food brands also predominates on digital platforms that children frequent (19, 103). More than one-third of videos on YouTube's "made-for-kids" child-influencer channels feature branded foods (primarily candy, SSBs, and sweet/salty snacks) (29). The majority (70%) of adolescents reported engaging with food brands on social media by liking, sharing, and/or following the brands; approximately one-half engaged with brands in each of four categories (fast food, SSBs, candy, snacks) (28). On gaming platforms, energy drinks represented 80% of hours of food brand exposure on sponsored streams (73).

In many ways, digital food marketing affects children's diet-related behaviors similarly to TV advertising. Playing advergames increases liking, preferences, purchase intentions, and requests to parents for advertised brands and products (30, 61, 65, 84, 94); increases food intake following exposure (4, 12, 30, 61, 84); and activates attention and reward-related brain regions (4). Adolescents also express more positive attitudes about advergames compared with TV or banner ads, and interactions with brand cues during gameplay increase brand attitudes and purchase intentions (94). More recent systematic reviews of social media marketing have documented similar effects on children's choices, requests, purchases, and intake of unhealthy products (55, 61).

However, digital marketing differs from traditional advertising in ways that raise considerable concerns when targeted to children. Marketing online often appears disguised as entertainment or other content (19, 103). Brand placements embedded within games and other entertainment content, branded posts on social media that spread virally through peer networks, and "information" about brands presented by beloved celebrities and online influencers are more difficult to recognize as advertising (67). This stealth marketing circumvents any potential for young people to critically process the persuasive intent of advertising messages. Even when recognized as advertising, these techniques effectively deactivate skeptical responses by distracting attention from its persuasive intent and overriding children's motivation to resist influence (39, 67). Moreover, social media, celebrity, and influencer marketing takes advantage of adolescents' susceptibility to peer influence and social standing (14, 18, 109, 111). Thus, digital marketing provides additional venues to repeatedly pair unhealthy food brands with engaging and rewarding stimuli, and unique characteristics of online marketing likely amplify negative effects on children.

In addition, food companies have been at the forefront of marketing techniques that utilize children's personal data to track and measure online behaviors, enabling companies to target entertainment content and advertising to maximize exposure and engagement with brands (86, 103). For example, brands incorporate rewards into mobile apps utilizing global positioning system (GPS) tracking (e.g., sending special offers for a fast-food restaurant nearby) and integrate consumer interactions with virtual products in the metaverse through their "avatar selves" (19, 94). Therefore, digital marketing also denies children their right to privacy and freedom

from exploitation. Yet researchers face substantial challenges to monitoring and assessing the effects of digital marketing exposure due to its highly personalized nature (86). Moreover, parents, educators, and health care providers have few options to shield children from harmful exposure (74, 86).

Contributor to Health Disparities

Food marketing also disproportionately affects children who face higher risks of obesity and diet-related diseases due to socioenvironmental factors. Black and Hispanic youth in the United States and those of lower socioeconomic position (SEP) globally are exposed to more unhealthy food marketing in the media compared with more advantaged youth (7, 35). US youth of color also experience more junk food marketing in their communities, including outdoor ads and retail signage and promotions (3, 47, 58, 59). Black and indigenous youth in Canada report greater exposure to food marketing across a variety of settings compared with White youth (2). Studies in Australia, England, New Zealand, and Canada also show significant negative associations between household income and/or parent education/occupation and youth exposure to TV ads for high-sugar products and fast food and more outdoor food advertising in their neighborhoods (2, 6).

Furthermore, US food companies directly target Black and Hispanic youth with marketing for candy, SSBs, sweet/salty snacks, and sugary cereals on targeted TV programming (41). Popular digital marketing campaigns feature Black and Hispanic music and sports celebrities and themes to portray a "cool" image, such as the McDonald's "Travis Scott Meal" (the rapper's "favorite meal") (17) or Cheetos' "Deja tu Huella" campaign with Latin-American singer Bad Bunny (105). These campaigns appeal to children of all backgrounds and encourage brand engagement (19, 41). In a vicious circle, greater exposure and targeted marketing may also increase children's liking and engagement with advertising (54). Black adolescents and those of lower SEP report greater trust in advertising and a desire to try advertised foods (87). On social media, Black and Hispanic youth living in Spanish-speaking households are more likely to engage with junk food brands (28), and Spanish-speaking Hispanic children visit food and beverage websites more frequently (48).

Unhealthy food marketing that targets youth of color and those of lower SEP likely increases preferences for and consumption of targeted brands and product categories (35). For example, Black adolescents respond more positively to Black-targeted junk food ads than do White adolescents (13). In focus groups, Black and Hispanic adolescents in one low-income US community discussed how they and their friends preferred targeted SSB, snack, fast-food, and candy brands (38). Some participants raised ethical issues about targeting their communities with primarily unhealthy products, but many appreciated brands that wanted to appeal to "people like them." Adolescents' positive attitudes about targeted food ads, including liking and agreement that ads were aimed at "someone like them," predicted positive attitudes about the brand (including perceived popularity), which predicted consumption of targeted brands and soda and fast-food categories (45). However, additional research is needed to examine how unhealthy food marketing targeted to less-advantaged youth may disproportionately affect diet-related behaviors.

ADDRESSING THE PROBLEM

Although most research to date has focused on how food-marketing exposure affects individual behaviors, a synthesis of recent evidence points to broader impact on the sociocultural food environment (15), demonstrating that solutions must focus on systemic change at the population level. Food marketing affects purchases and consumption of unhealthy product categories, including SSBs and fast food, not just advertised brands; changes descriptive norms about "typical" products

in an "average" diet; and shifts expectations and assumptions about portion sizes. In one study with parents of young children, normative beliefs that friends and family frequently consume and approve of fast food mediated the relationship between parents' exposure to fast-food marketing and their children's fast-food consumption (36). Moreover, experimental studies demonstrating acute effects of exposure on food intake indicate that food marketing likely acts as a real-world cue to consume, with potential broad impacts on caloric intake over multiple exposures across the entire population (12, 39).

Brand advertising: advertising that depicts a brand logo and/or promotes a brand without specifying an individual product

Industry Cannot Be Part of the Solution

Child health advocates have called on food companies to instead use their enormous resources to market nutritious foods to children (49, 98). In response, major food companies have promised to be part of the solution, primarily through multicompany voluntary industry self-regulatory programs, such as the Children's Food and Beverage Advertising Initiative (CFBAI) (**https://bbbprograms.org/programs/all-programs/cfbai**) or the European Union (EU) Pledge (104). However, numerous loopholes limit the scope and therefore effectiveness of industry self-regulation (42, 104). Lax nutrition criteria used by industry to designate "healthier" products that can be advertised directly to children often include nutrient-poor products, such as high-sugar cereals, snacks that are somewhat lower (but still high) in fat and/or sugar, and sweetened drinks. Industry self-regulatory programs cover some types of marketing (e.g., children's TV ads) but exclude many forms of marketing with large child audiences and wide appeal, including product packaging, in-store promotions, sponsorships, social media, and advertising in media that children frequently view despite not being the primary audience. Brand advertising is another major loophole that allows companies to advertise a brand consisting of primarily unhealthy products, as long as the ad depicts only the brand logo without images of the unhealthy product (e.g., a Coca-Cola logo but not an image of the can of Coca-Cola). In addition, brands can create a small number of products that meet nutrition standards and depict those products in their ads, even when the majority of the brand's products do not meet the standards. For example, Lunchables is one of the most highly advertised brands on US children's TV, but only 2 of 45 available Lunchables products meet the food industry's self-regulatory nutrition standards for foods that may be advertised directly to children (42). Moreover, many companies do not participate in self-regulation, and participating companies face no limits on marketing to children over age 13. Not surprisingly, evaluations have found that industry self-regulation has not produced meaningful improvement in unhealthy food marketing to children (42, 104).

A recent review highlights additional industry part-of-the-solution strategies that offer incremental concessions, build relationships, and partner with health actors to influence policy and governance processes (57). Companies often engage in corporate social responsibility campaigns to increase perceptions that they are good actors, such as fast-food restaurants offering free food to health care workers during the COVID-19 pandemic or packaged food companies donating to charities addressing food insecurity. Companies also reformulate or develop new products to create the illusion of healthier product portfolios to improve their public image. An evaluation of 11 US food manufacturers found that all companies reported focusing on nutrition and health in their commercial growth strategies (1). Yet despite these stated commitments, only 30% of individual products met independent nutrition standards, with no improvement from 2018 to 2022. Moreover, top US packaged food and beverage brands spent $3.0 billion in advertising in 2021, but less than 5% promoted products in healthier categories (41). Only one fruit or vegetable brand advertised at all, spending a miniscule $5,000 ($0.005 million). Major food companies have failed to deliver on implied promises to market nutritious foods to children or even adults.

Governments Must Regulate Food Marketing to Children

In 2010, the WHO called on member states to enact government policies to reduce both children's exposure to and the power (i.e., creative techniques appealing to children) of unhealthy food marketing (99). Yet, to date, just 13 countries have statutory national policies regulating food marketing to children, with the highest prevalence in Latin America and Europe (85, 106) (see **Figure 1**). Relative to other policies that promote healthier diets, global coverage of food-marketing policies is scarce, and progress has been slow. For example, more than 50 countries had SSB taxes in 2023, all implemented within the last decade (106).

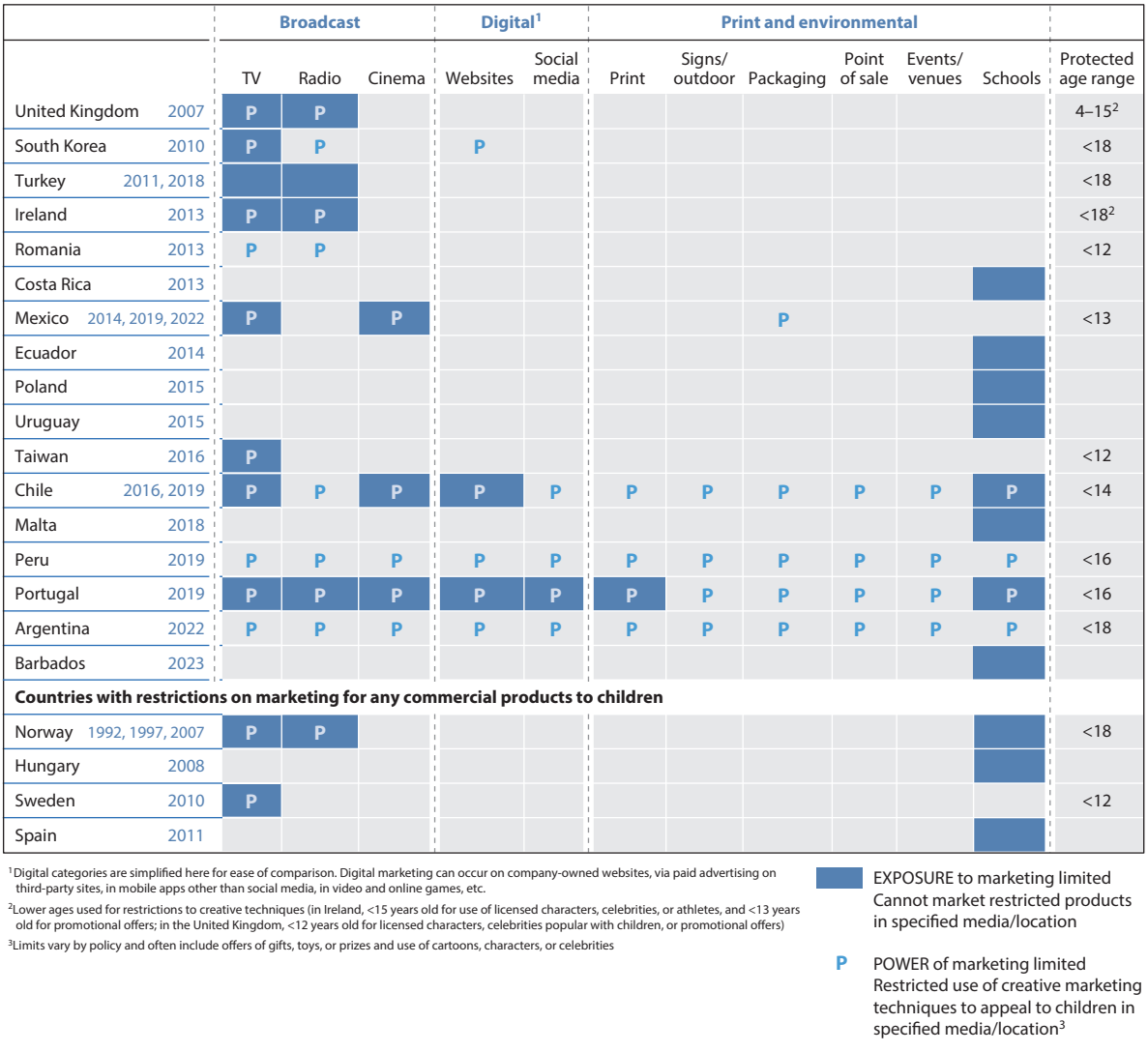

Figure 1

Description of the types of limits (exposure to and/or power of marketing), forms of media (broadcast, digital, print, and/or environmental), and ages covered by government regulations restricting food marketing to children in 21 countries. Figure based on data collected from the NOURISHING framework database (106) through October 2023.

Existing national statutory food-marketing policies also have limitations, but they are more comprehensive than industry self-regulation (85, 106). Most use a nutrient profile model to identify unhealthy foods that cannot be advertised to children, which are typically stricter than industry-defined nutrition models. Two countries (Norway and Sweden) and the Canadian province of Quebec do not allow marketing of any commercial products, including all foods, in child-directed media. Most government policies also set restrictions on types of media and/or locations where unhealthy food advertisements can appear, for example media with child audiences >20% or between certain hours. Television exposure restrictions are most common; Portugal and Chile also restrict advertising on websites and social media. Nearly all national regulations include some restrictions on strategies associated with the power of marketing directed to children, including free gifts or toys, celebrities, and licensed or brand characters, primarily on TV. Fewer countries restrict child-directed techniques in digital or other marketing venues (including on food packages, in signs/outdoor advertising, in point-of-sale displays, through event/venue sponsorships). Most national policies protect children up to at least age 13, while eight policies cover all children under age 16 or 18 (85, 106).

The WHO also recommends prohibiting all forms of unhealthy food marketing in settings where children gather (99). Accordingly, 12 countries have policies limiting food marketing in schools, many of them passed within the last 15 years. Hungary, Spain, and Costa Rica ban all food marketing inside preschools, primary schools, and secondary schools, regardless of a food's nutritional content, while other countries ban the promotion of foods not meeting nutrient thresholds or forbid advertising, promotion, and sales of unhealthy foods. The only US national marketing-related policy limits food marketing in schools. In 2010, the Healthy Hunger-Free Kids Act specified nutrition standards for foods and drinks that could be sold in schools ("Smart Snacks in School") and prohibited marketing of products that did not meet these standards on school property during the day (5). By 2017–2018, school wellness policies in 50% of districts across 20 states included definitive requirements restricting food marketing in schools (72).

Chilean Case Study

Chilean regulations represent the most comprehensive and well-documented national statutory policy addressing food marketing to children (21). This multicomponent law incorporates front-of-package warning labels, marketing restrictions, and a ban on school sales of any products exceeding nutrient thresholds. Phase 1 of the regulation, implemented in 2016, limited child-directed creative content in all marketing (including television, digital, packaging, and schools) and prohibited TV ads for unhealthy products during programs attracting a child audience. In phase 2, Chile extended restrictions to a daytime (6 AM to 10 PM) ban across all TV regardless of audience composition and in phase 3 implemented stricter nutrient thresholds. A recent evaluation found that after phase 1, children's exposure to unhealthy food advertising dropped by 57%, and after phase 2, it dropped by 73%, compared with the prepolicy period (23). After phase 1, the use of child-directed creative content on television ads also dropped by 67%, and child-directed marketing on breakfast cereal packages fell from 50% of products to 15% (63) (phase 2 has not yet been evaluated).

While successful in reducing children's exposure to unhealthy food advertising, Chile's experience also highlights how companies rapidly shift marketing strategies to circumvent the intent of the law. For example, although ads for sugar-sweetened Coke are no longer allowed on daytime television, Coca-Cola Zero ads featuring child actors and ads with the Coca-Cola logo (without depicting a product) are permitted. Moreover, the Chilean regulation has led to product

reformulations (76), such as shifts from sugar to noncaloric sweeteners in drinks and other sweetened products (110), that allow companies to continue to market ultraprocessed foods to children. Other countries have had similar experiences. In Mexico, where child-directed marketing is not allowed on unhealthy product packages, there have been reports of companies stamping cartoon characters on the products themselves or providing gifts attached to (but not part of) the unhealthy product.

Future Policy Considerations

Limitations of existing policies to restrict food marketing to children merit a radical rethinking of approaches. The Chilean experience highlights the speed and innovation with which companies respond to rigorous marketing policies, with policy makers and advocates playing a game of whack-a-mole to keep up with companies' rapid development of new marketing techniques. The WHO acknowledged this challenge in its recent guidelines, recommending that policies should be sufficiently comprehensive so as to reduce the risk that marketing will simply shift to other nonregulated forms of marketing (102). A more comprehensive approach that addresses all children's exposure to all forms of unhealthy food marketing and the power of this marketing will be necessary to prevent companies from exploiting policy loopholes and address ever-evolving forms of marketing (104). Moreover, all policies must protect children up to age 18 years (102). Protecting adolescents is necessary due to the heightened influence of food marketing during this vulnerable developmental period. **Table 1** presents characteristics of potential comprehensive policies. In addition, national policies must address cross-border marketing of unhealthy foods. Future policies should also incorporate WHO recommendations on implementation, monitoring, and evaluation (99), which are currently missing in most existing government food-marketing policies (104). For example, they should include mechanisms to track and enforce industry compliance and monitoring systems to assess changes in key measures to evaluate the impact and effectiveness of policies.

Additional policy actions are also needed to specifically address digital marketing. Digital marketing threatens not only children's rights to a healthy life, but also their rights to privacy and freedom from exploitation (19, 86), and governments have increasingly begun to recognize the incremental harms resulting from common digital marketing practices. The US Children's Online Protection and Privacy Act (COPPA) (**https://www.ftc.gov/legal-library/browse/rules/childrens-online-privacy-protection-rule-coppa**) and the EU General Data Protection Regulation (**https://gdpr-text.com/read/article-8/**) require parental permission to collect personal data from children under age 13 (up to age 16 in some EU member states), but they do not cover older adolescents nor do they limit how children's data are used. A few technology companies have policies restricting children's exposure to some harmful marketing on their platforms or the use of children's data (86), but these policies fall short of the voluntary UK Age Appropriate Design Code recommendations (issued in 2020) calling for default privacy protections for children under age 18 on all digital platforms (**https://ico.org.uk/for-organisations/uk-gdpr-guidance-and-resources/childrens-information/childrens-code-guidance-and-resources/introduction-to-the-childrens-code**). California has passed, and other US states are considering, legislation modeled on the Design Code. In 2021, the United Nations (UN) provided guidance for member states to fulfill their obligations to make the best interests of the child a primary consideration when regulating digital marketing under the UN Convention on the Rights of the Child (CRC) (90). Accordingly, the 2022 EU Digital Services Act (effective 2024) bans online advertising targeted to children under 18 and restricts the use of data for profiling (26).

Table 1 Characteristics of comprehensive food-marketing policies

Policy element	Recommendation[a]	Options and examples
Child age	Protect all children up to age 18 years	
Nutrition standards	Restrict marketing of all foods high in saturated fat and/or *trans* fats, sugars, and/or sodium	Utilize government-created nutrient profile models with standards for added sugar, saturated fat, *trans* fat, and sodium; Incorporate nonnutritive sweeteners in models; Ban all products in unhealthy product categories; or Ban all ultraprocessed products.
Types of marketing	Restrict unhealthy food marketing to which children are exposed, regardless of time of day or venue	
	Venue	Restrict advertising in traditional and digital media; and Restrict marketing on product packaging and the product itself, in retail environments, and in all locations that children frequent (including schools, sports venues).
	Time of day	Apply total daytime restrictions when feasible (e.g., TV, radio); or Implement total restrictions, if time-based restrictions are not feasible (e.g., social media, mobile apps, print media).
Marketing appeals	Restrict all marketing appeals in unhealthy food marketing with the power to persuade children, regardless of the intended target audience	Restrict the use of promotional characters, emotional appeals, games, engagement techniques, interactive or downloadable content, celebrity endorsements, sponsorships, giveaways.
	Brand marketing	Limit marketing that depicts only brand logos (and not a specific product); and Limit marketing that pictures a healthier variety (e.g., Coke Zero, Lunchables with Juice) of a brand with primarily unhealthy products (e.g., Coca-Cola, Lunchables).

[a]WHO guidelines for policies to protect children from the harmful impact of food marketing (102).

BARRIERS TO ENACTING FOOD-MARKETING POLICIES

Slow progress in the food-marketing policy space also demonstrates the need for new approaches to address barriers that limit policy action. In the United States, the First Amendment significantly restricts government's ability to limit advertising, which the courts have determined to be protected commercial speech (43). However, legal scholars have proposed that food marketing to children is misleading and deceptive and, thus, not a protected form of speech. Outside of the United States, advertising does not receive the same protections. A recent UNICEF report of 24 countries (representing Latin America, Africa, Europe, and Asia) found that 80% of countries intended to introduce additional regulations on unhealthy food marketing (81). Most respondents also agreed that countries are legally required to protect children from unhealthy food marketing. Yet few countries were in advanced stages of policy development, with 30% in the internal advocacy phase (81).

There is clearly a major gap between stated intentions to develop and implement restrictions and political action on food marketing to children. Among many barriers is the lack of local data. Outside of Latin America, countries report that they do not have sufficient evidence on the extent and nature of food marketing in their country (81). Additional barriers include insufficient political

leadership to create a comprehensive legal response; lack of authority by the Ministry of Health or other regulatory bodies to develop and implement regulations; and lack of capacity, including technical and human expertise for policy design, implementation, monitoring, and enforcement. Strikingly, 90% of countries cite insufficient financial resources to develop a comprehensive legal response (81). Additional financial considerations play an important role, including industry arguments that restrictions will hurt the economy and employment or lead to reduced government advertising revenue (20, 64, 82).

Tepid public support presents an additional barrier to policy action. A recent cross-country study found moderate support for food-marketing policies, with higher support for policies requiring the promotion of healthier options versus those restricting marketing on unhealthy options (71). Similarly, the International Food Policy Study found that public support is highest for policies that provide incentives or information and lowest for those that impose restrictions (i.e., restricting sponsorship of sports events or banning all food/beverage marketing to children) (56). However, lower support did not necessarily equate to opposition. For example, ~38% of respondents supported a ban on including toys/vouchers/competitions with fast-food children's meals, but only 20% opposed the ban (the rest were neutral). Qualitative research with US parents indicates that many find food marketing to their children annoying but feel that there is little they can do about it (25, 93). Thus, public opinions about the need for food-marketing policies stand in stark contrast to those of public health experts, who view food marketing as a major threat to children's health and well-being.

Another major barrier is political lobbying and opposition by the food, media, and advertising industries. Such lobbying has been well-documented in other food policy areas (24) and can include legal threats or lawsuits, critiques, or challenges to regulatory design and negative framing of public discourse (20). Insidious industry tactics have been documented, including using spyware or death threats to intimidate researchers and advocates working on policies (50, 70). Industry opposition can have a chilling effect, leading to watered-down, stalled, or abandoned regulations. For example, in Australia an original policy that included many types of restrictions on outdoor food advertising was, after industry consultation, substantially reduced to restrict only advertising on government-run buses and light rails (20). In another example, Health Canada drafted a comprehensive bill to regulate most forms of food marketing to children, but the bill stalled in the senate and was never passed (83). In 2022, the United Kingdom passed a food-marketing law that includes restrictions on all digital marketing, but implementation has been delayed until 2025 (83).

POTENTIAL NEW APPROACHES

Technical capacity to enable countries to design, advocate for, and enact effective regulations is necessary. Research to better understand industry tactics that deter policy adoption and exploit loopholes once implemented together with successful strategies to counter industry actions is also needed. Case studies of industry responses and example solutions could help countries prepare for and prevent successful industry lobbying or other tactics. Technical assistance could range from guidance on how to design regulations and supporting legal documents, to low-cost monitoring tools to assess changes in food marketing before and after implementation, and to tool kits to assist in policy implementation and enforcement.

Strategic litigation presents another potential strategy in advancing public interest, including public health, often by seeking systematic change through remedies that extend beyond individual litigants (34). At the national level, several countries have legal frameworks that support governments' obligation to act. In South Africa, civil society resorted to litigation to ensure that all children had access to the school meals program following disruptions due to COVID-19. The court ordered the government to immediately resume the program, citing its obligation

to realize children's right to basic nutrition (52). In Colombia, civil society also resorted to litigation, demanding front-of-package warning labeling aligned with the best available evidence free from conflicts of interest. The court ordered the government to change its original policy proposal, requiring the use of scientific studies about the most effective label format and content to safeguard the population's right to public health (75). Looking ahead, rights-based approaches present unique opportunities to pinpoint potential violations under current food-marketing regulations, as well as policy solutions to address these.

Relatedly, at the international level, most countries are parties to human rights treaties that have been interpreted as not only accommodating marketing restrictions, but also, in some cases, even requiring them. For example, the UN Committee on the Rights of the Child, in interpreting the CRC, has required that countries ensure that marketing and advertising do not adversely impact children's rights by adopting appropriate regulation (89). Former UN Special Rapporteur on the right to health Anand Grover argued that countries are obligated to regulate marketing and to reduce children's exposure (91).

Increasing demand from the public and policy makers for policies to address harmful food marketing is also essential (27). Policy successes in other areas provide some guidance. Grassroots sugary-drink campaigns in California and national advocacy campaigns in Mexico (24) were instrumental in increasing public awareness, changing public opinion, and generating demand for and support of SSB taxes. Careful public messaging in Philadelphia, Pennsylvania, increased public and policy maker support for its SSB tax in the face of strong industry opposition. Communications campaigns to raise public awareness of the extent and negative impact of food marketing to children will play an important role in increasing support for food-marketing policies. Countermarketing campaigns, such as those that exposed the motives and dubious practices of tobacco marketers, could also help reduce demand for unhealthy food and change industry marketing practices (69). Communications, including countermarketing, campaigns can also influence policy makers' awareness and lead to policy discussions and priorities (10). Research is needed to understand how to frame public communications campaigns, accounting for each country's cultural values, political context, and legal precedent.

However, policy success will require dramatic changes in public and policy maker attitudes about food marketing to children. Common beliefs that lack of knowledge and irresponsible behavior are the root causes of poor diets and obesity lay the blame and responsibility for change on individuals, including children and their parents. Moreover, industry proponents have exploited these common beliefs to frame marketing bans as intrusions on personal freedom and companies' rights to sell their products. Combined with misperceptions that adolescents' ability to understand persuasive intent and skepticism about marketing protect them from harmful influence, these beliefs suggest a focus on education, such as nutrition or media literacy, to solve the problem. Overreliance on individual-level solutions also ignores the billions that companies spend to make SSBs, fast food, candy, and snacks the fun, cool, easy, least expensive, and most accessible options. Advocates must shift the narrative to demonstrate how food marketing threatens children's rights to privacy, freedom from exploitation, nutritious food, and healthy futures (27).

CONCLUSIONS

In the past 15 years, researchers worldwide have made enormous progress in understanding that food marketing to children (including adolescents) has far-reaching negative effects on their diets and long-term health, is nearly impossible to resist, increasingly exploits developmental vulnerabilities, and contributes to health disparities affecting children of color and those of lower SEP. Thus, marketing of ultraprocessed foods to children is more than a nuisance. It fuels a powerful obesogenic environment surrounding young people that threatens their long-term health and

well-being. The public health community also increasingly recognizes that only governments can effectively regulate unhealthy food marketing to children. Moreover, nations are required to act to address these marketing practices that threaten children's rights to a healthy life, adequate food, privacy, and freedom from exploitation. However, advocates continue to face daunting barriers to enacting government regulations, due largely to common misperceptions about food marketing to children and powerful industry influences (44). Investments are needed in both research and advocacy to develop effective strategies to overcome these barriers and move the needle on the adoption and implementation of rigorous food-marketing regulations.

SUMMARY POINTS

1. Worldwide, food companies spend massive amounts to market SSBs and other ultraprocessed foods directly to younger children and adolescents.
2. This marketing negatively impacts children's diets by increasing positive associations, liking, preferences, purchase intentions, and requests to parents for unhealthy marketed products and categories, as well as total caloric consumption immediately following exposure.
3. Marketing directly to young children is unfair because children under age 12 do not have the cognitive ability to recognize and actively defend against the persuasive effects of marketing attempts.
4. Adolescents may be even more vulnerable to the effects of unhealthy food marketing due to their enhanced sensitivity to rewards and the influence of peers and to their reduced ability to inhibit impulsive behavior and resist social pressures.
5. Newer forms of digital marketing take advantage of these vulnerabilities, including social media marketing that spreads virally through peer networks and branded messages from popular influencers and celebrities.
6. Digital marketing is often embedded within online entertainment content, such as online games and social media content, making it more difficult to recognize as marketing and to actively resist its influence.
7. Food marketing contributes to health disparities affecting children of color and of lower socioeconomic positions due to greater exposure in their communities, media usage patterns, and disproportionate targeting by unhealthy food brands.
8. To address the substantial negative impact of food marketing on children's diets and health, the WHO has called on governments to enact comprehensive government policies to reduce unhealthy food marketing to children up to age 18 years.

FUTURE ISSUES

1. Research is required to better understand how unhealthy food marketing targeted to less-advantaged youth may disproportionately affect diet-related behaviors.
2. Research is also needed to stay abreast of ever-developing marketing techniques in digital media, such as the use of children's personal data to track and measure online

behavior to target marketing messages, GPS tracking, and brand interactions in the metaverse.

3. Food companies continue to promise to be part of the solution to childhood obesity as a strategy to ward off government regulations of food marketing, despite growing evidence that industry self-regulation has had no meaningful impact on unhealthy food marketing to children.
4. A few countries (including Chile and the United Kingdom) have implemented national statutory food-marketing policies, which have some limitations but are substantially more comprehensive than industry-initiated policies.
5. Additional policy actions are needed to address newer forms of digital marketing that threaten children's rights to privacy and freedom from manipulation, as well as a healthy life.
6. Effective strategies are needed to address barriers that limit food-marketing policy actions by governments, including availability of local data, insufficient political leadership and lack of authority or technical capacity, limited public awareness and support, and political lobbying and opposition by the food, media, and advertising industries.
7. Potential new approaches include providing technical capacity to enable countries to design and advocate for effective regulations and counteract common industry tactics; strategic litigation, including enforcement of children's rights under the UN Convention on the Rights of the Child; and communications campaigns to increase public and policy maker demand for regulations.

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