

## Short Communication

# What's on Malaysian television? - A survey on food advertising targeting children

Tilakavati Karupaiah PhD APD<sup>1</sup>, Karuthan Chinna PhD<sup>2</sup>, Loi Huei Mee BSc<sup>1</sup>,  
Lim Siau Mei BSc<sup>1</sup> and Mohd Ismail Noor PhD DVM<sup>1</sup>

<sup>1</sup>Department of Nutrition & Dietetics, Faculty of Allied Health Sciences, National University of Malaysia, Kuala Lumpur, Malaysia

<sup>2</sup>Department of Statistics, Faculty of Information Technology & Quantitative Sciences, University Technology MARA, Shah Alam, Selangor, Malaysia

The Malaysian government recently introduced a ban on fast food advertisements targeting children on television. This study reports on data covering 6 months of television food advertising targeting children. Six out of seven of the Nation's commercial television networks participated (response rate = 85.7%). Based on reported timings of children's programmes, prime time significantly differed ( $p < 0.05$ ) between weekdays (mean =  $1.89 \pm 0.18$  hr) and weekends (mean =  $4.61 \pm 0.33$  hr). The increased trend during weekends, school vacation and Ramadhan was evident. Over the six-month period, the mean number of food advertisements appearing per month varied greatly between television stations (C = 1104; D = 643; F = 407; B = 327; A = 59; E = 47). Food advertising also increased the most in September (n = 3158), followed by July (n = 2770), August (n = 2431), October (n = 2291), November (n = 2245) and June (n = 2211). Content analysis of advertisements indicated snacks were the highest (34.5%), followed by dairy products (20.3%), sugars and candies (13.4%), biscuits (11.2%), fast food (6.7%), breakfast cereal (6.4%), beverages (4.1%), supplements (0.9%), rice (0.6%), noodles (0.5%), bread (0.3%), miscellaneous and processed foods (0.2%). Paradoxically, we found that the frequency of snack food advertised during children's prime time was 5 times more than fast foods. The sodium content (mean = 620 mg per 100g) of these snack foods was found to be highest.

**Key Words:** television, advertising, children, food groups, content analysis

## INTRODUCTION

A public policy to ban fast food advertisements on television for children, was introduced in Malaysia during March 2007.<sup>1</sup> This step is not without precedence as Britain promulgated a phased ban on advertising of food and drink products categorized as 'High in Fat, Salt and Sugar' (HFSS) on children's television (TV) to be fully implemented by the end of 2008.<sup>2</sup> The rationale for these public policies is borne out of concerns over the global obesity epidemic and a link to childhood habits.<sup>3,4</sup> A Consumer International report on an extensive 13-country survey consistently found a significant number and content of TV advertising targeting children focused on sugar-dense food products.<sup>5</sup> The concern is that brand awareness fosters preferences for HFSS food choices in early childhood, which is probably linked to the development of adult obesity.<sup>4-10</sup>

In the matrix of multiple factors influencing eating behaviour and food choices of the youth, food advertising through media is a recognized potent force.<sup>11</sup> This has led to children becoming an increasingly important market for food advertisers, with TV the preferred medium to reach them.<sup>4,5,12,13</sup> Children's food preferences at both brand and category level followed by purchasing and consumption habits have been driven by TV food advertising.<sup>14,15</sup> Coon and Tucker (2002) have described 3 scenar-

ios of 'priming' children via exposure to TV food advertising: exposed children will choose advertised food products at significantly higher rates than children who were not exposed, a higher incidence of exposed children attempting to influence food purchases by their parents, and greater requests for specific brands or categories of food products triggered by exposure to greater frequencies of the product advertising.<sup>6</sup>

Content analysis is a methodology which allows researchers to generate objective, systematic, and quantitative descriptions of the visual and linguistic elements in TV advertisements.<sup>16</sup> Studies using content analysis of food advertising directed towards children have shown these foods are predominantly in the HFSS group and overall inconsistent with recommended dietary guidelines.<sup>17-20</sup>

We have found no published data to date on the content analysis of food advertising on TV in Malaysia. This

**Corresponding Author:** Dr. Tilakavati Karupaiah, Department of Nutrition & Dietetics, Faculty of Allied Health Sciences, National University of Malaysia, Jalan Raja Muda Abdul Aziz, 50300 Kuala Lumpur, Malaysia.

Tel: 92897245/ 7511; Fax: 603-26947621

Email: tilly\_karu@yahoo.co.uk ; tilly@medic.ukm.my

Manuscript received 9 March 2008. Initial review completed 21 May 2008. Revision accepted 1 July 2008.

study is timely as we report on data covering 6 months of TV food advertising targeting children. Of relevance, our survey was completed just prior to the period that the Ministry of Health publicly indicated its concern over TV advertising and its influence on children’s food choice behaviour. Our study purpose was to report on the nature, type and frequency of food advertising directed to children during prime time by the different TV stations in Malaysia. Through content analysis we were able to describe the nutritional value of advertised foods, and utilizing a Food Pyramid model we compared these foods with recommendations.

**MATERIALS AND METHODS**

*Design*

Total sampling was adopted in this study whereby all TV stations in Malaysia were invited to participate. Of these stations, 6 out of the total 7 sampled agreed to participate, thus yielding a respondent rate of 85.7%. The participating TV stations are all ‘free to air’ whereas the TV station that did not participate is a cable channel. Data on all broadcasted advertorials, covering the period from June to November 2006, was requested from these participating

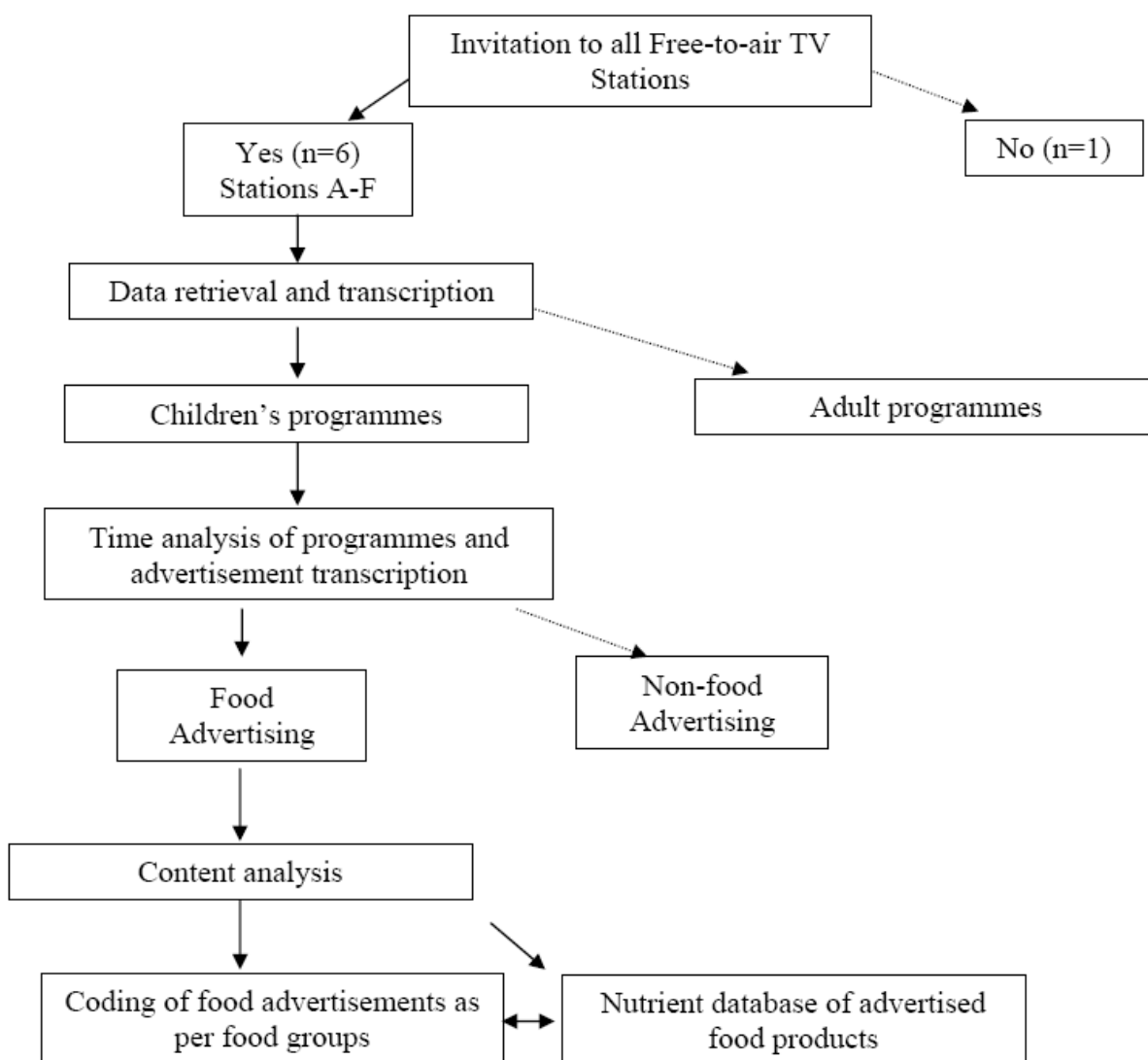
stations. We felt that these 6 months would fairly provide inclusion for seasonal variations, i.e., would capture the major festivals as well as school holidays.

*Instrument*

All consenting TV stations were coded for anonymity. Consenting stations submitted computer-generated print-outs of all advertisements broadcasted during the stated period. The researchers’ role was to independently transcribe this data for analysis. It would be a fair observation to state that the data therefore reported in this study was totally without bias as TV stations played no role in extracting information from the database. As a first step, we had to identify which programmes targeted adults and which programmes targeted children. Embedded advertising data were identified and categorized into food and non-food advertising. Finally, coding was carried out for the embedded food products. Figure 1 represents a process chart explaining the development of a database of advertisements for subsequent data analysis.

*Determination of TV advertising patterns*

Other researchers have sourced prime time information



**Figure 1.** Algorithm for data transcription and development of a food product database for data analysis.

from Nielsen Media Research.<sup>21</sup> Similarly we approached the Malaysian subsidiary of this agency for prime time information but were refused access to the data as it was against company protocol. Traditionally prime time is determined based on programmed screening in time slots that achieved the largest target audience/ density. As we were unable to gauge audience density, we instead used data from TV stations designating scheduled time slots for children's programmes. We, then, tracked all advertisements as well as food advertisements screened per hour per day over 6 months of screening time for each TV station. The mean time trends of advertising frequency were compared between stations and months. This accounted for all food advertising during designated children's programming to be used for data analysis. To answer the question whether the type and frequency of food advertisements are unique to age group, another analyses of data for broadcasted advertisements during adult programming was carried out.

### Content analysis

All food products advertised during children's prime time were categorized into food groups through coding. Sixteen food groups were identified through content analysis which were rice, bread, noodles, breakfast cereals, biscuits, dairy products, ice cream, sweets, chocolates, oils and fats, snacks, fast foods, beverages, health supplements, processed foods and flavouring agents. Care was taken to ensure uniformity and adherence to coding protocol and application of food definitions. A test re-test method was carried out to ensure consistency and reliability of intra-observations as per recommendations.<sup>21</sup> Nutritional content of these products were verified from label information. When food labels were not available, either the Malaysian Food Composition Table or the USDA Food database were referred as source documents.<sup>22,23</sup> Food items without any nutritional information were excluded from this analysis. Additionally, a comparative analysis of embedded TV food advertisements during prime time to the Malaysian Food Pyramid was carried out.<sup>24</sup>

### Statistical analyses

The Statistical Package for Social Sciences (SPSS) version 15.0 software was used for data analysis. Mean, percentages, standard deviation and frequency were used to describe data. Independent t-test was carried out to detect significance within stations for length of prime time hours between weekdays and weekends. One-way ANOVA was used to test if there was a difference in advertising time between TV stations during weekdays and weekends. One-way ANOVA was again used to test significance in all advertisements and food advertisements between TV stations. The binomial tests of differences in proportions were used to determine the significance of food advertising frequency as per food groups. Significance for all data was reported as  $p < 0.05$ .

## RESULTS

### Children's prime time on TV

Children's programmes were typically broadcast in the evenings on weekdays with additional broadcasts in the

**Table 1.** Mean prime time ( $\pm$  SE) for children's programmes (hr/day/month)

TV Stations <sup>†</sup>	WEEKDAY	WEEKEND
	mean ( $\pm$ SD)	prime time (hr)
A	0.42 $\pm$ 0.06	0.52 $\pm$ 0.13
B	1.18 $\pm$ 0.11	2.95 $\pm$ 0.15*
C	1.47 $\pm$ 0.09	3.78 $\pm$ 0.04*
D	0.38 $\pm$ 0.04	4.05 $\pm$ 0.03*
E	0.18 $\pm$ 0.03	0.56 $\pm$ 0.03*
F	5 $\pm$ 0	10 $\pm$ 0*
Mean prime time(hr)	1.89 $\pm$ 0.18**	4.61 $\pm$ 0.33**

<sup>†</sup> Codes A-F represent TV stations; \*significantly different ( $p < 0.05$ ) between weekdays and weekends and \*\*significantly different ( $p < 0.05$ ) between groups based on independent t-tests

morning during the weekends, school holidays, Ramadhan and public holidays (data not shown). Group mean ( $\pm$  SD) for children's prime time, increased significantly ( $p < 0.05$ ) during weekends compared to weekdays for all TV stations surveyed as indicated by 4.61  $\pm$  0.33 hr/day/month for weekends and 1.89  $\pm$  0.18 hr/day/month for weekdays (Table 1). This mean increase in prime time reflected significant trends for Stations B, C, D, E and F. For weekdays the p-value from the ANOVA table was less than  $p < 0.05$  indicating at least one-pair of means differed significantly. The test of homogeneity of variance gave  $p < 0.05$  indicating lack of equality of variances. Dunnett's T3 post-hoc multiple comparison procedure was used to test the pairs that differed significantly. Prime time was significantly larger for Station F compared to all the other stations ( $p < 0.05$ ). There was no significant difference between Stations A, D and E. For weekends the p-value from the ANOVA table was less than  $p < 0.05$  indicating at least one-pair of means differed significantly. The test of homogeneity of variance gave  $p < 0.05$  indicating lack of equality of variances. Dunnett's T3 post-hoc multiple comparison procedure was used to test the pairs that differed significantly. Prime time was significantly larger for Station F compared to all the other stations ( $p < 0.05$ ). However, there was no significant difference between Stations A and E.

### Total advertisements vs food product advertisements

In total, 54152 advertisements were broadcasted by all TV stations in this study for the 6-month period during children's prime time. Of these, 27.9% ( $n = 15106$ ) comprised of food product advertisements. The breakdown of this data, shown in Table 2, indicated Stations F (3412  $\pm$  116, 35.6%) and C ( $n = 3222 \pm 493$ , 33.6%) screened the most advertorials during children's prime time ( $p < 0.05$ ). In assessing the contribution of food product advertisements to total advertisements screened during prime time, it was found that Station C screened the most food advertisements per month ( $n = 1104 \pm 138$ , 42.7%), followed by Stations D (643  $\pm$  163, 24.9%), F (407  $\pm$  76.3, 15.7%), B (327  $\pm$  25.3, 12.6%), A (59  $\pm$  18.0, 2.3%) and E (47  $\pm$  14.4, 1.8%) (Figure 2). However the percent contribution of food advertisements to total advertisements as per

**Table 2.** Advertisements on children's prime time by TV station

TV Stations <sup>†</sup>	All advertisements		Food advertisements	
	Mean number ( $\pm$ SD)	Percent (%)	Mean ( $\pm$ SD)	Percent (%)
A	227 $\pm$ 72.0	2.37	59 $\pm$ 18.0	2.27
B	873 $\pm$ 218**	9.1	327 $\pm$ 25.3**	12.6
C	3222 $\pm$ 493**	33.6	1104 $\pm$ 138**	42.7
D	1540 $\pm$ 149**	16.1	643 $\pm$ 163**	24.9
E	320 $\pm$ 149	3.33	47 $\pm$ 14.4	1.81
F	3412 $\pm$ 116**	35.6	407 $\pm$ 76.3**	15.7

<sup>†</sup> Codes A-F represent TV stations; \*sum for June to November 2006; \*\*significantly different ( $p < 0.05$ ) for the 6-month period using Dunnett's T3 multiple comparisons.

**Table 3.** Nutrient value per 100g of advertised food products

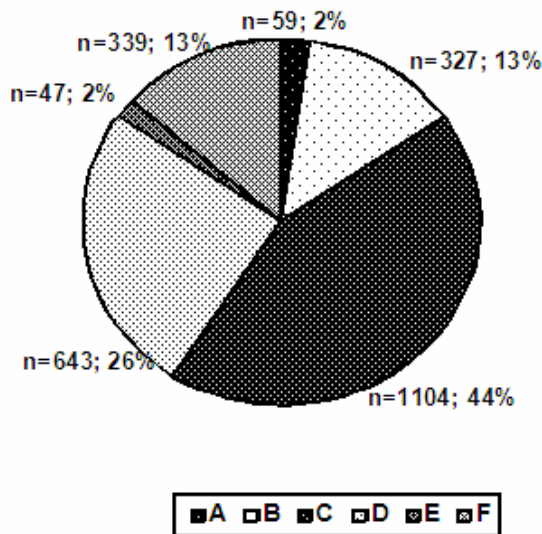
Food Groups	Energy (kcal)	Carbohydrate (g)	Fat (g)	Protein (g)	Sodium (mg)
Foods identified as meals					
Breakfast cereals	391 $\pm$ 14	82.3 $\pm$ 4.6	4.1 $\pm$ 2.7	6.4 $\pm$ 1.8	364 $\pm$ 221
Instant noodles	483 $\pm$ 23	64.2 $\pm$ 0.6	20.0 $\pm$ 1.6	11.5 $\pm$ 1.4	1600 $\pm$ 116
Bread	233 $\pm$ 21	42.0 $\pm$ 7.1	2.3 $\pm$ 0.2	9.6 $\pm$ 1.4	460 $\pm$ 3
Dairy products	302 $\pm$ 183	39.3 $\pm$ 24.4	10.7 $\pm$ 6.2	12.8 $\pm$ 7.6	121 $\pm$ 71
Fast foods	210 $\pm$ 44	20.7 $\pm$ 4.1	8.7 $\pm$ 3.3	12.3 $\pm$ 4.6	307 $\pm$ 108
Foods identified as snacks					
Ice cream	161 $\pm$ 81	25.4 $\pm$ 11	5.5 $\pm$ 4.5	1.8 $\pm$ 1.5	77 $\pm$ 2
Biscuits	480 $\pm$ 30	65.4 $\pm$ 3.3	21.3 $\pm$ 3.6	7.5 $\pm$ 2.1	152 $\pm$ 39
Confectionary- chocolate	491 $\pm$ 38	59.3 $\pm$ 4.5	24.6 $\pm$ 6.2	8.7 $\pm$ 0.2	103 $\pm$ 34
Confectionary- sweets	449 $\pm$ 88	74.2 $\pm$ 30.8	0.4 $\pm$ 0.5	0.8 $\pm$ 0.4	194 $\pm$ 236
Snacks	497 $\pm$ 54	59.3 $\pm$ 7	25.9 $\pm$ 8.2	7.0 $\pm$ 2	620 $\pm$ 216
Beverages	144 $\pm$ 168	26.1 $\pm$ 26.8	2.8 $\pm$ 4.5	3.6 $\pm$ 5.4	58 $\pm$ 305

All values reported as mean  $\pm$  SD.

**Table 4.** Comparison of food advertisements on children's and adult prime time.

Food Groups	Children's Prime Time (n=15106)		Adult Prime Time (n=38360)	
	Total	Percent (%)	Total	Percent (%)
Rice*	93	0.62	2387	6.22
Bread	42	0.28	319	0.83
Instant noodles*	78	0.52	1517	3.95
Breakfast cereals*	970	6.42	1566	4.08
Biscuits	1696	11.2	3861	10.1
Dairy products*	1263	8.36	5807	15.14
Ice cream*	1772	11.7	3364	8.77
Confectionary (sweets)	991	6.56	2400	6.26
Confectionary (chocolate)*	1034	6.85	1301	3.39
Oils and fats*	122	0.81	973	2.54
Snacks*	5210	34.5	4803	12.5
Fast foods	1008	6.67	2200	5.74
Beverages*	628	4.16	4698	12.3
Flavour enhancers*	23	0.15	1864	4.86
Supplements	148	0.98	923	2.41
Processed foods	28	0.19	377	0.98

\* $p < 0.05$  based on binomial test on proportions



**Figure 2.** Percent total food advertisements screened during primetime by TV stations from June - November 2006  
*Note- Codes A to F represent TV stations*

station varied greatly. This was 41.9% for Station D, followed by 37.5% for Station B, 34.3% for Station C, 26.0% for Station A, 14.7% for Station E and 11.9% for Station F (Figure 3). Looking at monthly trends, September recorded the highest frequency of food advertisements ( $n = 3158$ ) coincidental to the Muslim month of fasting, Ramadhan (Figure 4).

#### **Nutrition content of food advertisements**

An evaluation of food groups as components of food advertisements indicated snack foods were significantly ( $p < 0.05$ ) the most advertised food groups (34.5%). This was followed by dairy products (20.3%), confectionary (13.4%), biscuits (11.2%), fast food (6.7%), breakfast cereals (6.4%), beverages (4.1%), and less than 1% each for supplements, rice, instant noodles and oils and fats (Figure 5). The breakdown of this data by TV station indicated a similar trend in that advertisements on snacks commonly formed the largest segment in food advertising [data not shown].

Using the list of food groups generated by coding, i.e., fats and oils, supplements, and rice were excluded in further analysis. The nutrient content per 100g of the remaining foods is presented in Table 3. These were foods, which children were likely to identify as a food item ready for consumption and therefore likely to influence choice/ informed opinion. These food groups were further differentiated into foods consumed at meals and foods that fit into 'snacking' or in-between meals. Foods with the greatest energy density were instant noodles, biscuits, confectionary and snacks (449 to 497 kcal per 100g). The fat content of instant noodles, snacks, biscuits and chocolates were comparable (~20g fat) and the highest in the advertised foods. Instant noodles contained the greatest amount of sodium per 100g (1600mg) whereas snacks were also found to contain an appreciable amount of sodium (620mg). Foods classified as snacks were crackers, potato crisps or chips, extruded snacks and bakery items.

By developing a Food Pyramid based on the frequency of advertised food products, as shown in Figure 6, the largest area (56%) was formed of foods high in fat, refined sugars and salt, which are commonly designated as 'HFSS' foods. This contrasted with 20% of advertising time devoted to dairy products including ice cream which signify sources of protein and calcium whereas 19% of advertising time carried commercials on carbohydrate-rich foods.

#### **Difference between children's and adult prime times**

To answer the question whether the type and frequency of food advertisements are unique to a specific age group, a comparison was made between children's and adult prime times using independent t-test. Table 4 summarizes the major food group advertisements as ratio to the total TV advertisements. Pair-wise comparison between children's and adult prime times were tested using the binomial test of equality of proportions. The highest significant difference ( $p < 0.05$ ) was recorded for snack food advertisements. This group contributed to 34.5% of total advertising during children's prime time, compared to only 12.5% in adult prime time.

#### **DISCUSSION**

It is important that regulatory approaches in controlling TV food advertising should consider the peak viewing periods of programming as well as the identity and density of advertisements. Our data collected for 6 months from the 6 sampled Malaysian TV stations indicated that though mean prime time for children's programmes was  $1.89 \pm 0.18$  hrs during weekdays, prime time increased ( $4.61 \pm 0.33$  hrs) during weekends, school vacation and Ramadhan. The ban on fast food advertisements on Malaysian TV was fixed for timings which were not consistent with the prime time patterns determined in our study.<sup>1</sup> Other reports indicate children's TV prime time can vary greatly. In New Zealand, prime time is reported to occur between 3.30 to 6.30 pm during weekdays and 8 to 11am during weekends for one sampled TV channel.<sup>18</sup> For all 3 free-to-air TV stations in Australia, weekday prime time occurred between 6 to 9 pm but the early morning time slot on Saturday became a concentrated period for advertising unhealthy food.<sup>25</sup> However, if considering multiple TV channels in the United States, children's prime time was found to stretch between 7am until 10.00pm.<sup>19</sup>

Malaysian children were exposed to a combined total of 54152 TV advertisements during the 6-month period of this study. Of these, 27.9% comprised food advertisements. In comparison, the percent composition of food advertisements to total advertising during prime time was 31% in Australia, 29% in New Zealand and 23% in New Jersey, United States whereas it is reported to be 47.8% for California.<sup>18-20,26</sup> Although not significant, a time trend in increased frequency of food advertising on Malaysian TV occurred coincidental with Ramadhan. This is clearly a marketing ploy to take advantage of a cultural situation in developing economies as highlighted in a WHO Technical Report reviewing the evidence (2006).<sup>4</sup>

TV food advertising targeting children in developed countries is dominated by high fat, sugar and salt (HFSS)

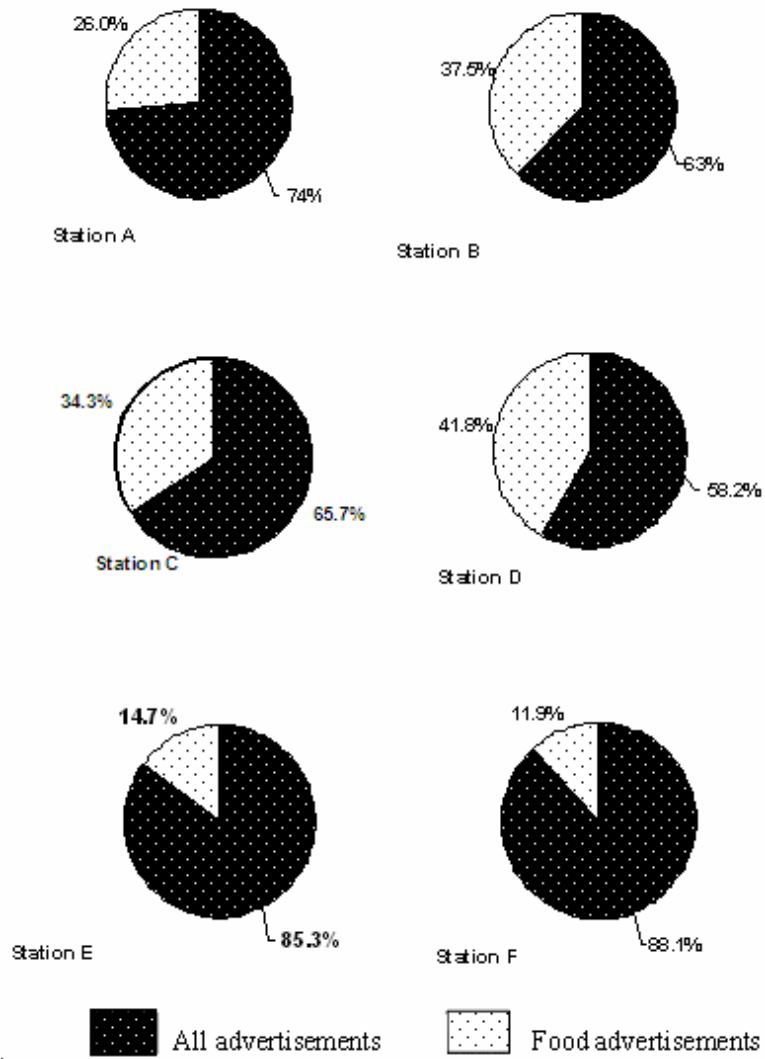


Figure 3. Food advertisements as a percentage of total advertisements for 6 months [June to September 2006] by TV station

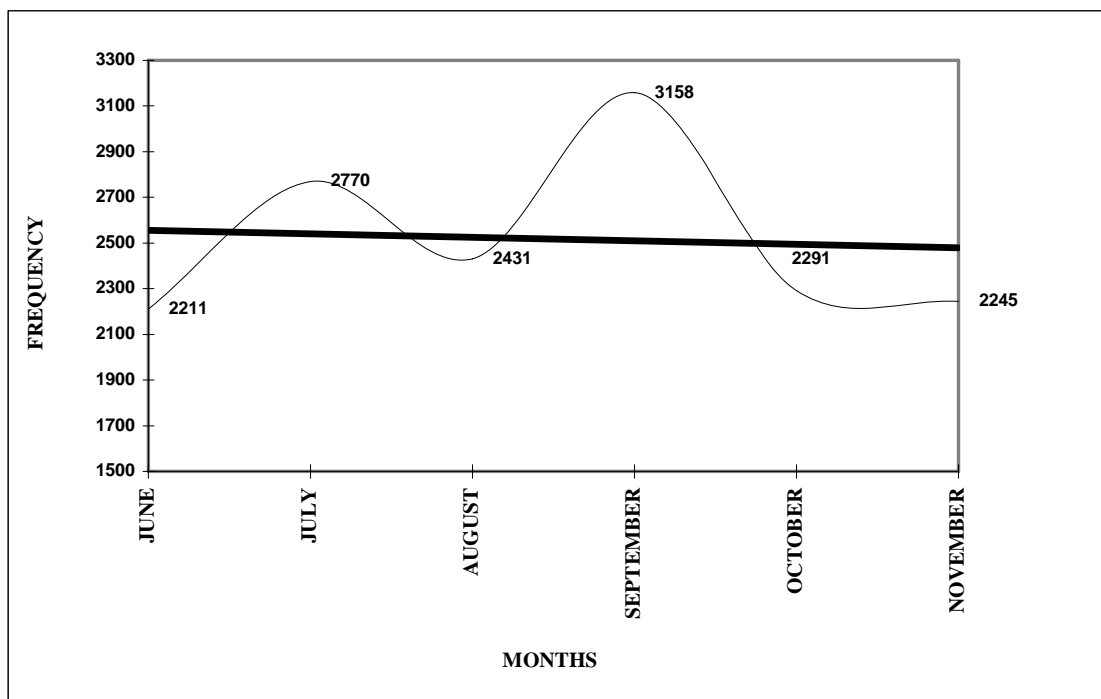


Figure 4. Monthly trends in food advertisements; Time trend value,  $y = -15.429x + 2571.7$ ;  $R^2 = 0.0059$

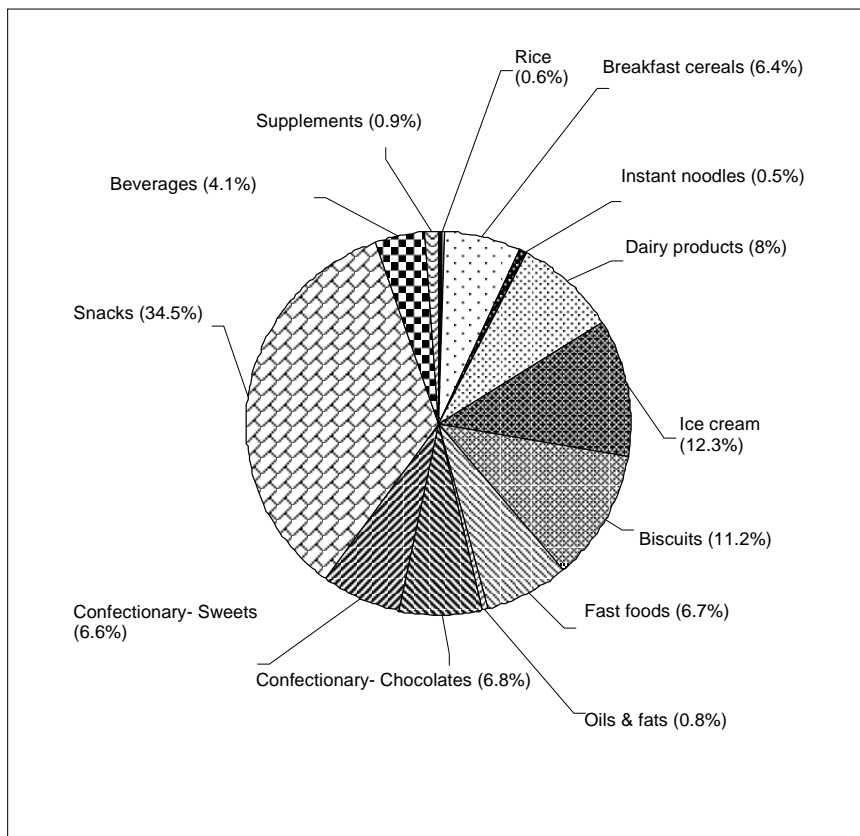


Figure 5. Percent components of food advertisements by food group

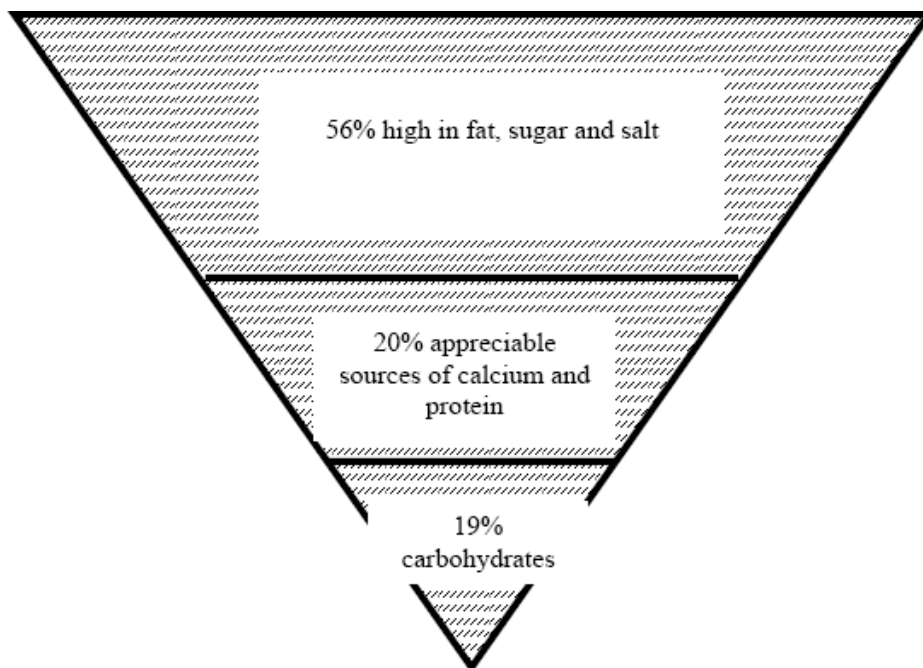


Figure 6. Advertised foods by percent contribution to nutrients on the Food Pyramid

foods.<sup>27,28</sup> Kelly et al (2007) note that 50% of overall food advertisements in Australia during general viewing comprise high-fat, high-sugar foods and this rises to 65.9% for children’s programmes.<sup>27</sup> Overall, fruit and vegetables, dairy products and drinks recorded the lowest frequency of screened advertisements. According to the food classification methods used in our study, snacks were found to be the most advertised food on Malaysian TV. Significant mean trends were in the order of snack foods (34.5%) >

dairy products (20.3%) > confectionary (13.4%) > biscuits (11.2%) > fast food (6.7%) > breakfast cereals (6.4%) > beverages (4.1%) > supplements, rice, instant noodles and oils and fats (less than 1% each). This finding is contrary to the rationale for a selective ban of only fast foods on children’s prime time in Malaysia. Of concern was the high energy density (449 to 497 kcal per 100g) of instant noodles, biscuits, confectionary and snacks; the high fat content (~20g fat per 100g) of instant

noodles, snacks, biscuits and chocolates as well as the high sodium of instant noodles (1600mg per 100g) and snacks (620mg per 100g)). A Food Pyramid based on the frequency of advertised food products indicated a predominant distribution of foods rich in fat, refined sugars and salt (56%) compared to dairy products including ice cream (20%) and carbohydrate-rich foods (19%).

If TV food advertising potentially modulates food preference and food choice behaviours of children, is regulation a viable answer as a form of control? Restricting advertising time or embedded advertising, regulating premium offers and instituting either total or selective bans of specific food groups are regulatory approaches used in developed countries.<sup>27,29</sup> However, with the rapid pace of globalization and the proliferation of HFSS food promotion through TV advertising, sustainable policies that are sensitive to the culture and vulnerability of children in the developing world has been recommended in a WHO technical report.<sup>4</sup> In this regard, the regulatory ban on fast food advertising on Malaysian TV has little merit as indicated by our study outcomes on prime time patterns and content analysis of embedded food advertising. Since the problem is long-term and involves both food marketing and food promotion, it is clear that public health regulation of TV food advertising targeting children should incorporate surveillance and monitoring systems.<sup>4,29</sup> This in particular will generate appropriate guidelines suitable for the individual needs of developing countries.

## CONCLUSION

Food advertising frequency during children's prime time TV varied between TV channels and increased during weekends, school vacation and Ramadhan. It was found that advertisements of snacks are screened 5 times more frequently than fast foods and are the major component of food advertising on children's TV in Malaysia. The nutritional content of these snacks are a major concern as they are high in calories, sodium and salt per 100g of consumed food.

## ACKNOWLEDGEMENTS

This study was carried out using faculty grants reserved to fund student projects. No external funding whatsoever was received and the authors report no links or affiliations with any of the television stations that were sampled. However, the authors extend sincere appreciation to all participating television stations for volunteering data that we believe were to all purposes without bias.

## AUTHOR DISCLOSURES

All authors declare that there is no conflict of interest involved.

## REFERENCES

1. The Star. Malaysia mulls ban on fast food advertising. Reuters. [http://yahoo.reuters.com/news/articlehybrid.aspx?storyID=urn:newsml:reuters.com:20070217:MTFH55491\\_2007-02-17\\_03-4201\\_KLR334439&type=comktNews&rpc=44](http://yahoo.reuters.com/news/articlehybrid.aspx?storyID=urn:newsml:reuters.com:20070217:MTFH55491_2007-02-17_03-4201_KLR334439&type=comktNews&rpc=44) [accessed 17/02/2007].
2. The Food Navigator. British approach to junk food ads praised in US. <http://www.foodnavigator.com/news> [accessed 27/04/2007].
3. World Health Organization. Diet, Nutrition and the Prevention of Chronic Disease: Report of the Joint WHO/FAC Expert Consultation. Geneva: WHO Technical Report Series 916; 2003.
4. Hastings G, McDermott L, Angus K, Stead M, Thomson S. The extent, nature and effects of food promotion to children: a review of the evidence. Technical paper prepared for the World Health Organization. July 2006. Geneva: WHO Technical Report Series 978; 2007.
5. Dibb S, Harris LA. A spoonful of sugar: Television food advertising aimed at children, an international comparative study. London: Consumers International, 1996.
6. Coon KA, Tucker KL. Television and children's consumption patterns. A review of the literature. *Minerva Pediatr.* 2002;54:423-36.
7. Gleason P, Suitor C. Food for thought: children's diets in the 1990s. Princeton, NJ: Mathematica Policy Research, Inc.; 2001.
8. Freedman DS, Dietz WH, Srinivasan SR, Berenson GS. The relation of overweight to cardiovascular risk factors among children and adolescents: the Bogalusa Heart Study. *Pediatrics.* 1999;103:1175-82.
9. Lin BH, Guthrie JF, Frazao E. American children's diets not making the grade. *Food Rev.* 2001; 24:8-17.
10. US Department of Health and Human Services. The Surgeon General's call to action to prevent and decrease overweight and obesity. Rockville, MD: US Department of Health and Human Services, Public Health Service, Office of the Surgeon General; 2001.
11. Hawkes C. Marketing food to children: the global regulatory environment. Geneva: World Health Organization Report; 2004.
12. Story M, Newmark-Nztainer D, French S. Individual and environmental influences on adolescent eating behaviors. *J Am Diet Assoc.* 2002;102:S40-5.
13. McNeal J. The kids' market: Myths and realities. New York: Lexington Books; 1999.
14. Zywicki TJ, Holt D, Olhaussen M. Obesity and advertising policy. *George Mason Law and Economics Research Paper.* 2004;04-05: 979-1011. Available at: <http://law.bepress.com/gmulwps/gmule/art3>. Accessed on July 16 2006.
15. Lobstein T, Dibbs S. Evidence of a possible link between obesogenic food advertising and child overweight. *Obes Rev.* 2005; 6:203-8.
16. Krippendorff K. Content analysis an introduction to its methodology. Beverly Hills. CA: Sage; 1980.
17. Wilson N, Signal L, Nicholls S, Thomson G. Marketing fat and sugar to children on New Zealand television. *Preventive Med.* 2006;42:96-101.
18. Wilson N, Quigley R, Mansoor O. Food ads on TV: a health hazard for children? *Aust N Z J Public Health.* 1999;23:647-50.
19. Harrison K, Marske AL. Nutritional Content of Foods Advertised During the Television Programs Children Watch Most. *Am J Public Health.* 2005;95:1568-74.
20. Taras HL, Gage M. Advertised foods on children's television. *Arch Pediatr Adolesc Med.* 1995;149:649-52.
21. Byrd-Bredbenner C, Grasso D. A comparative analysis of television food advertisements and current recommendations. *Am J Health Sci.* 1999;15:169-80.
22. Tee ES, Ismail MN, Azudin MN, Khatijah I. Nutrient Composition of Malaysian Foods. Kuala Lumpur: Malaysian Food Composition Database Programme c/o Institute for Medical Research; 1997.



23. Nutritionist Pro™. Nutritional analysis software. Axxya Systems Licensee- First DataBank/Hearst Corporation, Stafford, Texas, USA. www.axxya.com; 2005
24. Ministry of Health, Malaysia. Malaysian Food Guide: Technical Working Group for Malaysian Nutrition Guidelines. Department of Food and Nutrition Coordination/MOH, Kuala Lumpur. 1999.
25. Chapman K, Nicholas P, Supramaniam R. How much food advertising is there on Australian television? Health Promot Int. 2006;21:172-80.
26. Byrd-Bredbenner C, Grasso D. What is television trying to make children swallow? Content analysis of the nutrition information in prime time advertisements. J Nutr Edu. 2000;32:187-95.
27. Kelly B, Smith B, King L, Flood V, Bauman A. Television food advertising: the extent and nature of exposure. Public Health Nutr. 2007;10:1234-40.
28. Story M, French S. Food advertising and marketing directed at children and adolescents in the US. Int J Behav Nutr Phys Act. 2004;1:3. Available at: <http://www.ijbnpa.org/content/1/1/3>. Accessed date 16<sup>th</sup> July 2006.
29. Kelly B, King L, Bauman A, Smith B, Flood V. The effects of different regulation systems on television food advertising to children. Aust N Z J Public Health. 2006;31:340-3.

## Short Communication

# What's on Malaysian television? - A survey on food advertising targeting children

Tilakavati Karupaiah PhD APD<sup>1</sup>, Karuthan Chinna PhD<sup>2</sup>, Loi Huei Mee BSc<sup>1</sup>, Lim Siau Mei BSc<sup>1</sup> and Mohd Ismail Noor PhD DVM<sup>1</sup>

<sup>1</sup>Department of Nutrition & Dietetics, Faculty of Allied Health Sciences, National University of Malaysia, Kuala Lumpur, Malaysia.

<sup>2</sup>Department of Statistics, Faculty of Information Technology & Quantitative Sciences, University Technology MARA, Shah Alam, Selangor, Malaysia

## 马来西亚电视在播放什么？ - 针对儿童的食物广告调查

近期马来西亚提出严禁播放针对儿童的速食电视广告。本篇报告是对儿童的食物电视广告所做的长达六个月的调查。马来西亚七间商业电视公司当中，有六间参与此项调查(响应率=85.7%)。据所报导的儿童节目时程表，周日(平均数=1.89±0.18 小时)与周末(平均数=4.61±0.33 小时)的黄金时段，有显著差异(p<0.05)。在周末、学校假期及斋戒月的黄金时段明显增加。这六个月内，该七间电视台每月所播放的食物广告平均次数各显著不同(C=1104; D=643; F=407; B=327; A=59; E=47)。食物广告也在九月份达到最高播放率(n=3158)，接着是七月份(n=2770)，八月份(n=2431)，十月份(n=2291)，十一月份(n=2245)及六月份(n=2211)。广告内容分析显示零食占最高比率(34.5%)，接着是乳制品(20.3%)，糖果(13.4%)，饼干(11.2%)，速食(6.7%)，早餐谷粮(6.4%)，饮料(4.1%)，保健食品(0.9%)，米(0.6%)，麵(0.5%)，麵包(0.3%)，及其他加工食品(0.2%)。矛盾地，我们发现在儿童节目的黄金时段所播放的零食广告是多达速食广告的 5 倍。这些零食含有最高的盐含量(平均数=每 100 克含有 620 毫克)。

**关键词:** 电视，广告，儿童，食物种类，内容分析