

Food references in UK children's magazines – an oral health perspective

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IN BRIEF

- Highlights the preponderance of sugar-loaded messages in pre-teens magazines.
- Discusses how sugar-loaded messages permeate throughout general and editorial content and are not restricted to direct advertisements.
- Suggests that parents and dental health professionals need to be aware of this when recommending healthier treats to children.

Objective Children's magazines are popular in the United Kingdom, but their content is poorly regulated. Consequently, food and beverages high in fat, salt and sugar (HFSS), detrimental to oral and wider health, make unrestricted appearances. The study aim was to assess the amount of HFSS food and drink children are exposed to while reading magazines; with particular focus on foods containing free sugars due to their known cariogenic properties, and foods with low pH due to their erosive potential. **Design** Eleven of the most popular UK children's magazines were selected and purchased at four separate time points in 2012. These 44 magazines were examined using content analysis; any references to food/beverages (in advertisements, free gifts, editorial and general content) were recorded. **Results** Of the 508 food references observed, 73.6% (374/508) were for foods detrimental to oral health owing to their high sugar and/or acid content. 5.9% (30/508) were considered 'unhealthy' due to their fat or salt content. 20.5% of references were for 'healthy' foods (104/508). The most common food categories referenced were baked goods (181/508) and sweets (86/508). Over a third (36.4%, 16/44) of magazines came with free sweets. In terms of positioning, the food/drink references were predominantly found in the general content of the magazines, including the editorial spreads. Direct advertisements for food/drink only accounted for 9.6% (36/374) of the total number of references counted. **Conclusion** Food references within children's magazines are biased towards unhealthy foods especially those detrimental to oral health; these permeate throughout the general and editorial content and are not restricted to direct advertisements. Magazine editors, journalists and illustrators are responsible for the editorial and general content of magazines. Without regulation, subliminal placement of advertisements within editorial and general content leads to 'advertorials' which are known to confuse children and parents alike. This study concludes that regulation may therefore need to cover more than just the direct advertisements. Dental professionals need to be aware of current trends in children's media when giving health education advice or designing health promotion initiatives.

INTRODUCTION

There is evidence that young people are consuming nutritionally poor diets, predisposing them to obesity and other health related problems like dental caries.¹⁻³ Currently, sugar consumption is high on the public health agenda both globally and nationally. At present, UK dietary reference values state that free sugars (defined as sugars added to foods, for example, sucrose, glucose and fructose and sugars naturally present in fruit juices, such as glucose and fructose⁴) should provide no more than 10% of the

total energy intake for children and adults who do not consume alcohol (11% for those who do).⁵ However, there are consultation guidelines produced by the World Health Organisation (WHO) and the UK Scientific Advisory Committee on Nutrition (SACN) which recommend reducing free sugars to 5% of total energy.^{4,6}

Several large scale systematic reviews commissioned by the WHO and the UK Food Standards Agency have found that food and drink promotion in magazines and on television has a profound effect on children's food preferences, purchase behaviour and consumption.⁷⁻⁹ Also, the evidence confirms that the majority of food advertisements within the media represent energy dense, high fat-salt and sugar (HFSS) foods.⁷ From an oral health standpoint the frequent consumption of high sugar foods (in particular free sugars) predisposes to the development of dental caries.^{2,10,11} Additionally dental erosion is becoming more prevalent with the increasing

popularity of acidic 'fizzy' sweets and carbonated drinks^{12,13} and the well documented link between increased consumption of foods with low pH and erosive tooth wear.¹⁴

Advertising

Advertising to children is fundamental to confectionery and food and beverage companies, especially those producing foods high in HFSS. Children are 'vulnerable as a consumer group due to their limited ability to recognise the persuasive intent of advertising';¹⁵⁻¹⁷ they are both 'receptive and responsive' to advertising campaigns.^{18,19}

In the past, food advertising campaigns have largely been focused on broadcast media, that is, television.^{8,20} However, since the introduction of the 2006 UK Ofcom television regulations²¹ companies have been restricted from advertising HFSS foods during children's television viewing times. Consequently, food and beverage companies have been looking for alternative advertising outlets, predominantly

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based in the non-broadcast media, including; the internet, SMS, other forms of print media, supermarket check-out areas, point of sales, posters and magazines.²²⁻²⁴

Magazines

Magazines are popular with children; the 2010 Mintel report documented that 82% of children read comics or magazines and 18% of these buy magazines themselves, with the remaining being bought by parents or grandparents.²⁴ Furthermore, UK research indicates that parents view children’s magazines as trustworthy and educational.²⁵

Magazines have advantages to companies wishing to market their products, including the fact you can read them more than once, you can take them anywhere with you, and you can pass them on and share them with others.²⁶ They are the only form of media where a ‘free’ sample can be supplied. This feature is popular with children; Mintel report that six out of ten children are attracted by free cover mount giveaways²⁴ and this strategy has been heavily utilised by confectionery companies Haribo™, Chewitts™ and Fruitella™. Cowburn and Boxer reported that where food related ‘cover mounts’ were used in the UK all were free gifts of confectionery and were aimed at younger readers.²⁷

More recently, Australian authors have found that food marketing in children’s magazines is moving from clearly identified advertisements into the editorial and general content,¹⁷ thus advertising is becoming more subliminal to this vulnerable audience.

Currently, advertising within magazines published within the UK are regulated by the Committee of Advertising Practice (CAP), a self-regulatory body that enforces the UK Code of Non-broadcast Advertising, Sales Promotion and Direct Marketing.²⁸ This code does not currently distinguish between healthy and non-healthy foods being advertised in magazines or account for the covert advertising apparent in editorials or wider general magazine content.

In the UK the majority of content analysis studies relating to food advertising and nutritional themes within children’s media have been based on television,⁷⁻⁹ leaving magazines a relatively unexplored medium. Those studies focusing on magazines have mainly addressed formal advertisement content neglecting the editorial and general content of the magazine.^{27,29}

Therefore, the objectives of this study were to:

- Assess the amount of HFSS food and drink children are exposed to while reading magazines targeted to their age group;
- Assess the positioning of food references detrimental to oral health with regards

Table 1 Description of magazine sample in terms of target audience, circulation, cost and number of pages³⁰

Boys aged 4–11	Circulation per annum	Cost per issue	Number of pages
Moshi Monsters	162,838	£2.99	52
Ben 10	64, 671	£2.60-4.99	24–36
Simpsons comic	64,078	£2.99-3.99	52–68
Match!	46,569	£1.99-2.99	68–100
Girls aged 4–11			
Sparkle world	66,752	£2.55-3.99	52–64
Animals and you	32,376	£2.99-3.99	32–44
Girl Talk	51,463	£2.50-3.50	36
Disney princess	63,907	£2.25-3.99	32–40
Preteens aged 11–12			
Top of the pops	84,782	£2.99-3.99	64–68
Toxic	41,521	£2.99-4.99	40–48
Go girl	41,095	£2.50-3.99	32–44

Table 2 Food references within each food-group category

	Count of food category	Sum of repeats
Food references ‘detrimental to’ oral health	221	374
Baked goods	78	181
Sweets	66	86
Combination	30	41
High sugar drinks (including fizzy)	20	31
Ice cream	14	18
Chocolate	12	14
High sugar cereals	1	3
Food references ‘detrimental to’ wider health	27	30
High fat and/or salt	21	22
Negative vegetable association	2	4
Alcohol	2	2
Unhealthy portion sizes	2	2
Healthy images	63	104
Fruit	27	56
‘Balanced meal’ image	20	23
Exercise	8	12
Water as a drink	2	5
Vegetables	3	4
Seafood	2	3
Anti-junk food	1	1
Grand total	311	508



Fig. 1 Selection of recipes with high sugar content sourced from the magazines

references to foods were logged and the total number of times the same product/advert appeared was also recorded and referred to as 'repeats'. Photographs from the magazines were also used to illustrate findings.

In terms of verification 'the nature of qualitative analysis means that it is subjective, which raises the question as to whether qualitative researchers should have their analyses verified or validated by a third party'.³¹ However, in this study it was decided that a second qualitative researcher should analyse 10% of the magazines independently. The number of discrepancies found were sufficiently low to validate the results (<5% disagreement).³¹

Foods (including drinks) were classified as being 'healthy' or 'non-healthy' using the Foods Standards Agency nutrient profiling model of 2011.³³ Then within the unhealthy category if the food contained high sugar (that is, more than 20% total sugars³³) or high sugar and low pH^{13,14} (for example, non-diet fizzy drinks, acidic sweets) it was considered to be detrimental to oral health. The category 'combination foods' was used in this study to refer to advertisements or features where multiple HFSS foods were seen; for example, an image of a picnic spread with crisps, chocolate and fizzy drinks.

For the analysis of the food references detrimental to oral health, the positioning of content was classified in one of three ways:

- 'Advertisements' were direct advertisements for mainly branded food products but also for books, magazines and toys with associated food imagery
- 'Editorial content' were counted as pages in the magazine where the editor had chosen certain seasonal items to make photographic collages of 'what's hot now'. The pages frequently show foods, fashion accessories, seasonal goods and contain competition prizes and celebrity endorsements
- 'General content' contained non-branded food placement, including activity pages with their suggested recipes, games and crafts. Also illustrations and cartoon images of non-branded food/drink.

RESULTS

Types of food references found within magazines

A total of 508 references to food and beverages were recorded in the 44 magazines. These included repeated references, overall there were 311 unique food references (Table 2).

73.6% (374/508) of total references were for foods detrimental to oral health owing to their high sugar (\pm acid) content. 5.9% (30/508) were considered unhealthy due to

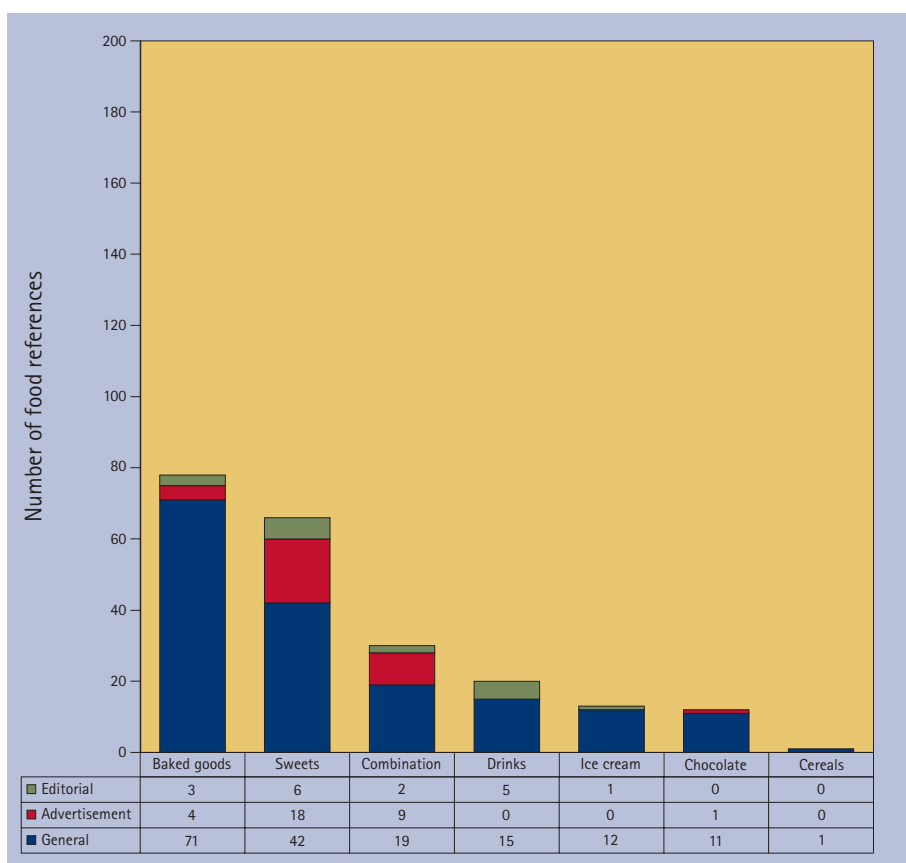


Fig. 2 Number of unique references to foods detrimental to oral health by food category and positioning within the magazine

to advertisements, editorial or general magazine content.

METHODS

Eleven of the most popular UK magazines were purposively selected to cover the reading of children of primary school age through to 'preteens' (4–12 years old). Magazines were selected according to the Audit Bureau of Circulations figures for the second half of 2011.³⁰ Table 1 shows a description of the magazine sample. The magazines were purchased at four separate time points to reflect seasonal change and the school holidays. The purchase dates were 30 March 2012, 20 July 2012, 31 October 2012 and 18 December 2012.

All magazines were analysed within a week of purchase, and every page (including front and back covers, in addition to the cellophane wrapping) were examined using content analysis informed by an inductive approach. As the name implies, inductive content analysis relies on inductive reasoning, in which themes emerge from the raw data through repeated examination and comparison.^{31,32} A pilot study was carried out by the primary and tertiary researcher. This involved looking through a small selection of children's magazines to begin developing themes, categories and coding schemes.

Themes, appropriate verbatim quotes and counts of food references observed were all recorded on an Excel spreadsheet. Unique

their fat or salt content. 20.5% (104/508) were for healthy food (Table 2).

The majority of total food references within the magazines were for baked goods, 35.6% (181). Sweets followed as the second most common reference with 86 counts (16.9%). Fruit was the third most frequent reference with 56 counts (11%, Table 2).

Activities for children

The magazines frequently contained activities for children, recipes being a popular example. During this study 20 recipes were recorded; 17 of these were for baked items (such as cakes or cookies) or other foods high in free sugars (for example, toffee apples, milkshakes made with gummy sweets, home-made fudge). A recipe from *Moshi Monsters™* October edition showed a fruit smoothie, but this was classified as a high free-sugar recipe due to the addition of ‘jelly snakes’ gummy sweets (Fig. 1). Only three recipes were considered to be ‘healthy’; one recipe for vegetable soup found in the December edition of *Moshi Monsters™* magazine; another for a fruit smoothie documented in the March edition of *Go Girl™*, and finally a recipe for fritata in the March edition of *Sparkle World*.

Free gifts

All but one of the magazines (43/44) had a free gift. 36.4% (16/44) of magazines analysed included free sweets. Half of these sweets were Haribo Tangfastics™, a confectionary item falling into the high sugar and low acidity category, making them the most frequently recurring confectionary.

Food references considered to be detrimental to oral health

There were 221 unique food references which were considered to be detrimental to oral health (Table 2). Baked goods (78), sweets (66) and the combination category (30) predominated.

Position of food references detrimental to oral health

Out of the 221 unique references to food detrimental to oral health only 32 were direct advertisements, (14.5%, Fig. 2). Out of the 374 total references (including repeats) there were only 36 (9.6%, Fig. 3) advertisements. The remainder of the food references detrimental to oral health were either found in the editorial pages or the general content of the magazine. The distributions of the unique and repeated references to foods detrimental to oral health by category and positioning in the magazine are presented in Figures 2 and 3 respectively. Repeated references for food products harmful to oral health were primarily located within the general content (Fig. 3)

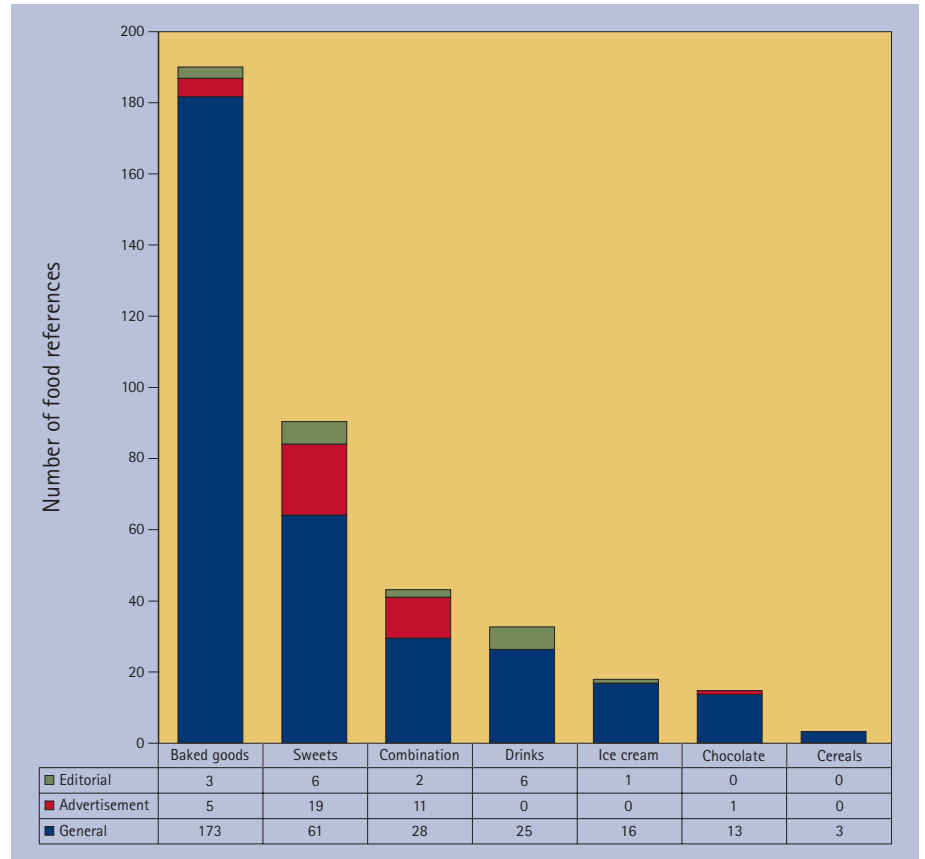


Fig. 3 Number of total references (including repeats) to foods detrimental to oral health by food category and positioning within the magazine



Fig. 4 Sugar being promoted in general content of *Moshi Monster™* magazine, 2012

of the magazines. Baked goods predominated with 78 unique references and 181 repeats, indicating an average of 2.3 repeats for each of the baked goods across the 44 magazines.

Common themes and quotations

Moshi Monsters™ had a particularly sugar laden theme running throughout; advertisements, editorials and general content. Indeed, the characters themselves come in the form of an ice cream, a ginger bread man, a cupcake, a gumball machine and many others (Fig. 4). Images of cupcake canyons were accompanied by text: ‘Explore the wonders

of cutie pie canyon. 300 Rox gets you a room at the Gateaux Marmont. Don’t forget your toothbrush!’ (March edition p.6). A character called ‘sweet tooth’ quoted: ‘these boogy bags are perfect for carrying around your sweet treats.’

Characters were associated with other sugar-orientated statements such as ‘likes eating glump cakes’, or ‘likes sweets, hates vegetables’. It is of note that the company who have developed *Moshi Monsters™* is called ‘Mind Candy™’.

The Simpsons™ comic also appeared to have a particularly cariogenic theme



Fig. 5 Celebrity images in *Girl Talk* (July and October 2012), *Go Girl* (October 2012)



Fig. 6 Examples of advertisements contained within the magazines

focusing on baked goods high in sugar, such as iced donuts, pancakes and cakes.

Celebrity endorsement

*Go girl*TM, *Girl talk*TM and *Animals and You*TM used celebrities to endorse unbranded unhealthy foods. For example, Rihanna 'loves cheesecake', Jessica Ennis puts 'the salad on top of the chocolate' in her shopping trolley and Jade from Little Mix was portrayed as having her cheeks 'full of sweets' (Fig. 5).

Magazines aimed at a slightly younger target market, such as *Disney Princess*, *Sparkle World* and *Animals and You*TM contained frequent unbranded references (n = 46 across the three magazines) to unhealthy food in cartoon imagery and activity pages, for example recipes, colouring in pictures, counting icons etc.

Magazines with very little food content or promotion of unhealthy food included *Ben 10*, *Top of the Pops* and *Match*. Healthy references were infrequent and no themes emerged, just occasional pictures of fruit in comics and activity pages. Fruit references were most common in *Sparkle World* which is aimed at younger primary school aged girls. Exercise promotion was sparse, with all of the references counted (12/508) being

in the July editions of *Girl Talk*TM and *Go Girl*TM coinciding with the 2012 Olympics.

DISCUSSION

This study confirms findings of other research on children's magazines^{17,22,23,27} that unhealthy food references (that is, references to HFSS foods) are far more common than healthy food references (79.5% vs. 20.5%). References to foods high in sugar, specifically related to oral health, were frequently documented in the magazines constituting 73.6% of all food references. Baked goods were the most commonly referenced food item in contrast with the findings of Kelly and Chapman²³ who documented ice cream, 'fizzy' drinks and confectionary as the most frequently appearing references. Carbonated sugary drinks did not feature frequently in our study, with only 31 total references; a positive finding in relation to dental erosion.

Reference to high sugar foods in the magazines most frequently came under the 'general references' category for unbranded products (77.8%); which included recipes, illustrations, generic text and activity pages. It is known that non-branded food references can act as influential messages, with the repetition normalising these foods to children making them highly desirable.²³

Showing cartoon characters and celebrities associated with unhealthy foods (Fig. 4–6) further strengthen the desirability factor.²³

Direct advertisements accounted for only 14.5% of all unique references detrimental to oral health; all of these were for confectionary, including HaribosTM, ChewittsTM, FruitellaTM and Moshi Monsters ConfectionaryTM. This is in contrast with the work of Cowburn and Boxer²⁷ who reported a range of food types being advertised such as sugary breakfast cereals, soft drinks, and fruit and vegetables.

High free-sugar foods predominated in the editorial and general content of the magazines in this study, accounting for 85.5% of all references detrimental to oral health. These covert advertising techniques mirror those described by other researchers in Australasia^{16–19} but have not been documented previously within the UK. Furthermore their use in the UK appears to be more frequent when compared with the southern hemisphere; Jones *et al.* (2012) reported that 69% of all branded food references in Australian children's magazines were not clearly identifiable as advertisements.¹⁷ Magazine editors, journalists and illustrators are responsible for the editorial and general content of their magazines. Without regulation subliminal placement of advertisements within editorial and general content leads to 'advertorials' which are known to confuse children and parents alike.^{22,34} This study, like others, indicates that print media regulation may therefore need to cover more than just the direct advertisements.

Free gifts were a common occurrence with 97.7% of magazines including them. Over a third of the magazines had sweets as one of their free gifts, and half of these free sweets were Haribo TangfasticsTM. Sour sweets have a low pH and with frequent consumption are capable of causing dental erosion as well as dental caries.¹³ It is of concern that so many magazines came with confectionary. Often parents or grandparents buy magazines as an educational tool and as a consequence they are inadvertently supplying their children with sweets.¹⁶

Commendably, there were some healthy food references (20.5% of all references), including recipes, fruit and vegetables in comic strips and illustrations of well balanced meals. A recent study of television advertising has reported that the advertisement of healthy foods can be associated with increased fruit and vegetable intake.³⁵ While this evidence could be used to encourage editors to increase the healthy content within their magazines, it is unlikely to be economically viable while the sugar and confectionery industry provide economic

stability to the magazine companies promoting products that children enjoy. Concern is mounting in the UK with consultations⁴ and lobbying for reductions in sugar intakes³⁶ which will inevitably require inter-disciplinary action in order to reduce the current national intake from 15–50%^{2,4,6} or even 30%.³⁶

This study has been pragmatic and systematic and as such presents an accurate snapshot of food content within the magazine sample analysed. However, there are some limitations which should be taken into account when interpreting the findings. It is recognised that 'human coders are subject to fatigue and are likely to make more mistakes as the coding proceeds'.³² However, analyses were cross-checked by the primary researcher throughout the study and by the tertiary researcher who validated a proportion of completed data analyses.

The way foods are categorised according to the FSA nutrient profiling model³³ has been questioned in the past by nutritionists who have argued there is no such thing as an 'unhealthy' food, but more an 'unhealthy diet', with the phrase 'everything in moderation' springing to mind. However, the nature of this study dictates that there had to be a way to categorise foods and the FSA's method was considered to be the most objective approach.

More studies are needed to investigate the impact advertisements and non-branded references have on children. Magazines can be read again and shared, making their true impact harder to assess.²⁶ Furthermore, studies are needed to assess the impact of the culmination of adverts and themes from television, magazines, internet and mobile phone applications etc. Alone the impact may be relatively insignificant, but in conjunction the effect is likely to be much greater.³⁷

CONCLUSION

National governments should be the stakeholders in the development of policy, and they should be responsible for implementation, monitoring and evaluation.³⁸ The UK Action on Sugar lobby group have recommended that: '...the body of scientific evidence about the dangers of excessive refined added sugar consumption becomes translated into policy by the Government and relevant professional organisations'.³⁶

The current UK Committee of Advertising Practice (CAP) regulations are self-regulated and vague in terms of print media. They do not clearly define HFSS foods and only concentrate on direct advertisements. This will not be successful in reducing children's exposure to HFSS food advertising.

Regulations should account for the overwhelming evidence base that excess free sugars cause both obesity and dental caries and national governments need to support such regulation. However, regulation alone is unlikely to achieve behaviour change.

A more pragmatic approach to change could draw upon the UK national salt reduction campaign. This is coordinated by the UK Food Standards Agency and involves a consumer education programme relating to salt consumption and voluntary salt reduction targets for the food industry. These have achieved significant reductions in salt intakes over the last ten years.^{39,40}

Public health workers, dentists and parents all need to be aware of media trends and what children are exposed to in their magazines. Public health workers need to be informed to enable the safeguarding of children's wider health when developing recommendations to the government. Dentists and dental care professionals also need to be aware of these media trends to enable them to tailor their prevention advice to parents, and to warn parents of the potential contradiction magazines have to their best efforts at improving healthy eating habits.

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