



Original article

The Frequency and Healthfulness of Food and Beverages Advertised on Adolescents' Preferred Web Sites in Canada

 Monique Potvin Kent, Ph.D. ^{*}, and Elise Pauzé, M.Sc.

School of Epidemiology and Public Health, Faculty of Medicine, University of Ottawa, Ottawa, Ontario, Canada
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ABSTRACT

Purpose: The purpose of this study was to document the frequency and healthfulness of pop-up and banner food advertisements displayed on third-party Web sites preferred by adolescents in Canada.

Methods: Syndicated Internet advertising exposure data licensed from comScore was used to identify adolescents' (ages 12–17) 10 most popular Web sites and determine the frequency of food and beverage display advertisements on these Web sites from June 2015 to May 2016. The nutrition information for all advertised products was collected, and the healthfulness of all food and beverage ads was assessed using the Pan-American Health Organization (PAHO) and the U.K. Nutrient Profile Models (NPM).

Results: In total, there were 14.4 million food advertisements on all 10 Web sites from June 2015 to May 2016. The most frequently advertised food categories were cakes, cookies, and ice cream (32.5%); cold cereal (20.5%); restaurants (18.0%); and sugar-sweetened beverages (12.0%). Most advertised products (93.3%) were categorized as excessive in either fat, sodium, or free sugars according to the PAHO NPM, and 83.5% of ads were categorized as “less healthy” according to the U.K. NPM. Specifically, 81.3% of ads were excessive in free sugars, 22.1% were excessive in sodium, 14.1% were excessive in saturated fat, and 11.8% were excessive in total fat according to the PAHO NPM.

Conclusions: Canadian adolescents are potentially exposed to a high frequency of unhealthy food and beverage display advertisements on their preferred Web sites. Regulations restricting food and beverage marketing to children need to include digital media and should consider protecting adolescents up to the age of 17.

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IMPLICATION AND CONTRIBUTIONS

Legislation restricting food advertising to youth should apply to Web sites popular with adolescents even if they are intended for mixed audiences. Given the borderless nature of the Internet, international coordination, as was mobilized for the control of tobacco, will likely be needed to protect youth from unhealthy food advertising online.

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Previous presentations: The results from this study have been presented in a webinar organized by the Health and Stroke Foundation.

^{*} Address correspondence to: Monique Potvin Kent, Ph.D., School of Epidemiology and Public Health, Faculty of Medicine, University of Ottawa, 600 Peter Morand Cres., Room 301J, Ottawa, Ontario, Canada K1G5Z3.

E-mail address: mpotvink@uottawa.ca (M. Potvin Kent).

Rates of obesity among school-aged children including adolescents have been rising globally over the last four decades, with nutrition-related chronic diseases among youth increasing in tandem [1,2]. Given that food and beverage (hereafter only referred to as food) marketing has been established as a potent environmental determinant of dietary behaviors and childhood obesity [3,4], international and national health organizations have called on governments to adopt policies to limit the marketing of unhealthy foods to children [5,6].

To date, most research and policy discussions on restricting food marketing have focused on younger children [3]; however, emerging research is making a compelling case for extending

protections to adolescents [7,8]. Indeed, studies have shown that adolescents are particularly vulnerable to food marketing given their stage of neurocognitive and psychosocial development, which makes them more impulsive, emotionally volatile, prone to risky behavior, and heavily influenced by their peers [7,8]. These traits are being increasingly exploited by food marketers, particularly in digital media, where ad spending is growing [9,10].

In Canada, the prevalence of obesity among adolescents aged 12–17 tripled between 1979 and 2010 [11]. Currently, the combined prevalence of overweight and obesity among this age group is 27% [12]. The potential for advertisers to reach Canadian youth online is great, as access to the Internet is practically universal and almost a third (30%) of youth aged 12–17 in grades 6–12 are spending upwards of 2 hours of their daily leisure time on computers [13,14]. Currently, there are no regulations in Canada protecting adolescents from the marketing of unhealthy foods, and much of the research examining food advertising in the country has focused on television advertising to children aged 12 and under [15]. To our knowledge, no research in Canada has examined adolescent exposure to food advertising in digital media. To fill this gap, this study documented the frequency and healthfulness of pop-up and banner food ads displayed on third-party Web sites preferred by Canadian adolescents.

Methods

Identifying adolescents' preferred Web sites

Syndicated Internet advertising exposure data for June 2015 to May 2016 were licensed from comScore. This company has an online measurement panel of 40,000 Canadians and collects data on the Web sites they visit, their engagement with online content, and which display advertisements (i.e., pop-up or banner ads) are shown on Web pages they view. The panel's data are weighted based on various demographic characteristics and are used to estimate the online behavior of the Canadian population using the Internet. The 10 most popular Web sites with advertising for March–May 2016 were determined using comScore's Media Metrix Key Measures Report for children ages 12–17 years from all provinces, except Quebec. Quebec adolescents were excluded as the primary language in Quebec is French and therefore preferred Web sites may differ significantly from the rest of the country, where English predominates. The most popular sites were defined as those that had a minimum of 50,000 unique adolescent visitors and whose percentage of adolescent visitors reached a minimum of 15%. This audience threshold was chosen because it is the one applied by Quebec's Consumer Protection Act, which prohibits all commercial marketing to children under 13 in that province [16]. Ten Web sites with advertising met these criteria and were included in this study (Table 1).

Frequency of display advertising

The frequency of food display ads on each Web site from June 2015 to May 2016 was identified by generating comScore's Ad Metrix Advertiser Report for six food-related advertiser categories (i.e., food and grocery, frozen food, alcoholic beverages, restaurants, dairy, and beverages). comScore's Ad Metrix module captures all display ads that were displayed on Web pages visited by their Canadian panelists, including advertisements originating from food companies located outside of Canada. Ad Creative Reports were generated for each advertiser on every Web site.

Table 1

List of top 10 adolescent (12–17 years of age) preferred Web sites^a, Canada (except Quebec), March–May 2016

	Web site	Total unique adolescent visitors per month	Reach ^b (%)	Composition of unique visitors ^c (%)
1	Coolmathgames.com	114,000	6.2	17.6
2	Enotes.com	63,000	3.5	20.7
3	Clubpenguin.com	57,000	3.1	21.1
4	Miniclip.com	96,000	5.3	15.6
5	Counter-strike.net	81,000	4.5	17.7
6	Sparknotes.com	75,000	4.1	18.2
7	Shmoop.com	66,000	3.6	21.7
8	Armorgames.com	53,000	2.9	20.9
9	Wattpad.com	53,000	2.9	17.7
10	Citationmachine.net	52,000	2.9	23.6

^a Defined as Web sites with at least 50,000 monthly adolescent visitors where individuals of this age group make up at least 15% of Web sites' unique visitors.

^b Percent of Canadian adolescent Internet users (outside Quebec) who visited the Web site.

^c Percent of unique monthly Web site visitors who are adolescents aged 12–17.

The number of ads displayed in Canada on examined Web sites and their content (i.e., name of products or brand logos advertised) was documented.

Classifying display advertisements

Each ad was classified by food company and ad type ("product" if one was featured or "brand" if only a logo was featured). Categorization by food company was done based on the brand and product portfolios of Canadian food companies (which may slightly differ from their counterparts in other countries). Ads that were reported as belonging to a food advertiser by comScore but whose content could not be seen due to technical glitches were included in the study and categorized as unspecified (neither brand nor product). Ads were also coded into 15 food categories including cakes, cookies, and ice cream; restaurants; cold cereal; sugar-sweetened beverages; tea or coffee; cheese, candy, and chocolate; water; bread and pasta; alcohol; yogurts; snacks; 100% juice; mixed category (i.e., featuring products from multiple food categories); and other.

Nutritional analysis

The nutritional information was collected for all advertised products (with the exception of alcohol) and was taken from, in order of priority, the Canadian company Web site, the Nutrition Facts table on the product, the U.S. company Web site, or the Canadian Nutrient File. Information collected included energy, total fat, saturated fat, trans fat, sodium, carbohydrates, fiber, sugar, and protein per stated serving. The volume of beverages (milliliter) was converted into grams using their specific density (g/mL) [17], and the nutritional information for all products was expressed based on 100-g servings. The healthfulness of products featured in the display ads was assessed using the Pan American Health Organization (PAHO) Nutrient Profile Model (NPM) and the U.K. NPM [18,19]. All product ads were classified according to whether they were excessive in total fat ($\geq 30\%$ of total energy), saturated fat ($\geq 10\%$ of total energy), trans fat ($\geq 1\%$ of total energy), sodium (≥ 1 mg per 1 kcal), and free sugars ($\geq 10\%$ of total energy) as per the PAHO NPM [18]. They were also classified as excessive or not in at least 1 of these nutrients.

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