Television advertising, not viewing, is associated with negative dietary patterns in children

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Received 26 March 2015; revised 27 May 2015; accepted 6 July 2015

Summary

Background: Children’s exposure to unhealthy food marketing is a contributor to poor diets and weight gain. Television food advertising, in particular, has been the focus of research and policy discussions.

Objectives: We aimed to quantify the specific impact of television advertising, as distinct from television viewing generally, on children’s usual diet. Methods Four hundred seventeen Australian children aged 10–16 participated in an online survey, which assessed television viewing habits and consumption of 12 frequently advertised unhealthy foods/drinks. Consumption of these foods/drinks was dichotomized (less weekly, weekly or more) and summed (1 point for each item consumed weekly or more) to give cumulative consumption scores.

Results: After adjusting for age and socioeconomic status, there was strong evidence of an increase in unhealthy food score (P < 0.001), drink score (P = 0.002) and food/drink combined score (P < 0.001), with increasing commercial television viewing.

Conclusions: The link between television viewing and poor diet was strongest for children who watched the most commercial television, and those who were actually exposed to advertisements embedded within programs. This association between advertisement exposure and poor diet emphasizes the need for public policy intervention to reduce children’s food advertising exposures.

Keywords: Advertising, food, marketing, television.

Introduction

Children’s exposure to high levels of energy-dense, ultra-processed (‘unhealthy’) food marketing contributes to an environment that promotes obesity, and works by increasing familiarity of foods and brands, forming positive brand associations and encouraging product purchase and consumption (1). Experimental (2,3) and observational (4) studies have identified positive associations between television food advertising exposure and intake of unhealthy food and beverages. Children’s commercial television viewing has also been linked to body mass index (BMI) longitudinally (5). In one US study (n = 2037), each hour of commercial television that younger children (<7 years) watched per day in 1997 was associated with a 0.1 increase in BMI z-score in 2002 (5). There was no association between children’s exposure to non-commercial television and weight status at follow-up. This study aimed to quantify the impact of children’s exposure to television food advertising on usual dietary patterns, as part of a larger survey on responses to food branding.

Methods

An online survey was conducted with 10- to 16-year-old Australian children during October–November 2014. Parents who were panel members of a market research company were contacted by email to invite their child to participate. Survey measures included (i) sociodemographic characteristics (sex, age, residential postcode); (ii) commercial/non-commercial television viewing habits (minutes/day, weekdays and weekends), including frequency of watching television live or pre-recorded (with skip through ads); and (iii) consumption of frequently advertised unhealthy foods/drinks using short food frequency questions, with responses ranging from more than two per day to less than one per week (6).

Frequency of intakes for foods/drinks was dichotomized into ‘less than weekly’ or ‘at least weekly’. This aligns with population dietary surveys (6) and recognizes that responses to short questions do not represent absolute intake but can rank low/high consumers (7). Participants received one point for each food/drink consumed at least
weekly to give cumulative consumption scores for unhealthy foods (seven items including biscuits, cakes, muesli bars; fast food; confectionery; ice cream, ice blocks; chips and salty snacks; pre-sugared breakfast cereal; and fried potato), unhealthy drinks (five items including fruit juice, sugary drinks, flavoured milk, diet drinks and energy drinks) and unhealthy food/drink combined (12 items). Amount of television viewing was grouped into quartiles based on data spread. Children were grouped into those exposed to advertisements and those who were not. Exposed children were those who ‘always’ or ‘mostly’ watched commercial television live or those who did not watch television live but did not skip through advertisements in recordings. Australian Bureau of Statistics Socio Economic Indexes for Areas were used to group participants into socioeconomic status (SES) tertiles (8). The study was approved by the University of Sydney Human Research Ethics Committee.

Analysis of variance with Scheffe post-hoc testing was used to compare television viewing quartiles and food/drink scores. Multiple linear regression was used to determine associations between commercial television viewing and food/drink scores, controlling for SES and age.

Results

Four hundred seventeen children (53% female), with mean age 13 years (standard deviation = 1.9) completed the survey. A spread of SES was achieved. There was a positive association between amount of commercial television viewing and unhealthy food score ([3, 413] = 6.60, P = 0.001), unhealthy drink score ([3, 413] = 2.67, P = 0.05) and unhealthy food/drink combined score ([3, 413] = 6.34, P = 0.001) (Table 1). Those who watched the lowest amount of commercial television had a lower unhealthy food score and unhealthy food/drink combined score compared with those who watched the most television.

For non-commercial television, there was a weaker positive association between television viewing and unhealthy drink score ([3, 413] = 2.99, P = 0.03), and unhealthy food/drink combined score ([3, 413] = 3.66, P = 0.01). No pairwise differences existed for unhealthy drink score across groups of non-commercial television viewing.

For those who were exposed to advertisements, there was a positive association between commercial television viewing and unhealthy food score ([3, 307] = 5.17, P = 0.002) and unhealthy food/drink combined ([3, 307] = 5.44, P = 0.001). There were no significant differences in unhealthy food, unhealthy drink or unhealthy food/drink combined scores for children who were classified as not exposed to television advertisements.

Younger children (10–12 years) and those living in low SES areas had higher unhealthy food scores. After adjusting for age group and SES, there remained strong evidence of an increase in unhealthy food score ([4, 412] = 9.27, P < 0.001), unhealthy drink score ([4, 412] = 4.42, P = 0.002) and unhealthy food/drink combined score ([4, 412] = 8.73, P < 0.001) with increasing commercial television viewing. Each hour of commercial television viewing per week was associated with a 0.048 unit increase in unhealthy food score, 0.019 unit increase in unhealthy drink score and 0.067 unit increase in the unhealthy food/drink combined score (Table 2).

Discussion

This survey identifies a dose–response relationship between children’s exposure to television advertising and poor diet. Although the act of watching television per se has been linked to childhood obesity (9), we identified that exposure to advertising in particular was associated with increased consumption of unhealthy food and drinks. The link between television viewing and poor diet was strongest for those children who watched the most commercial television, and were exposed to advertisements at the time.
of broadcast or did not skip through advertisements in television recordings. Watching commercial television content without advertisements was not linked to poor diets and non-commercial television was only weakly associated with unhealthy food/drink intake. Earlier content analyses of television advertising in Australia identified that children are exposed to approximately six food advertisements per hour, more than half of which are for unhealthy products (10). Public policy intervention is required to curb children’s exposure to these deleterious advertisements.

### Conflict of Interest Statement

No conflict of interest was declared.

### Acknowledgements

This study was partly funded through an Australian National Preventive Health Agency grant and an Australian Research Council Linkage Grant.

### Authors contributions

B. K., B. F., L. K. and K. C. developed the questionnaire and survey protocol. B. K. carried out the data analyses and drafted the manuscript. All authors were involved in writing the paper and had final approval of the submitted version.

### References


