

Original research and reviews

Digital marketing to young people: Consequences for the health and diets of future generations

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ABSTRACT

Digital marketing is widely used to promote highly processed food and beverage products with excessive energy and high in fat, sugars and salt (HFSS) to young people, negatively impacting their diet and health. In this paper, we describe the global trends in digital marketing used to promote unhealthy HFSS products to children, adolescents and young adults aged 7 to 24 years. We review the digital privacy policies of 18 major transnational firms – six technology and 12 international food and beverage companies – to promote food and beverage products, brands and healthy and sustainable lifestyles to young people. Our analysis shows that four of the six technology firms have privacy-protection policies for children under 13 years, but that no firm has a digital marketing policy to restrict the targeting of HFSS food and beverage products to young people. Only one of the 12 food and beverage companies studied has publicly pledged not to use digital marketing to promote HFSS food and beverage products to adolescents (aged 13–18). Governments must develop comprehensive privacy-protection laws that restrict firms from using digital marketing to promote HFSS products to

young people and only allow products that meet healthy nutrient-profile criteria. Global and national actors should encourage these 18 firms to adopt best practices to use digital marketing to support healthy and sustainable diets, lifestyles and food systems for future generations.

INTRODUCTION

Our globalized food system cannot sustainably promote healthy people and a healthy planet (Swinburn et al., 2019). Companies are using digital technologies to perpetuate unsustainable consumer behaviours that contribute to obesity (Montgomery et al., 2018) and climate change (Swinburn et al., 2019), despite hopes that these technologies would foster social and emotional development, encourage healthy and sustainable choices and mobilize adolescents and young adults to transform their future (Burke-Garcia and Scally, 2014; Patton et al., 2016; UNICEF, 2017).

Global food-system actors have made limited progress on restricting the widespread marketing to young people

of processed, energy-dense and nutrient-poor food and beverage products that are high in fat, sugar and salt (HFSS) and which are linked to poor diet quality, increased obesity, diet-related non-communicable diseases (NCDs) and climate change (Kraak et al., 2016; Kraak et al., 2019; Swinburn et al., 2019). The World Obesity Federation (2019) estimates that 254 million children between the ages of 5 and 19 in 191 countries will be obese by 2030. China (61.9 million), India (27.5 million) and the United States of America (16.9 million) will have the highest obesity burdens (World Obesity Federation, 2019). Poor diet is a leading risk factor in NCD mortality, associated with 11 million deaths and 255 million disability-adjusted life years globally in 2017 (Afshin et al., 2019).

Numerous United Nations and other expert reports have urged state and non-state actors to take comprehensive action to tackle malnutrition in all its forms and create healthy and sustainable food systems that are resilient to climate change (Branca et al., 2020; Hawkes et al., 2020; Swinburn et al., 2019; UNICEF and GAIN, 2018; Willett et al., 2019). These reports have not investigated how digital marketing could be used to achieve these goals, however.

If we are to align the great intergenerational food transformation of the United Nations Decade of Action on Nutrition (2016-2025) with the 2030 Sustainable Development Goals (Swinburn, 2019), young people must have supportive built and virtual environments and the capacity to mobilize resources to advocate for and adopt healthy and sustainable consumption patterns that stay within planetary boundaries (Swinburn et al., 2019).

This paper builds on a *UNSCN Nutrition 44* paper (Granheim, 2019) addressing the under-explored issue of how transnational firms use digital marketing and media technologies to reach young people. We use the term “digital marketing” to refer to any promotional activity delivered through a digital or social-media platform, aimed at individuals, groups and/or populations.

The paper has six objectives. First, we examine the global trends in digital marketing targeted at young people –children (under 12 years), adolescents (12–18 years) and young adults (19–25 years). Second, we explore the child- and adolescent-focused privacy and marketing policies of six transnational technology firms that own popular social-media platforms. Third, we review the policies of 12 International Food & Beverage Alliance (IFBA) firms on the marketing

of food and non-alcoholic beverage products, brands and healthy and sustainable lifestyles to young people. Fourth, we examine evidence from 16 studies (2014–2020) on how 18 transnational firms have used digital marketing and social-media platforms to engage young people with food and beverage products and brands. Fifth, we compare these policies with best-practice recommendations to reduce children’s exposure to digital marketing. Sixth, we suggest policies and actions for global and national actors, including United Nations agencies and Member States, technology and food and beverage firms, and civil-society organizations (CSOs), to ensure that digital marketing and media are used to foster healthy and sustainable diets, lifestyles and food systems for future generations.

GLOBAL TRENDS IN DIGITAL MARKETING TARGETED AT YOUNG PEOPLE

The 2019 Global Digital Report estimates that nearly half (3.5 billion) of the world’s population currently uses social-media platforms (We are Social, 2019). Children and adolescents are rapid adopters and frequent consumers of digital marketing communications and social media (Patterson et al., 2016). Children and adolescents of the current generation are digital natives, raised in digital media-immersed environments, exposed to computers, videogames and social-media applications (apps) from an early age, which influences how they think and process information (Dingli and Seychell, 2015).

The United Nations Children’s Fund (UNICEF) (2018a) describes digital technologies as “revolutionizing marketing strategies to broaden their influence” and reach people in more than 200 countries (Figure 1). The State of the World’s Children 2017 report focused on young people aged 15 to 24 years in the digital world (UNICEF, 2017). At 71 percent, this is the most internet-connected age group, compared with just under half (48 percent) of the total world population. Yet, about 29 percent of young people (346 million youths), notably in Africa, are disadvantaged by the digital divide, with limited access to the internet or online digital technologies, unlike their counterparts in the more affluent countries of Europe, the Americas and Oceania (UNICEF, 2017).

Figure 1.

HOW DIGITAL MEDIA ARE USED TO TARGET AND INFLUENCE YOUNG PEOPLE



Source: UNICEF (2018)

Digital marketing is part of a broader set of integrated marketing communication strategies used by transnational food, beverage, restaurant and entertainment firms to promote brands and products to children (aged 2–11 years), Generation Z teens (12–19 years), Millennials (20–34 years) and older adults (Generation X, Generation Y, Baby Boomers and the Silent Generation) (Kraak et al., 2016; Nielsen, 2015). In 2018, the International Chamber of Commerce (ICC) expanded the definition of marketing communications it applies to children and adolescents up to the age of 17 to include advertising and promotion, sponsorships, direct marketing and digital marketing communications intended to influence consumer behaviour (ICC, 2018).

Young people are especially vulnerable to the interactive nature of the advertising and marketing of energy-dense and nutrient-poor HFSS food and beverage products promoted through digital media platforms (Boyland et al., 2020; Kelly et al., 2015; Montgomery et al., 2012). These platforms include mobile devices, online and subscription videos on demand, interactive games with embedded brands and product placement, social-media and content-sharing

platforms and social-networking websites that influence peer interactions, diet and health outcomes (Boyland et al., 2020; Kelly et al., 2015; Montgomery et al., 2012).

Studies in European countries have shown that children aged 7 to 15 years are using digital media more frequently and that the websites they visit most often are not child-specific, but platforms that offer a range of content for different ages (WHO Europe, 2016). Younger children (aged 9–12) tend to view videos through YouTube, while older children (aged 13–16) use social-networking sites. Children aged 13–17 spend most of their screen time on social media (WHO Europe, 2016).

In a recent study by the Pew Research Center, 95 percent of 13–17 year-old American adolescents surveyed said they had access to a smartphone. Forty-five percent reported being online “constantly” and using YouTube, Instagram and Snapchat as their favourite social-media platforms (Pew Research Center, 2018). Adolescents have been shown to be more likely to share social-media posts for unhealthy food products with their peers, to recall and recognize more brands associated with unhealthy food products, and to view advertising for longer when interacting with their peers, celebrities or companies (Murphy et al., 2020).

THE CHILD- AND ADOLESCENT-FOCUSED PRIVACY AND MARKETING POLICIES OF TECHNOLOGY FIRMS

Six transnational digital technology firms dominate the industry and are among the wealthiest public companies in the world, with collective annual revenue of more than USD 548 billion in 2019 (Forbes Media, 2020). They are Alphabet (USD 137 billion), owner of Android Enterprise, Google and YouTube, each of which operate in 40–90 countries worldwide; Amazon Global (USD 233 billion), which owns Twitch Prime and operates in more than 100 countries globally; Facebook (USD 55.8 billion), which also owns Instagram, Messenger, WhatsApp and Oculus and operates in more than 190 countries worldwide; Microsoft Corp. (USD 118.2 billion), present in 210 countries worldwide; Snap, Inc. (USD 1.2 billion), which owns Snapchat and operates in 15 countries; and Twitter (USD 3 billion), which operates in more than 200 countries (Forbes Media, 2020).

In January 2020, we searched each firm's website for specific policies on privacy protection and the use of digital marketing and media to promote food and beverage products and brands to young people. Google and Google's YouTube Kids, Facebook, Snap and Twitter provide detailed policies on their public websites to protect children's privacy and restrict digital content that would endanger the emotional or physical well-being of minors under 13 years. Amazon Global and Microsoft did not have a child privacy-protection policy on their websites.¹

Google's policies for YouTube and YouTube Kids, the world's largest video-sharing websites, were revised in 2019 after complaints by CSOs concerned about branded advertisements and sponsored commercial content by influencers targeting children through the YouTube and YouTube Kids' platforms (Center for Digital Democracy, 2016).

Social-media influencers can have thousands or millions of followers online and they monetize this through sponsored content aimed at shaping young people's lifestyle choices and behaviours (De Veirman et al., 2019).

The US Federal Trade Commission required YouTube to pay a USD 170 million penalty for not obtaining parental consent when collecting data on children under the age of 13, violating national and state privacy laws for children (US Federal Trade Commission, 2019). Since January 2020, YouTube has informed advertisers that it limits personal data from children under 13 to comply with the Children's Online Privacy Protection Rule (COPPA) (US FTC, 2019).

In 2019, Facebook and Instagram updated their advertising policies and applied age restrictions, prohibiting content that promotes diet, weight loss or other health-related products for young people under the age of 18 (Facebook, 2020b; Roesler, 2019). This policy could be adopted by other technology firms and expanded to cover branded food and beverage products and websites that target adolescents and young adults in all countries where these firms operate. We found no public commitments by these firms to use digital marketing to children and adolescents (up to 18 years) solely to encourage healthy food and beverage products and brands.

THE DIGITAL MARKETING POLICIES OF TRANSNATIONAL FOOD AND BEVERAGE FIRMS

IFBA represents the world's 12 largest transnational food and beverage manufacturers, present in up to 200 countries (Table 2), with collective annual revenue exceeding USD 369 billion (IFBA, 2020a; Kraak et al., 2019). In 2009, IFBA firms adopted a Global Policy on Marketing Communications to Children (IFBA, 2020b) and, in 2018, they published a 10-year progress report on responsible marketing to children (IFBA, 2018).

An evaluation of IFBA's Global Marketing Communications Policy (2009-2019), however, showed several weaknesses that failed to protect children under 18 years from the aggressive marketing of unhealthy HFSS foods and beverages (Kraak et al., 2019). Areas to be remedied included: (1) failure to use a children's rights-based approach, as recommended by the United Nations (UNICEF, 2018a); (2) failure to cover the wide range of digital marketing and media in voluntary pledges for children under 12; (3) failure to extend pledges to protect children aged 12-17, as recommended by the ICC (2018) or children up to 18 years, as recommended by the World Health Organization (WHO) (2016) and UNICEF (2018a); and (4) failure to adopt uniform nutrient-profiling standards to guide all marketing practices for food and beverage products and brands targeted at young people (Kraak et al., 2019). The assessment issued six recommendations to strengthen IFBA's Global Policy to protect children worldwide from HFSS food and beverage marketing practices.

We examined IFBA's current Global Policy (IFBA, 2020b) and the 12 IFBA members' marketing policies between 15 December 2019 and 20 January 2020 to assess whether they addressed the digital marketing of healthy food and beverage products and healthy and sustainable lifestyles to children and adolescents up to 18 years of age. Most IFBA firms have included certain digital marketing and media policies that apply to children under the age of 12 years. Mars, Inc. reports that it has aligned its online marketing communications and digital media with the amended COPPA law (US Federal Trade Commission, 2013) and the European General Data Protection Regulation by not marketing to children aged 13 years or younger (Mars, Inc., 2018). General Mills has said it will not promote food and beverage products that use digital or interactive marketing (websites, blogs and games) to children younger than 12 years of age and is the only firm to extend its voluntary commitment to cover digital marketing communications to adolescents aged 12 to 18 years (General Mills, 2019).

¹ Please see Google (2020), YouTube Kids (2020), Facebook (2020a), Snap (2020), Twitter (2020), Amazon Global (2020) and Microsoft (2020).

In 2017, Ferrero reported that it had applied ICC's framework for responsible food and beverage communications (Ferrero, 2017). The ICC updated its policy in 2018 to recommend that businesses expand their voluntary commitments to children and adolescents up to the age of 17 and apply this to the full array of digital marketing communications (ICC, 2018). At the time of writing, Ferrero had not updated its policy to reflect the ICC age limit.

The Coca-Cola Company and PepsiCo have not updated their policies on responsible marketing to children for five years now, according to their websites (Coca-Cola, 2015; PepsiCo, 2014). Danone, Kellogg Company, Nestlé and Mondelez International have pledged to cover select digital media and marketing practices that apply only to children under 12 years (Danone, 2019; Kellogg Company, 2018; Nestlé, 2018; Mondelez International, 2018a). Unilever updated its advertising and marketing principles and policies in February 2020 to apply to all marketing communications on digital and social-media platforms to children under 13 years (Unilever, 2020a).

Grupo Bimbo and McDonald's Corporation did not post specific policies on food and beverage marketing to children on their public websites (Grupo Bimbo, 2020; McDonald's, 2018; Alliance for a Healthier Generation, 2018; Kraak et al., 2019). Grupo Bimbo's 2019 annual report, however, stated that the firm had embarked on new commitments in relation to advertising and marketing to children in line with WHO recommendations (Grupo Bimbo, 2019).

Several IFBA firms or their corporate foundations currently fund or partner with communities and non-governmental organizations to implement healthy or sustainable lifestyle programmes to encourage both healthy and responsible consumption behaviours by children worldwide (Drewnowski et al., 2018; Newson et al., 2013; Robinson et al., 2014). Examples include Danone's One Planet, One Health initiative (Danone, 2017); Nestlé's Start Healthy Stay Healthy Programme and Healthier Kids Programme, which aim to reach 50 million children aged 3–12 by 2030 (Nestlé, 2020); Unilever's Sustainable Living Plan (Unilever, 2020b); and Mondelez International's Healthy Lifestyles Program (Mondelez International, 2018b).

We found no independent assessments of how IFBA firms are using digital marketing to promote healthy and sustainable lifestyle programmes to young people globally, given their current practices promoting HFSS products. This is important, as IFBA firm Nestlé plans to commercialize a "wellness ambassador" to promote a personal nutrition approach based on digital technologies

(such as wearable devices, artificial intelligence, dietary intake, fitness assessments and energy sensors) to influence young consumers' dietary behaviour and health (Adams et al., 2020; CB Insights, 2019). There is a need for universal measures of the effectiveness and unintended consequences of such programmes at a national, regional and global level.

EVIDENCE OF DIGITAL MARKETING USED TO PROMOTE BRANDS AND PRODUCTS TO YOUNG PEOPLE

Montgomery et al. (2011; 2012; 2017) have described six digital marketing features that companies use to target young people: (1) immersive environments, (2) engagement that fosters emotional connections between young consumers and brands, (3) user-generated content, (4) personalization through "big data" infrastructure that involves the online tracking of behavioural data, (5) social-networking websites and (6) ubiquitous connectivity. These activities are also referred to as "surveillance capitalism"—a strategy used by powerful corporations to predict and control people's behaviour (Zuboff, 2019). Technology, food and beverage manufacturers use biometric information, geolocation technologies and mobile marketing techniques, promoted through physical and virtual online retail settings, to develop personalized, targeted marketing that can predict and influence the "path-to-purchase" e-commerce behaviour of customers (Montgomery et al., 2017; Seklir et al., 2016).

Systematic reviews and a meta-analysis have shown food and beverage firms using digital advergames and videos to reach children and adolescents. Their engagement can range from 2 to 12 minutes per interaction and the digital marketing strategies involved strongly influence their choice and consumption of unhealthy food and beverage products (De Veirman et al., 2019; Folkvord and van 't Riet, 2018; Qutteina et al., 2019a; Smith et al., 2019).

We conducted a rapid scoping review of research published between 2014 and 2020 and identified 16 studies through the PubMed electronic database. We included publications if they explored digital marketing and social-media platforms and strategies used to reach children, adolescents and young adults. The studies we included were conducted in nine countries, involving young people aged 7 to 24

years. Nine of the studies mentioned one or more of the 18 technology, food, beverage or restaurant firms discussed in this paper.

Figures 2A and 2B illustrate the global nature of this research and emphasize findings relevant to the corporate brands and digital marketing practices of specific firms. The countries where studies have been conducted were Australia (Boelsen-Robinson et al., 2015; Buchanan et al., 2017; 2018; Freeman et al., 2014; Vassallo et al., 2018), Belgium (Qutteina et al., 2019b), Canada (Potvin-Kent et al., 2019), Malaysia (Tan et al., 2018), New Zealand (Vandevijvere et al., 2017), Thailand (Jaichuen et al., 2019), the United Kingdom (Coates et al., 2019) and the United States of America (Bragg et al., 2019a; 2019b; Fleming-Milici and Harris, 2020; Polacsek et al., 2019), as well as a multi-country study that examined associations between digital and traditional marketing and sugared-beverage exposure and consumption among adolescents and young adults in Australia, Canada, Mexico, the United Kingdom and United States (Forde et al., 2019).

Nine studies from four countries (Australia, Canada, Thailand and the United States) examined the marketing practices of transnational technology and/or IFBA food and beverage firms to promote brands or products to young people. Figures 2A and 2B show the media followers, posts and social-media accounts of young people frequently exposed to HFSS snack and sugary-beverage brands owned and marketed by IFBA members, including The Coca-Cola Company, PepsiCo and energy-drink manufacturers Red Bull and Monster (Bragg et al., 2019b; Freeman et al., 2014). The studies showed that digital marketing was used by nine IFBA firms to encourage young people to buy, share, promote and consume energy-dense, nutrient-poor HFSS food and beverage products through company-owned and third-party websites and social-media platforms owned by transnational technology firms, shared as Instagram and Facebook posts, Twitter tweets and YouTube videos (Boelsen-Robinson et al., 2015; Bragg et al., 2019a; 2019b; Buchanan et al., 2017; Fleming-Milici and Harris, 2020; Freeman et al., 2014; Jaichuen et al., 2019; Potvin-Kent et al., 2019; Vassallo et al., 2018).



Figures 2A and 2B. NINE DIGITAL MARKETING STUDIES THAT EXAMINE PRODUCTS AND BRANDS PROMOTED BY FOOD AND BEVERAGE FIRMS* THROUGH SOCIAL-MEDIA PLATFORMS, 2014–2020

	Study	Target audience	Digital platform	Company	Key results
Australia	Boelsen-Robinson, 2015	Children and adolescents <12 to 17 years	Facebook, brand websites and mobile phone apps	McDonald's Corporation Cadbury The Coca-Cola Company	85% of promotional activities used four or more marketing strategies; 81% promoted unhealthy dietary behaviour
	Buchanan, 2017	Young adults 18–24 years	Brand websites and social-media sites	Red Bull GmbH Frucor	Digital marketing of energy drinks increases purchase and consumption intention
	Freeman, 2014	Not applicable	Facebook	7-Eleven, Cadbury, Doctor's Associates Inc, Domino's, Ferrero International , Franchised Food Company Pty Ltd, Frucor, Kellogg Company , Mars Incorporated , McDonald's Corporation , Mondelez International , Monster Worldwide Inc, Red Bull GmbH, Restaurant Brands International, The Coca-Cola Company , Unilever , Yum! Brands	All food and beverage brand pages in the final sample were classified as energy dense, nutrient poor (EDNP); common techniques were competitions based on user-generated content, interactive games and apps
	Vassallo, 2018	Not applicable	Instagram	Domino's, Ferrero International , McDonald's Corporation , Mondelez International , Monster Worldwide Inc, PepsiCo , Red Bull GmbH, Restaurant Brands International, Starbucks, Subway, The Coca-Cola Company , Unilever , Yum! Brands	Each brand used 6–11 different marketing strategies in their Instagram accounts; EDNP foods and beverages are flourishing
Canada	Potvin-Kent, 2019	Children and adolescents 7–16 years	Facebook, Instagram, Snapchat, Twitter and YouTube	McDonald's Corporation , Starbucks PepsiCo , Mars International , The Coca-Cola Company , Restaurant Brands International, General Mills Inc	72% exposed to food marketing, most promoted unhealthy products; children and adolescents see food marketing 30 and 189 times, respectively, on average per week on social-media apps
Thailand	Jaichuen, 2019	Children, adolescents and young adults 6–14 years and 15–24 years	Facebook	AJE, Ezaki Glico Co., Ltd, Fraser and Neave Limited Hot Pot Buffet, Ichitan Company, International Dairy Queen, Inc, McDonald's Corporation , Nestle , Ogilvy Group, Oishi Group, PepsiCo , Restaurant Brands International Inc, Sermsuk Public Company Limited, Sizzler, Starbucks, Swensen's The Coca-Cola Company , TCP Group, Thai Best Snack Co., Ltd, The Pizza Company, Unilever , Yum! Brands	Food-brand Facebook pages in Thailand do not comply with government regulations and the industry's self-regulatory codes; the most common marketing technique was the use of pictures
USA	Bragg, 2019a	Adolescents 12–17 years	Television, website, radio station, newspaper, and magazine	PepsiCo , Wrigley Company, Post Foods Ferrara International	Participants liked 84% of the ads; 90% had a positive, effective reaction; 64% "liked" or "followed"; no significant difference between race/ethnicity
	Bragg, 2019b	Adolescents 12–17 years	Instagram, Facebook, Twitter Tumblr, Vine	The Coca-Cola Company , McDonald's Corporation , Starbucks, Red Bull GmbH, Yum! Brands, PepsiCo , Hansen Natural Corp, Doctor's Associates Inc, Dr Pepper Snapple Group, International Dairy Queen, Restaurant Brands International, Dave Thomas, Chick-fil-A	Social-media accounts increased 567% from 2007 to 2016; 31.5% (n=630) had an interactive feature; 67.9% (n=362) of foods were unhealthy
	Fleming-Milici, 2020	Adolescents 13–17 years	Computer, tablet or smartphone use, including texting, watching movies/TV and social media	McDonald's Corporation , Yum! Brands, Wendy's Company, Restaurant Brands International, Applebee's International, Domino's Pizza, Chick-fil-A, Doctor's Associates Inc, The Coca-Cola Company , PepsiCo , Dr Pepper Snapple Group, The Hershey Company, Mars Incorporated , Nestle , Mondelez International	70% of adolescents engaged with food and beverage brands on social media; 50% engaged with unhealthy food and beverage products

* IFBA firms are in bold

BEST-PRACTICE RECOMMENDATIONS TO REDUCE CHILDREN'S EXPOSURE TO DIGITAL MARKETING

Digital technologies have heightened public policy debate on the roles and responsibilities of parents, communities, governments, businesses and CSOs in balancing the risks and opportunities of digital media for young people with protecting their rights. Holding countries to account for meeting their legal obligations and adhering to the ethical principles outlined in international human rights treaties, including the United Nations Convention on the Rights of the Child, is crucial to creating an environment that restricts corporate practices that undermine healthy and sustainable diets, lifestyles and food systems for young people (Granheim et al., 2018; Tatlow-Golden et al., 2017; UNICEF, 2018a; UNICEF and the United Nations Special Rapporteur on the Right to Food, 2019; Verdoodt, 2019; WCRF International, 2020). The interactive and immersive nature of digital advertising and marketing affects children's rights to privacy, protection against economic exploitation, freedom of thought and access to education (Verdoodt, 2019).

In May 2010, in World Health Assembly Resolution WHA63.14, 193 United Nations Members endorsed recommendations to restrict the marketing of unhealthy food and non-alcoholic beverage products to children (WHO, 2010). In 2012, WHO published a monitoring and evaluation framework for Members to implement the Resolution, encouraging governments and CSOs to monitor digital marketing practices (WHO, 2012).

Table 2 provides a timeline of reports published by United Nations agencies, expert bodies and CSOs between 2010 and 2020, with recommendations for governments and businesses to restrict children's exposure to digital marketing that promotes HFSS products and to encourage digital marketing to be used to promote healthy food and beverage products and healthy diets. Public- and private-sector actors are encouraged to: (1) ensure that businesses abide by a strong code of practice to safeguard the best interests of the child; (2) conduct data-protection impact assessments; (3) ensure age-appropriate applications that allow transparency, prevent the harmful use of children's personal data and ensure high privacy default settings; (4) promote minimal data-collection, sharing and profiling;

(5) switch geolocation options off by default for children; (6) address algorithmic nudging for children and ensure toys and devices align with these standards.

The 2020 WHO-UNICEF-Lancet Commission on the Future for the World's Children acknowledged the substantial limitations of industry self-regulatory programmes and recommended that the United Nations develop an Optional Protocol to the Convention on the Rights of the Child to protect children from the marketing of harmful products (including sugary beverages), social media and the inappropriate use of their personal data (Clark et al., 2020).

These guidelines collectively recommend that governments and CSOs hold transnational technology and food and beverage firms to account for the content they put on social-media platforms viewed by young people. More than 18 CSOs worldwide have issued position statements on digital marketing to children, requesting that governments and businesses protect children's right to health when promoting the commercial marketing content of food and beverage products and brands (World Obesity Federation, 2020).

GLOBAL AND NATIONAL ACTIONS TO REDUCE CHILDREN'S EXPOSURE TO DIGITAL MARKETING

Global actors must ensure the ethical oversight and responsible use of digital marketing and media technologies targeting young people. Table 3 proposes actions for global and national actors, including governments, United Nations agencies, CSOs and transnational food, beverage and technology firms to ensure that digital marketing and media are used only to promote healthy and sustainable diets, lifestyles and food systems.

Governments must prioritize digital privacy-protection laws and policies that restrict the digital marketing of unhealthy products and develop comprehensive codes of conduct and standards to guide policy development, implementation, monitoring and the evaluation of digital marketing practices targeted at young people. They should also engage in international and regional efforts to restrict and regulate cross-border digital marketing practices that promote unhealthy products linked to increased obesity and NCD risks (Consumers International and the Transatlantic Consumer Dialogue, 2019; WCRF, 2020).

Governments should further enforce mandatory and uniform standards and encourage transnational firms to implement best-practice recommendations and voluntary codes of conduct that protect children's digital privacy, promote digital literacy and support healthy and sustainable diets. They should also support independent research that explores the impact of digital marketing on the diet quality and health outcomes of children, adolescents and young adults (Boyland et al., 2020). Lastly, governments could collaborate with non-state actors, including international alliances (such as the NCD Alliance and the Sustainable Food Policy Alliance) to understand how digital technologies can be used to encourage consumer behaviours that are more environmentally sustainable to support the health of people and the planet (White et al., 2019).

Government and CSOs have several tools available to monitor industry progress, including the Access to Nutrition Index (ATNI), which stakeholders can use to monitor several IFBA food and beverage manufacturers' policies across seven domains, including marketing practices that influence children (ATNI, 2018). While the 2018 ATNI report found that several IFBA firms had strengthened certain digital marketing strategies after the 2016 report (such as mobile and SMS marketing and promotion through social media and company websites), more comprehensive actions must be taken. Other options to monitor industry policies include the WHO European Office's CLICK tool (Comprehend the digital ecosystem, Landscape of campaigns, Investigate exposure, Capture on-screen and Knowledge sharing) (WHO, 2018), the Business Impact Assessment tool (Sacks et al., 2019) and the Responsibility Index, which enables governments to monitor digital marketing practices amid other integrated marketing communications and to develop a policy score that can be compared with other countries (Rincón-Gallardo Patiño et al., 2020).

Technology firms should develop and align policies that protect the digital privacy rights of young people and enforce standards for digital platforms that support responsible food and beverage marketing to children and adolescents, aligned with national, regional and international laws and recommended best practices. We also suggest that technology firms post their digital marketing and media policies on their public websites in all countries where they conduct business.

IFBA food and beverage firms should amend their Global Policy on Marketing Communications to Children and apply the WHO-recommended nutrient-profile standards for food and beverage marketing to young people on all social-media platforms, including digital and mobile devices. They should also ensure that children's rights are explicitly addressed in the amended Global Policy and identify processes to mitigate the adverse impacts of digital marketing and media on children's diet, health and well-being. Lastly, IFBA firms should update and harmonize their individual policies on responsible food and beverage marketing to children with national, regional and international standards and, like the technology firms, ensure that their digital marketing and media policies are posted on their external websites in all countries where they conduct business.

CONCLUSIONS

Our globalized food system cannot sustainably promote healthy people and a healthy planet. Transnational firms widely use digital marketing and media to perpetuate unhealthy and unsustainable behaviours that contribute to obesity and NCD risks for young people, as well as climate change. This paper reviews the digital marketing and media policies of 18 transnational firms – six technology firms and 12 IFBA food and beverage companies – and how they promote products, brands and healthy and sustainable lifestyles to young people.

At the time of writing, four of the six technology firms (except Amazon Global and Microsoft) had publicly posted privacy-protection policies for children under the age of 13 years. No digital technology firm had an explicit policy on digital marketing and its use in promoting corporate brands and unhealthy HFSS food and beverage products to young people. Individual IFBA firm policies were loosely aligned with the Global Policy on Marketing Communications to Children. Only General Mills had pledged to not use digital marketing to promote HFSS food and beverage products to adolescents. No evidence was available to assess the effectiveness of IFBA firms' digital technology to promote healthy and sustainable lifestyles.

Global and national actors should make greater efforts to ensure that digital marketing and media are used to support healthy and sustainable diets, lifestyles and food systems to benefit future generations. These findings may be applicable to other unhealthy commodities promoted by businesses through digital marketing and media platforms.

Table 1. TWELVE IFBA FIRM COMMITMENTS ON RESPONSIBLE DIGITAL MARKETING TO CHILDREN AND ADOLESCENTS

Company (policy commitment year)	Countries of operation	Public commitments on digital marketing and media communications to children under 12 years	Public commitments to children aged 12–18 years
The Coca-Cola Company (2015)	> 200	<ul style="list-style-type: none"> Does not advertise or market products through websites, social media, movies or SMS/email marketing (+) Excludes sponsorship from marketing strategy (-) 	• None (-)
Danone (2019)	> 120	<ul style="list-style-type: none"> Marketing communications are used only to promote products that meet Danone's Pledge Nutrition Criteria (+) Digital media covered include online and digital platforms, company-owned websites and social-media profiles, interactive games, mobile and SMS marketing, and influencers through blogs, posts, tweets and other uses of social media (+) 	• None (-)
Ferrero International (2018)	55	<ul style="list-style-type: none"> Does not advertise food products on the internet or on its own corporate websites (+) Implements age-screening systems to ensure that steps have been taken to restrict viewing of advertising and the downloading of materials without parental consent (+) 	• None (-)
General Mills (2019)	> 100	<ul style="list-style-type: none"> Does not market any product that does not meet nutrition standards, including on blogs, message boards, chat rooms or similar forums (+) Does not advertise on social media or any websites directed at children, engage in email marketing or encourage participation and promotion of third-party social media (+) 	<ul style="list-style-type: none"> Does not engage in email marketing (+) Does not encourage participation and promotion through third-party social media (+)
Grupo Bimbo (2019)	> 20	• None (-)	• None (-)
Kellogg Company (2018)	> 180	<ul style="list-style-type: none"> Does not advertise products that do not meet the Kellogg's Global Nutrient Criteria on third-party digital media/internet sites (+) Limits children's access to the internet using age-screening devices and/or parental consent options (+) Digital media websites do not contain content designed to appeal to or that are targeted at children under 12 years (+) Includes an automatic use-break feature that interrupts screen-time viewing after 15 minutes (+) Includes healthy-lifestyle messaging about energy balance, physical activity and nutrition on digital media (+) 	• None (-)
Mars Inc. (2018)	78	<ul style="list-style-type: none"> Does not use direct marketing communications through websites, mobile apps or other digital products and services, including online games offered on owned websites, digital advertising or other branded content made available on third-party websites and social networks, branded mobile apps, text messaging (SMS/MMS) campaigns or internet promotions (+) Ensures that parental controls or notices are available to prevent children from submitting personal information if a social-media platform or service does not permit age screening (+) 	• None (-)
McDonald's Corp. (2017-2019)	> 100	• None (-)	• None (-)
Mondelez International (2018)	160	• Does not direct or conduct marketing activities to children, be it web-based and digital media, digital apps or mobile games, social media, word-of-mouth, viral advertising, movies, video or computer games (+)	• None (-)
Nestlé SA (2018)	194	<ul style="list-style-type: none"> Does not direct marketing communications to children up to 6 years of age; when directing marketing communications to children aged 6-12 years of age, the marketing is for products that meet the Nestlé Policy Nutrition Criteria (+) Does not direct marketing communications at children for sweet or savoury biscuits, sugar confectionery, chocolate confectionery, water-based beverage products with added sugars and ice-cream products through paid or unpaid marketing communication developed directly by or on behalf of Nestlé, including digital media, mobile, games, apps, email, SMS and Nestlé-owned websites (+) 	• None (-)
PepsiCo (2014)	> 200	<ul style="list-style-type: none"> Marketing communications are used only to promote products that meet PepsiCo's Global Nutrition Criteria for Advertising to Children (+) The policy applies to internet, third-party, corporate and brand-owned websites (-) 	• None (-)
Unilever (2020)	190	<ul style="list-style-type: none"> Does not direct marketing communications at children younger than 6 years; any marketing at children aged 6-12 years must meet Unilever's Nutrition Criteria (+) The policy covers all digital marketing and media activities, including the internet (both company own websites and third-party websites), social media, apps, online games and direct marketing (+) 	• Pledge covers all digital marketing communications and digital media intended for children under 13 years (+), but not children aged 13–18 years (-)

Source: *The Coca-Cola Company (2015); Danone (2019); Ferrero (2017); General Mills (2019); Grupo Bimbo (2019; 2020); Kellogg Company (2018); Mars Inc. (2018); McDonald's (2020); Mondelez International (2018); Nestlé (2018); PepsiCo (2014); Unilever (2020)*

Table 2. KEY REPORTS ON RESTRICTING OR REDUCING YOUNG PEOPLE'S EXPOSURE TO HFSS MARKETING, 2010–2020

Year	Report
2010	• Set of Recommendations on the Marketing of Foods and Non-Alcoholic Beverages to Children (WHO)
2011	• Digital Food Marketing to Children and Adolescents: Problematic Practices and Policy Interventions (ChangeLab Solutions and National Policy & Legal Analysis Network to Prevent Childhood Obesity)
2012	• A framework for implementing the set of recommendations on the marketing of foods and non-alcoholic beverages to children (WHO)
	• Children's Rights and Business Principles (UNICEF, United Nations Global Compact and Save the Children)
2013	• General comment No. 16 on State obligations regarding the impact of the business sector on children's rights (Committee on the Rights of the Child, United Nations High Commission on Human Rights)
	• Children's Online Privacy Protection Rule (COPPA) Final Rule Amendment
	• Federal Trade Commission of the United States of America
2016	• Tackling food marketing to children in a digital world: trans disciplinary perspectives children's rights, evidence of impact, methodological challenges, regulatory options and policy implications for the WHO European Region (WHO Regional Office for Europe)
	• Implementation Guide for Marketing Communications to Children Commitment (World Federation of Advertisers and Consumers Goods Forum)
2018	• A Child Rights-Based Approach to Food Marketing: A Guide for Policy Makers (UNICEF)
	• Children and Digital Marketing: Rights, risks and responsibilities (UNICEF)
	• Monitoring and restricting digital marketing of unhealthy products to children and adolescents (WHO European Office for the Prevention and Control of Noncommunicable Diseases)
	• ICC Advertising and Marketing Communication Code (2018 edition) (International Chamber of Commerce)
2019	• Resolution on the protection of children from digital food marketing (Consumers International and the Transatlantic Consumer Dialogue)
	• Protecting Children's Right to a Healthy Food Environment (UNICEF and the UN Special Rapporteur on the Right to Food)
	• Marketing of food, non-alcoholic and alcoholic beverages. A toolkit to support the development and update of codes of conduct (European Commission)
2020	• Building momentum: lessons on implementing robust restrictions of food and non-alcoholic beverage marketing to children (WCRF International)
	• Age-appropriate design: a code of practice for online services (UK Information Commissioner's Office)
	• WHO-UNICEF-Lancet Commission report on the future of the world's children (WHO, UNICEF and The Lancet)

Source: WHO (2010; 2012); Montgomery and Chester (2011); UNICEF, United Nation Global Compact and Save the Children (2012); United Nation Committee on the Rights of the Child (2013); US Federal Trade Commission (2013); WHO Europe (2016; 2018); WFA and CGF (2016); UNICEF (2018a; 2018b); ICC (2018); UNICEF and the United Nations Special Rapporteur on the Right to Food (2019); Consumers International and the Transatlantic Consumer Dialogue (2019); European Commission (2019); WCRF (2020; Information Commissioner's Office (2020); Clark et al. (2020)

Table 3. RECOMMENDED ACTIONS FOR RESPONSIBLE DIGITAL MARKETING TO YOUNG PEOPLE ON HEALTHY DIETS, LIFESTYLES AND FOOD SYSTEMS

Actor	Actions
United Nations agencies	<ul style="list-style-type: none"> • Convene actors to clarify common guidelines and standards. • Provide technical assistance to national governments (1) to develop comprehensive and cost-effective policies that restrict children's exposure to the digital marketing of HFSS food and beverage products and (2) to protect children's rights to adequate food and nutrition, health and privacy through digital marketing. • WHO and its regional offices should ensure that digital marketing is included in existing guidelines and standards to restrict HFSS food and beverage marketing to children and adolescents up to 18 years of age. • Monitor the implementation of commitments and evaluate the impact of actions to achieve targets.
National governments	<ul style="list-style-type: none"> • Prioritize policies that protect digital privacy and restrict the use of digital marketing to children and adolescents. • Develop comprehensive national legislation, laws and regulations to cover all forms of digital marketing aimed at children and adolescents to align them with recommended best practices (Figures 2A and 2B). • Collaborate with international and regional bodies to develop cross-border policies to regulate transnational digital marketing and media practices. • Monitor and evaluate how transnational companies are using digital marketing and social media and boost accountability for their practices in all countries where they operate. • Prohibit businesses from collecting data from children and adolescents through digital marketing, including mobile apps. • Ensure that international trade and investment agreements do not limit the ability of national governments to restrict and regulate HFSS food and beverage marketing to young people through digital marketing and media.
Technology firms	<ul style="list-style-type: none"> • Develop policies that protect the digital privacy rights of young people and enforce standards for digital platforms that support responsible food and beverage marketing to children and adolescents, aligning them with national, regional and international laws and recommended best practices. • Ensure that digital marketing and media policies are posted on firms' public websites in countries where they operate.
Food and beverage firms	<ul style="list-style-type: none"> • IFBA firms should amend their Global Policy on Marketing Communications to Children and apply the WHO-recommended nutrient-profile standards for food and beverage marketing to young people on all social-media platforms and digital and mobile devices. • Ensure that children's rights are explicitly addressed in the amended Global Policy and identify processes for mitigating the adverse impacts of digital marketing and media on children's diet, health and well-being. • Update and harmonize each firm's policy on responsible food and beverage marketing to children with the policies of national, regional and international bodies and ensure that digital marketing and media policies are posted on companies' external websites in countries where they operate.
Civil-society organizations	<ul style="list-style-type: none"> • Advocate and mobilize populations to demand strong government policies to protect young people' digital privacy. • Monitor and evaluate the effectiveness of voluntary commitments on digital marketing and media used to promote food and beverage brands and products to children and adolescents, as well as the impact of healthy and sustainable lifestyle programmes that use digital marketing and media to encourage healthy and responsible consumption behaviour. • Hold national governments to account and encourage transnational firms to implement best-practice recommendations and voluntary codes of conduct that protect children's digital privacy, promote digital literacy and support healthy and sustainable diets.

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