Children’s exposure to television advertising for unhealthy fast food has remained unchanged since the introduction of industry self regulation, according to new research in the Medical Journal of Australia.

Researchers, led by Dietitian Lana Hebden of the University of Sydney, analysed all TV ads broadcast during a four-day sample period, in both May 2009 and April 2010.

The Australian Quick Service Restaurant Industry (QSRI) Initiative for Responsible Advertising and Marketing to Children is a self-regulatory initiative which began in August 2009, and has several signatories that include McDonald’s, KFC and Pizza Hut.

The study, which compared a period before (May 2009) and after (April 2010) the introduction of the QSRI initiative, found that the mean frequency of fast food ads significantly increased over the study period, from 1.1 per hour in 2009 to 1.5 per hour in 2010.

The frequency of ads for unhealthy fast foods remained unchanged (1.0/hr) overall, and during kids’ peak viewing times (1.3/hr).

The authors called for greater government regulation of fast food advertising, particularly as research shows that kids’ exposure to these ads negatively influences their food intake.

“The limited impact of self-regulation suggests that governments should define the policy framework for regulating fast-food advertising,” they wrote.

The Medical Journal of Australia is a publication of the Australian Medical Association.

The statements or opinions that are expressed in the MJA reflect the views of the authors and do not represent the official policy of the AMA unless that is so stated.

CONTACT: Ms Lana Hebden (02) 9036 3195 (Weds, Fri)
Advertising of fast food to children on Australian television: the impact of industry self-regulation

Lana A Hebden, Lesley King, Anne Grunseit, Bridget Kelly and Kathy Chapman

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.

Method: 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.

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.
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. Estimates were adjusted for a physical activity level (ratio of total to basal energy expenditure) of 1.6, based on estimates for Australian children. 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...
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).

**Advising 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-signatory v non-signatories), we found a significant interaction ($\text{IRR} = 5.18; P < 0.001; 95\% \text{ CI}, 2.10–12.79$), whereby non-significant interaction ($\text{IRR} = 5.18; P = 0.001; 95\% \text{ CI}, 2.10–12.79$), whereby non-significant interaction ($\text{IRR} = 5.18; P = 0.823$), 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 ($\text{IRR} = 5.04; P = 0.006; 95\% \text{ CI}, 1.59–15.92$).

**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. 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 for those that advertised in 2009.

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

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

* 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.

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

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 (i.e., 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 predominately 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. 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.9,20 Hence, consideration should also be given to restricting the use of branded promotions, particularly where the advertised company’s menu is predominately 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.7,21 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

**ACKNOWLEDGEMENTS**

We thank senior statistician Kamalesh Venugopal for informing aspects of the analysis.

**COMPETING INTERESTS**

None identified.

**AUTHOR DETAILS**

Lana A Hebeden, BND, Research Dietitian1
Lesley King, MPsych(Hons), Executive Officer1
Anne Grunstein, PhD, Research Fellow1
Bridget Kelly, MPH, BSc(Nutr)(Hons), Research Dietitian1
Kathy Chapman, MNutrDiet, BSc, Director2
1 Prevention Research Collaboration, University of Sydney, Sydney, NSW.
2 Health Strategies Division, Cancer Council New South Wales, Sydney, NSW.

**Correspondence:** lana.hebeden@sydney.edu.au

**REFERENCES**

5 Hebeden L, King L, Kelly B, et al. Industry self-regulation of food marketing to children: read-

Provenance: Not commissioned, externally peer reviewed.

(Received 8 Nov 2010, accepted 24 Mar 2011)