

Advertising of fast food to children on Australian television: the impact of industry self-regulation

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One of the key recommendations of the National Preventative Health Taskforce¹ was that children's exposure to advertising of unhealthy foods should be reduced. This was because of the negative impact this advertising had on children's food preferences and consumption, and potentially on children's weight status.² In response, the federal government recommended that the Taskforce continue to monitor the impact of self-regulation by food and advertising industries before the government took any further action.³ However, recent evidence has indicated that self-regulation is inadequate in protecting Australian children from the harmful effects of junk-food advertising.^{4,5}

In Australia, statutory guidelines (the children's television standards) regulate the use of promotions, popular characters and unsuitable material during time periods dedicated to children's television programs.⁶ However, these standards do not regulate the types of foods that may be advertised to children (with the exception of alcohol), and do not apply during times when the highest numbers of children are viewing.^{6,7} Recent self-regulatory initiatives for responsible advertising to children, introduced by food and advertising industries, have provided some specifications for the types of foods and marketing techniques they consider appropriate for advertising to children and for defining child audiences.^{8,9} However these specifications are poorly defined, highly permissive, and are voluntary for food manufacturers and services.^{5,10}

The most recent self-regulatory initiative, the Australian Quick Service Restaurant Industry (QSRI) Initiative for Responsible Advertising and Marketing to Children,⁸ specifies that fast-food companies (ie, quick-service restaurants) should "ensure that only food and beverages that represent healthier choices are promoted directly to children...".⁸ The QSRI initiative began in August 2009 with seven signatories: Chicken Treat, Hungry Jack's, KFC, McDonald's, Oporto, Pizza Hut and Red Rooster.⁸ These companies agreed that in advertising to children under 14 years of age, they would only advertise products that represent healthier choices (as determined by a

ABSTRACT

Objective: To assess the impact of the quick-service restaurant industry (QSRI) self-regulatory initiative on fast-food advertising to children on Australian commercial television.

Design and setting: Analysis of advertisements for foods on the three main free-to-air commercial television channels (channels 7, 9 and 10) in Sydney, Australia, over 4 days in both May 2009 and April 2010 in terms of: number of advertisements; types of food (coded core [healthy] foods, non-core [unhealthy] foods, miscellaneous foods; or fast foods); whether advertised meals were intended for children; whether advertisements were broadcast during children's peak viewing times; and whether the company in question was a signatory to the QSRI initiative.

Main outcome measures: Change in the mean frequency and rate of food advertisements per hour from 2009 to 2010; change in the types of fast-food meals (healthier alternatives [at least one nutrient-dense, low-energy food considered part of a healthy diet for children], non-core [high in undesirable nutrients and not considered part of a healthy diet for children], and other) being advertised; and proportion of children's energy requirements provided by fast-food meals.

Results: From 2009 to 2010, the mean frequency of fast-food advertisements increased from 1.1 to 1.5 per hour. While non-core fast foods comprised a lesser share of fast-food advertising in 2010 than 2009, the mean frequency at which they were advertised during times when the largest numbers of children were watching television remained the same (1.3 per hour in both 2009 and 2010). Family meals advertised for children's consumption in 2010 provided energy far in excess of children's requirements.

Conclusions: Children's exposure to unhealthy fast-food advertising has not changed following the introduction of self-regulation, and some fast foods advertised for children's consumption contain excessive energy. The limited impact of self-regulation suggests that governments should define the policy framework for regulating fast-food advertising to children.

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defined set of nutrition criteria for assessing children's meals), and/or represent a healthy lifestyle in advertisements directed primarily to children.⁸

We aimed to measure the impact of the QSRI initiative on the rates of fast-food advertising on Australian commercial television; identify the types of fast foods advertised in terms of their nutritional value; and estimate the likely energy contribution to children's diets of children's meals advertised by fast-food companies.

METHODS

Data sources and coding

All advertisements for food and non-food products broadcast on the three main Sydney free-to-air television channels (channels 7, 9 and 10), were recorded over 4 days in

May 2009 (Saturday 16 May to Tuesday 19 May, 6.30 am to 10.30 pm) and in April 2010 (Saturday 17 April to Tuesday 20 April, 6 am to 11 pm).

Food advertisements were identified and coded by food category, using a classification system applied in previous studies.¹¹

- **core (healthy) foods:** nutrient-dense, low-energy foods considered part of a healthy diet for children;¹²
- **non-core (unhealthy) foods:** high in undesirable nutrients and not considered part of a healthy diet for children;¹²
- **miscellaneous foods;** or
- **fast foods:** foods or beverages prepared by others outside the home, paid for before eating, with limited preparation or service required.¹³

Fast-food advertisements were coded into three subcategories — those promoting:

- healthier alternatives (with at least one core food advertised);
- non-core foods; or
- “other” (only the company brand or a specific promotion advertised).

Each fast-food advertisement was further coded by:

- company;
- whether or not the company had signed up to the QSRI initiative; and
- advertisement focus (single product, meal, multiple products, or company brand/specific promotion).

Meals were coded according to whether or not they were children’s meals. As the QSRI initiative does not define what constitutes a children’s meal, other than noting that it must comprise “at least a main and a beverage”,¹⁴ we adopted the following operational definition of an advertisement for a children’s meal, derived from previous research:

... an advertisement for a meal, where a child is depicted consuming the meal, or which uses themes of fun/happiness or fantasy/imagination to appeal to children.¹⁵

To examine fast-food advertising being shown when the highest numbers of children were viewing television, annual television audience data for 2009 were used. These data identified the peak viewing times for child audiences aged 5–12 years.⁷ Consistent with previous research,⁴ peak times were defined as times when the child audience exceeded 25% of the maximum child audience for the day, and included 5.30 pm–10.30 pm on weekdays, and 7.30 am–11 am and 4.30 pm–11 pm on weekends.

Coding was performed by two research dietitians, and interrater agreement was assessed using Cohen’s κ statistic. Coder reliability for 2009 and 2010 was 1.00 (perfect agreement) for both food categorisation (using a random 1-hour sample of advertisements) and fast-food categorisation (using a random sample of 10 unique fast-food advertisements).

For both the 2009 and 2010 study periods, the energy value per serve of children’s meals advertised by fast-food companies was obtained from company websites. When the energy value was unavailable from the websites, the relevant companies were contacted for this information.

Statistical analysis

The dependent variable was the number of advertisements during the 4-day sample period in each year. Separate analyses were

conducted, according to food category (core, non-core, fast-food and miscellaneous) and fast-food category (healthier alternatives, non-core and other), for the years 2009 and 2010 to examine change in the extent of advertising between these years. Non-core fast-food advertisements were further analysed for all times and during children’s peak viewing times, including a year (2010 v 2009) by company-type interaction (QSRI-initiative signatories v non-signatories).

Counts of advertisements were analysed using four regression models: (i) Poisson; (ii) negative binomial; (iii) zero-inflated Poisson (ZIP); and (iv) zero-inflated negative binomial (ZINB). ZIP and ZINB models were used where there were zero counts of the dependent variable (ie, no advertisements). The best model was selected based on goodness-of-fit statistics, Vuong test (ZIP v Poisson, and ZINB v negative binomial) and the dispersion parameter α (negative binomial v Poisson). Offsets were total advertisements (for fast-food, core, non-core and miscellaneous foods) and total fast-food advertisements (for each fast-food category). Analyses were conducted using Stata, version 11.0 (StataCorp, College Station, Tex, USA), with the significance threshold set at $P=0.05$. The reference year was 2009 (before the introduction of self-regulation), and the reference company type was companies that were not signatories to the QSRI initiative. A two-way interaction term between company type and year was included in the models, analysing the count of non-core fast food, and non-core fast food in peak times, to assess the impact of the QSRI initiative. Counts were calculated per

half hour in regression models to account for the different times sampled in 2009 and 2010, but are presented per hour, for ease of interpretation, with the incidence rate ratios (IRR) from the models.

As the QSRI initiative applies to advertising to children under 14 years of age, the energy content of children’s meals, advertised by fast-food companies in 2009 and 2010, was compared with the daily energy requirements of boys and girls aged 4, 8 and 12 years.¹⁶ Estimates were adjusted for a physical activity level (ratio of total to basal energy expenditure) of 1.6, based on estimates for Australian children.¹⁷ As a fast-food meal is likely to be one of three meals consumed each day in addition to snacks, a 30% threshold of children’s daily energy requirement was used to identify meals providing excess energy.

RESULTS

Sampled fast-food advertisements comprised those promoting healthier alternatives (at least one core food advertised), non-core foods, or other (company brand or specific promotion only) (Box 1).

The mean number of advertisements per hour for all foods, each food category, and each fast-food category are shown in Box 2, with the IRR comparing 2009 with 2010. The mean frequency of total food advertisements increased significantly from 6.0 per hour in 2009 to 6.3 per hour in 2010. However, changes in food advertising varied across food categories; excluding fast-food advertising, the rate of advertisements for non-core foods (ie, sugared beverages and confectionery) decreased while advertising

1 Numbers and examples of unique fast-food advertisements from the 2010 study period, by fast-food category and advertisement focus

Fast-food category (n)	Advertisement focus (n)	Examples
Healthier alternatives (6)	Meal (2)	Happy Meal with flavoured milk, apple slices, seared chicken snack wrap
	Multiple products (2)	Portuguese platter (Portuguese chicken, fries, bread, corn, three salads)
	Single products (2)	Sweet onion, chicken teriyaki and salad sandwich
Non-core (11)	Meal (5)	Cheeseburger Stunner Deal (burger, fries, coke, chocolate sundae)
	Multiple products (4)	Wraps, diet soft drink, fried chicken
	Single products (2)	Mighty McMuffin
Other (4)	Company brand (2)	Ronald McDonald teaching children fire safety
	Specific promotion (2)	“Cheaper Tuesday” promotion

2 Mean frequency of food advertisements per hour on commercial television in 2009 and 2010 and incident rate ratios, by food category

	Mean frequency (advertisements/h)		Incidence rate ratio (IRR) 2009 versus 2010		
	2009	2010	IRR	(95% CI)	P
Total food advertising	6.0	6.3	1.39	(1.22–1.59)	<0.001
Core foods*	1.5	1.6	1.02	(0.87–1.20)	0.823
Non-core foods†	2.0	1.4	0.64	(0.54–0.76)	<0.001
Miscellaneous foods‡	1.4	1.9	1.3	(1.11–1.52)	0.001
Total fast food	1.1	1.5	1.26	(1.06–1.51)	0.008
Healthier alternatives§	0.0	0.3	7.19	(2.87–18.0)	<0.001
Non-core¶	1.0	1.0	0.73	(0.60–0.88)	0.001
Other§	0.1	0.2	3.19	(1.55–6.57)	0.002
Total non-core advertising¶	3.1	2.4	0.74	(0.65–0.83)	<0.001

* Such as dairy, fruit, vegetables or low-sugar and high-fibre cereals. † Such as high-sugar or low-fibre cereals, sugared beverages, confectionery (excludes fast food). ‡ Such as dietary supplements, tea, coffee or advertisements from major supermarkets. § See examples in Box 1. ¶ Sum of non-core-food advertisements and non-core fast-food advertisements; 0.1 discrepancy is a rounding issue. ◆

for miscellaneous foods rose, and that for core foods remained the same (Box 2).

From 2009 to 2010, the rate of fast-food advertisements increased significantly. Box 2 also shows that the mean frequency of non-core fast-food advertisements was constant from 2009 to 2010; this was also the case during children's peak viewing times (1.3 per hour). However, relative to all fast-food advertising, the rate of non-core fast-food advertisements decreased significantly (Box 2). This occurred with an increase in the rate of fast-food advertisements promoting healthier alternatives and those promoting other aspects (Box 2).

Advertising by companies that were signatories to the QSRI initiative

Companies that were signatories to the QSRI initiative that advertised in 2010 also advertised during the 2009 study period (Hungry Jack's, KFC, McDonald's, Pizza Hut and Red Rooster). Companies that were not signatories to the QSRI initiative and that advertised in 2010 (Domino's Pizza, Subway and Nando's) were responsible for 14% of fast-food advertising, and those that advertised in 2009 (Domino's Pizza and 131 Pizza) were responsible for 8%.

In examining the change in advertising for non-core fast foods between 2009 and 2010, by company type (QSRI-initiative signatories v non-signatories), we found a significant interaction (IRR = 5.18; $P < 0.001$; 95% CI, 2.10–12.79), whereby non-signatory companies reduced their rate of non-core fast-food advertising, relative to all fast-

food advertising, by 84% (test of simple effects; $P < 0.001$), while QSRI-initiative signatories reduced their rate by only 17% (test of simple effects; $P = 0.061$). This interaction remained significant for children's peak viewing times (IRR = 5.04; $P = 0.006$; 95% CI, 1.59–15.92).

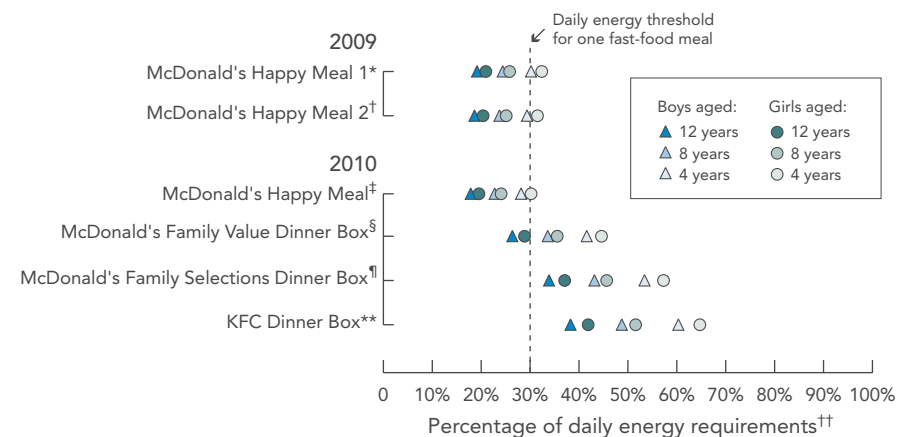
Advertising for children's meals by fast-food companies

Of the seven fast-food meals advertised in 2010 (see advertisement focus, Box 1), four

were classified as children's meals in this study. Three of these were advertised for a family and one for a child only, based on who was depicted consuming the meal in the advertisement. The child meal was the McDonald's Happy Meal (Box 1), which complied with the QSRI nutrition criteria as an appropriate meal to advertise to children.¹⁴ The content of this meal differed from the May 2009 meal (before the QSRI initiative), which comprised six chicken nuggets, 60 g of apple slices and 236 mL milk or 250 mL apple juice. Advertisements for all three family meals showed children under 14 years of age consuming the meal, and all meals consisted of non-core foods (burgers, fried foods and soft drink). Advertising for family meals did not occur during the 2009 sample period, and all children's meals advertised in 2009 and 2010 were from only two QSRI-signatory companies.

Box 3 compares the energy contribution of fast-food meals advertised to children in 2009 and 2010 with the estimated energy requirements of boys and girls aged 4, 8 and 12 years. Advertised children's meals that exceeded 30% of a child's daily estimated energy requirement were both 2009 McDonald's Happy Meals and the 2010 Happy Meal for girls aged 4 years, and the 2009 Happy Meal 1 for boys aged 4 years. Based on the assumption that a quarter of a family meal is available to children for consumption, all family meals exceeded 30% of children's daily energy requirements except

3 Contribution of fast-food meals advertised for children's consumption in 2009 and 2010 to energy requirements for boys and girls aged 4, 8 and 12 years



* Chicken nuggets (6), fruit bag (60 g) and apple juice (250 mL). † Chicken nuggets (6), fruit bag (60 g) and milk (236 mL). ‡ Seared chicken snack wrap, fruit bag (60 g) and chocolate flavoured milk (250 mL). § Cheeseburger (2), Big Mac (2), chicken nuggets (6), regular fries (4), regular soft drink (4); total energy divided by 4. ¶ Grand Angus burger (1), Big Mac (1), Quarter Pounder (2), chicken nuggets (6), regular fries (4), regular soft drink (4); total energy divided by 4. ** Fried chicken pieces (10) and large fries (2); total energy divided by 4. †† Adjusted for age and sex. ◆

the McDonald's Family Value Dinner Box for children aged 12 years (Box 3).

DISCUSSION

We measured the impact of the QSRI initiative on overall rates of television advertising for fast food as a gauge of children's exposure to fast-food advertising; our study was not designed to examine industry's compliance.

Since the self-regulatory QSRI initiative came into effect, fast-food advertising on television increased overall. Despite this, the rate of non-core fast-food advertising decreased; although this was likely an artefact of an increase in the relative share of fast-food advertisements for healthier alternatives, and "other" advertisements (ie, company brand or specific promotions). To illustrate, in 2009, non-core fast-food advertising comprised 93% of total fast-food advertising, compared with 67% in 2010. Regardless, the observed decrease in non-core fast-food advertising was predominantly from companies not signed to the QSRI initiative (84% decrease, versus 17% for QSRI-initiative signatory companies), and the frequency of advertisements for non-core fast foods remained the same during times when most children were watching television.

The limited impact of the QSRI initiative on children's exposure to fast-food advertising is likely due to limitations in the specifications of the initiative, as is the case for the Australian Food and Grocery Council's Responsible Children's Marketing Initiative.^{5,9} One key limitation is the narrow range of fast-food advertisements the QSRI initiative potentially applies to, that is, only those advertisements deemed by industry to be directed primarily to children.

Another reason for the limited impact of the QSRI initiative is that it applies nutrient criteria only to children's meals — a small segment of fast-food advertising. Based on our definition of a children's meal, only four of the 21 unique fast-food advertisements in the 2010 sample period were for a children's meal. Three of these were family meals, found to contain energy far in excess of children's requirements. However, as the QSRI initiative only applies to advertisements directed primarily to children, these family meals may not be subject to any nutritional assessment under this initiative, even though the food is clearly intended for children's consumption.

Arguably, a responsible marketing approach would apply restrictions to a wider range of foods that children actually

consume (not just designated children's meals), and apply to all advertisements that children are likely to be exposed to, and not just those deemed by industry to be directed to children.

The ambiguity of industry specifications, as well as the narrow approach of the QSRI initiative, underlines the rationale for the World Health Organization recommendations for governments to set clear definitions for policies on food advertising to children, to facilitate uniform implementation, monitoring and evaluation.¹⁸

The finding that the rate of advertisements for the company brand or branded promotions increased is also of some concern, as children recognise branded fast foods more easily than other branded foods, and may prefer branded, over unbranded, fast foods.^{19,20} Hence, consideration should also be given to restricting the use of branded promotions, particularly where the advertised company's menu is predominantly for non-core foods. However, these variations in the focus of fast-food advertisements, targeting multiple products or simply the brand, pose a challenge for monitoring and regulatory systems.

Finally, we found that fast-food advertisements promoting healthier alternatives still promoted some non-core foods (Box 1). This use of references to foods that are additional to the main product being advertised has been recognised in previous literature.¹⁵

A limitation of this study is the short periods over which we collected advertising data. However, these sample periods were within comparable seasons and excluded holidays and special events. Previous research has also found no significant differences in the proportion of advertisements for foods between 1-week and 4-day samples.⁴ However, when focusing on non-core fast-food advertisements by company type, we found that smaller sample sizes resulted in large confidence intervals.

We recognise that children's energy requirements will vary between individuals, but age, sex and physical activity level were all considered in energy calculations, based on current literature and data for the Australian population.^{16,17}

We found no difference between the number of non-core fast-food advertisements viewed by children in the sample periods before and after the introduction of the QSRI initiative. This is of concern, given that numerous systematic reviews have found that children's exposure to advertising of unhealthy foods negatively influences

their intake, purchase requests, and potentially their health outcomes.^{2,21} The frequent advertising for non-core fast foods found in this study continues to promote excessive energy intake and increased risk of weight gain.^{22,23}

The limitations of current industry-based self-regulatory initiatives that are illustrated in our study reinforce the recommendations of the World Health Organization on the need for government leadership to set the policy framework and key definitions for restrictions on food marketing to children.¹⁸

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COMPETING INTERESTS

None identified.

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