

Front-of-pack marketing on infant and toddler foods: Targeting children and their caregivers

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Abstract

Objective: To identify and quantify child- and caregiver-appeal on front-of-pack marketing on infant and toddler foods in the Australian food supply.

Methods: Content analysis of the presence and type of front-of-pack marketing techniques displayed on the front-of-pack of infant and toddler foods (for children aged up to 36 months) available in Australia's two major supermarkets' online stores.

Results: Infant and toddler foods are promoted by up to 15 unique marketing techniques on the front-of-pack with an average of eight unique features per pack. A majority of food packages included marketing techniques targeting children, and all food packages included marketing techniques targeting caregivers, most commonly promoting health and nutrition.

Conclusions: Infant and toddler food packages are saturated with front-of-pack marketing features that target children and caregivers. To adequately protect young children's diets from the harmful influence of food marketing, and to promote the development of optimal feeding behaviours, government-led controls of all marketing intended to influence children's diets are required. In the context of marketing infant and toddler foods, this includes regulation of front-of-pack marketing techniques targeted to children and their caregivers.

Implications for Public Health: Comprehensive government-led food marketing controls are required to protect children's diets from the harmful influence of marketing. The scope of these controls must include all unhealthy food marketing that children are exposed to and all other forms of unhealthy food marketing intended to influence children's diets.

Key words: food marketing, food industry, children, nutrition, policy

Introduction

Unhealthy diets are a leading burden of disease in Australia and globally.¹ Dietary patterns are established in early childhood, therefore early life is a critical period to support the development of healthy dietary behaviours.² Among Australian children aged under five current diets fail to meet recommended guidelines for core food groups including vegetables, cereals and grains, and meat and alternatives, and exceed recommended intakes of discretionary foods.³ Furthermore, young children experiencing socioeconomic disadvantage are more likely to consume unhealthy food and drinks compared to children from high socioeconomic backgrounds.⁴ Young children's diets also rely on commercially produced ready-made foods with one in two Australian children aged up to five years consuming commercially made foods one or more

days per week.⁵ Commercial infant and toddler foods include packaged foods specifically intended for consumption by children aged six months to 3 years. These products represent a growing segment of the Australian grocery market with new products coming onto the market each year,⁶ and an annual revenue of around \$390 million in 2023.⁷ They are also aggressively marketed to parents and children.^{6,8} Unhealthy food marketing negatively influences children's dietary behaviours, increasing their requests and preference for, and consumption of, unhealthy food and drinks.⁹

Front-of-pack marketing is a key strategy utilised by the processed food industry to influence consumer attitudes and behaviour.^{10,11} Marketing tactics are pervasive on food and beverage product packaging with the use of colourful images and logos, popular children's characters, and health and nutrition claims.¹² Front-of-pack

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marketing is a leading source of children's exposure to unhealthy food marketing¹³ and a key component of integrated marketing campaigns.¹¹ However, children are not the only intended audience of front-of-pack marketing with parents and caregivers (herein referred to as caregivers) also targeted.¹¹ Many of the features of front-of-pack marketing have been shown to attract children *and* caregivers' attention, shape product associations, and influence purchase intentions and decisions.¹⁴

The World Health Organization (WHO) Set of Recommendations on the Marketing of Foods and Non-Alcoholic Beverages to Children recommends that governments implement strategies to limit children's exposure to front-of-pack and other forms of food marketing.¹⁵ To protect young children in particular, the WHO's Ending Inappropriate Promotion of Commercially Available Complementary Foods for Infants and Young Children Between 6 and 36 Months in Europe (2019) aims to ensure information on the packages of commercially available complementary foods will 'neither mislead consumers nor undermine public health recommendations'.¹⁶ The globally recognised United Nations Convention on the rights of the child – of which Australia is a signatory – obliges governments to uphold children's rights to the highest standard of health.¹⁷

Research in Australia has found commercially available infant and toddler food packages are characterised by multiple front-of-pack claims; however, very few of these claims are regulated under Australia's food standards codes. Standard 1.2.7 outlines requirements for health and nutrition content claims but does not apply to infant food, whilst Standard 2.9.2 outlines compositional requirements and vitamin and mineral content claims on food for infants but does not cover other types of claims. This means most marketing features on infant and toddler foods are provided at the manufacturers' discretion.^{6,18} Front-of-pack marketing creates an inflated perception of health, misleading consumers and normalising the purchase and consumption of commercially made foods that are typically highly processed and high in added sugar and salt.^{6,19} What is not yet well known is the extent to which front-of-pack marketing on infant and toddler foods targets caregivers and the nature of the techniques used to do so. Monitoring both child-directed *and* caregiver-directed front-of-pack marketing on commercial infant and toddler food products in Australia is important to inform the development of food and nutrition policies that adequately protect children's diets from commercial influence. The aim of this study therefore was to identify and quantify child- and caregiver-directed front-of-pack marketing on infant and toddler foods in the Australian food supply.

Methods

Data collection

An automated online data scraping tool was utilised to collect images and product information of approximately 30,000 food and drink items from the online sites of Australia's two major supermarkets on December 14, 2021, representing 65% of Australia's total grocery market.⁷ Scraped data were extracted and exported into a Microsoft Excel spreadsheet for analysis. This study focused on a subset of food items marketed for consumption by infants and toddlers aged 4 to 36 months. To identify infant and toddler food items, we used the supermarkets' own categories of 'baby and toddler food' to select relevant products. Across the two supermarket websites, 345 items

were identified for inclusion (excluding infant formula and toddler milk drinks). Data were merged across the two supermarkets and cleaned, removing 85 duplicates and a further 30 items due to missing image data to create an analytical dataset of 230 food items. Missing data were due to images not collected by the data scrape, or in a small number of cases, the images extracted from supermarket sites appeared to be stock images that did not include any marketing. Product images were used to verify that items were marketed for consumption by infants (aged up to 12 months) and toddlers (aged 12 months and older) by cross-checking against age recommendations provided by manufacturers on the front-of-pack. Products were also classified into distinct product categories, as defined by the WHO Nutrient and Promotion Profile Model (NPPM) (dry cereals; dairy; fruit puree; vegetable puree; savoury meal; snacks & finger food, confectionary).²⁰

Data analysis

A coding framework based on a validated tool for evaluating the presence, type, and power of child-appealing marketing techniques on product packaging developed by Mulligan et al.²¹ was used to undertake content analysis of front-of-pack images and text-based marketing messages. This coding framework was chosen as it makes the distinction between child-appealing (core marketing techniques) and broad marketing techniques. Core marketing techniques include child-appealing graphics, cartoons, and branded or licenced characters, toys, or prizes. Broad marketing techniques include those that, on their own, do not necessarily appeal to children but are likely to appeal to caregivers (e.g., health and nutrition claims) and, when combined with core marketing techniques may increase the overall power of marketing messages.²¹

The original coding framework included 28 clearly defined and mutually exclusive marketing techniques comprising 18 core and 10 broad techniques.²¹ We adapted the coding framework to expand one category of broad marketing 'appeals to health or nutrition' into 10 sub-categories to examine the nature of health-related marketing techniques in greater detail (Tables 1 and 2).

Using this framework, two authors coded in duplicate the front-of-pack marketing techniques on a subset of 10% of products. Given the high degree of consistency with coding (85%), one author coded the remaining images. Throughout the coding process, the authors conferred to agree on best fit as necessary. Each marketing technique identified on the front-of-pack was counted only once and allocated to a single code.

Results

A total of 230 products comprising 188 infant foods and 42 toddler foods were analysed (Table 3). Infant foods predominantly comprised savoury meals (36.17%), fruit purees (33.51%), and snacks (21.21%). Toddler foods included snacks (50%), fruit purees (19.05%), and confectionary (21.43%) (fruit bars and yogurt buttons were classified as confectionary under the WHO NPPM definition due to high sugar content²⁰). The mean number of front-of-pack marketing techniques observed on infant foods was 8.65 per product (range 5–15) and the mean number of front-of-pack marketing techniques on toddler foods was 9.24 (range 6–16).

Table 1: Coding framework with examples of core marketing techniques.

Core marketing techniques	Examples
1 Child-appealing visual/graphic design of package	Rainbow packaging
2 Unconventional shape of the product, featured on the package	Animal shaped biscuits
3 Unconventional flavour of the product, featured on the package	Chocolate mud flavour
4 Unconventional colour of the product, featured on the package	Purple crackers
5 Games or activities on the package	Connect the dots, mazes
6 Presence of branded characters	Tony the Tiger
7 Presence of licenced characters	Peppa Pig, Bluey
8 Presence of celebrities	Images of actors, athletes
9 Other characters or cartoons	Animal cartoons or fictional sports players
10 Other child-appealing tie-ins	Movie, TV, or character features
11 Presence of children/parents/families	Children or families on pack, either real or cartoon
12 Toys or prizes	Toys or prizes inside the package or to be redeemed later
13 Coupons, contests, or giveaways, specifically appealing to children	Coupons inside the package or to be redeemed later
14 Children's product lines featured on the package	Mention of 'mini' 'junior' 'for small hands'
15 Appeals to fun	Have fun with...
16 Appeals to coolness or novelty	Try me, new
17 Recipes, specifically appealing to children	Honey joys, chocolate crackles
18 Promotion of websites, social media, rewards programs, specifically appealing to children	Find more at [website]

Table 2: Coding framework with examples of broad marketing techniques.

Broad marketing techniques	Examples
1 Interesting or unconventional product name	Fruity hoops, noughts and crosses
2 Interesting font or lettering	Bubble or chalkboard lettering
3 Presence of a logo, not specifically appealing to children	Product or brand logo
4 Convenient packaging	Squeeze pouch, individually packaged servings
5 Appeals to taste or texture	Tastes great! Crunchy, smooth
6 Appeals to health or nutrition	Appeals to health or nutritional quality of the product
6a Visual of healthy food on the package	Image of fruit/vegetable/grain
6b Nutrition content claim	Contains fibre, iron-enriched, no added sugar, dairy-free
6c Organic claim	organic
6d Natural claim	no artificial colours, flavours, preservatives
6e Made with claim	Made with real fruit, made with whole grains
6f Made in Australia claim	Made in Australia
6g Quality claim	Full of good stuff, premium, goodness
6h Plant-based claim	Plant-powered protein
6i Preparation claim	Freeze-dried
6j Health claim	For strong bones
7 Appeals to other product benefits	Quick and easy, ready to serve
8 Recipes, not specifically appealing to children	Recipes on or inside pack
9 Coupons, contests, or giveaways, not specifically appealing to children	Coupons on or inside pack, or to be redeemed later
10 Promotion of websites, social media, rewards programs, not specifically appealing to children	Find more at [website]

Table 3: Number and proportion of infant and toddler food products in each product category.

Product Category	Infant foods (n = 188)	Toddler foods (n = 42)
Dry cereal	8 (4.25%)	0
Dairy	10 (5.32%)	0
Fruit puree	63 (33.51%)	8 (19.05%)
Vegetable puree	0	0
Savoury meal	68 (36.17%)	4 (9.52%)
Snacks & finger food	38 (20.21%)	21 (50%)
Confectionary	1 (0.53%)	9 (21.43%)

Core marketing

The presence of one or more core marketing techniques was observed on 87% of products within the sample. The mean number of unique core marketing techniques observed was 1.73 (range 0–4) on infant foods and 2.64 (range 0 to 6) on toddler foods. The most frequently observed core marketing techniques included child-appealing graphics (55%), children's product lines (53%), and images of children or families (37%) (Table 4).

Broad marketing

Broad marketing techniques were observed on the front-of-pack of all infant and toddler food products examined. The mean number of unique broad marketing techniques observed was 6.92 (range 4–10)

Table 4: Frequency of core and broad marketing techniques.

Core marketing techniques	Infant foods	Toddler foods
Child-appealing visual/graphic design of package	102 (54%)	25 (60%)
Children's product lines featured on the package	88 (47%)	34 (81%)
Presence of children/parents/families	78 (41%)	8 (19%)
Appeals to fun	22 (11%)	15 (35%)
Presence of branded characters	21 (11%)	11 (26%)
Unconventional shape of the product, features on the package	5 (3%)	13 (31%)
Unconventional colour of the product, featured on the package	3 (2%)	4 (10%)
Appeals to coolness or novelty	6 (3%)	1 (2%)
Broad marketing techniques		
Appeals to health or nutrition	188 (100%)	42 (100%)
<i>Visual of healthy food on the package</i>	186 (99%)	35 (83%)
<i>Nutrition content claim</i>	185 (98%)	36 (86%)
<i>Organic claim</i>	93 (49%)	26 (62%)
<i>Natural/no artificial colours, flavours, preservatives claim</i>	95 (51%)	22 (52%)
<i>Made with claim</i>	59 (21%)	25 (60%)
<i>Made in Australia claim</i>	60 (32%)	1 (2%)
<i>Quality claim</i>	22 (12%)	5 (12%)
<i>Plant-based claim</i>	9 (5%)	2 (5%)
<i>Preparation claim</i>	1 (1%)	5 (12%)
Convenient packaging	171 (91%)	32 (76%)
Appeals to taste or texture	153 (81%)	21 (50%)
Presence of a logo, not specifically appealing to children	131 (70%)	18 (43%)
Interesting font or lettering	77 (41%)	12 (29%)
Appeals to other product benefits	30 (16%)	19 (45%)
Interesting or unconventional product name	22 (15%)	18 (43%)
Recipes, not specifically appealing to children	1 (1%)	0

on infant foods, and 6.59 (range 6 to 10) on toddler foods. All products (100%) featured one or more appeals to health or nutrition. Specifically, these health or nutrition claims included images of healthy food on the package (96%), nutrition content claims (58%), organic claims (52%), and natural claims (51%).

Other frequently observed broad marketing techniques included convenient packaging (85%) and appeals to taste or texture (75%) (Table 2). Convenient packaging included products sold in pouches with spouts (47.8%), single-serve jars (2.6%), bowls (3%), single-serve packets of infant and toddler snack foods (30.87%), and individually wrapped infant and toddler snacks (3.91%). Of products sold in pouches, 73% were labelled as suitable for infants (from 4–12 months) and 27% were labelled as suitable for toddlers (12 months and older). Texture-related comments were commonly included alongside statements indicating the minimum age from which the product is suitable and included statements such as ‘smooth puree’, ‘creamy smooth’, and ‘soft chunks for adventurous eaters’.

Discussion

This analysis of front-of-pack marketing techniques on a sample of 230 infant and toddler food products revealed that children’s food packages are saturated with marketing techniques. Most food packages analysed in this study included marketing techniques that appeal to children. All food packages included marketing techniques that appeal to caregivers, most commonly claims related to health and nutrition. This suggests that parents and caregivers are the primary target of much of the marketing on infant and toddler foods. Whilst this is a new finding, it is unsurprising given caregivers are the primary decision-maker when it comes to preschool-aged children’s food choices.²²

Health and nutrition are key factors motivating caregivers’ food choices for their children.^{23,24} We observed marketing strategies appealing to health and nutrition such as images of healthy ingredients, claims promoting positive product features (e.g., iron, fibre, organic), and claims highlighting an absence of unhealthy ingredients (e.g., sugar, salt, additives, and preservatives). We also observed claims that align with trends in the adult health market (e.g., plant-based, made with prebiotics, gut-loving goodness), but do not align with dietary advice for infants and toddlers. This kind of marketing is used to appeal to parents by creating the impression that products are good for children,²⁵ and can even be influential when present on unhealthy food products.²⁶ These claims are used despite other research demonstrating that baby and toddler foods often fail to meet nutritional recommendations, and commonly contain added sugar in the form of free sugars such as cane sugar, fruit purees, and fruit concentrates.¹⁹

Alongside health, convenience is a factor that motivates parents’ decisions when it comes to feeding their children.²⁷ We found that convenient packaging was a common feature of infant and toddler food products both in terms of actual packaging such as squeeze pouches and single-serve packets, and the promotion of convenience in front-of-pack messaging. We also observed marketing claims relating to product taste and texture, and benefits for child development (encourages self-feeding), in direct contrast to expert concerns about feeding difficulties and delayed development of eating skills associated with pureed foods and squeeze pouches.²⁸ Reliance on squeeze pouches can interfere with children’s oral-motor

development and result in delayed introduction of age-appropriate complementary foods.²⁹ The typically sweet flavour profile of infant and toddler foods sold in pouches can encourage a preference for sweet foods, leading to longer-term dental and health implications associated with diets high in free sugars.²⁹ Improved labelling on infant and toddler foods including squeeze pouches, combined with regulation of front-of-pack marketing claims is required to support the development of healthy eating behaviours in early childhood.

Although infant formula is regulated under strict product formulation and marketing legislation,³⁰ and some regulations apply to infant foods up to 12 months of age,³¹ foods for toddlers are not regulated in the same way. Claims relating to the presence of specific vitamins and minerals are regulated by Food Standards Australian and New Zealand (FSANZ), while marketing strategies related to convenience and taste, particular ingredients (contains prebiotics, preservative-free), and the use of terms such as ‘goodness’ or ‘natural’ are all unregulated and used at the discretion of manufacturers.³² This marketing undermines parents’ intentions to choose healthy options for their children.²³ Without adequate regulation, these front-of-pack marketing claims impede the development of optimal child feeding practices and adequate infant and toddler nutrition.

The sheer volume of marketing techniques observed on the infant and toddler products included in our analysis amplifies the overall power and impact of front-of-pack marketing,²¹ and the combination of various marketing techniques increases the likelihood that a product will appeal to a range of audiences. Visual and written marketing techniques are often combined on children’s food products to capture the attention of different consumers and appeal to a range of food-related goals.³³ The use of multiple front-of-pack marketing techniques is not unique to children’s food. Examination of marketing strategies on beverage packaging found that multiple strategies were used, often combining nutrition and health appeals alongside child-directed characters, appeals to emotion and fun, or other product features.³⁴

Our findings highlight the importance of considering all forms of front-of-pack marketing on infant and toddler foods for monitoring and when designing food marketing controls. Several countries around the world including Chile and Mexico, have introduced legislative measures that ban child-directed appeals on unhealthy food packaging.^{35,36} Other countries have introduced legal measures that aim to limit children’s exposure to unhealthy food marketing.^{37,38} The policy objective to reduce children’s exposure to unhealthy food marketing, rather than only restricting child-directed appeals, is a major advancement in recommendations for the design of food marketing controls in recent years.^{39,40} Our research show caregivers are also targeted by marketing on infant and toddler food products. Our finding underscores the need for regulation that also restricts marketing that appeals to caregivers. This is necessary to protect against all forms of marketing that impact children’s diets and builds upon WHO recommendations for legislative measures that restrict all marketing that children are exposed to, regardless of whether the marketing content is intended for them or not.⁴¹ To continue to build appropriate evidence to support this policy objective, future research should seek to better understand the ways in which broad marketing techniques appeal to caregivers and how these marketing techniques influence caregivers’ decisions.

The methods used in this study demonstrate the utility of an automated data collection approach to collect images of food and drink packaging from online sources to enable monitoring of processed food industry marketing practices. Routine application of these methods will enable monitoring of marketing trends over time to build the case for policy reform to protect children's diets from all forms of front-of-pack marketing and to monitor regulatory compliance where policies are already in place.

Limitations

This study examined marketing techniques on the front of infant and toddler food packages and did not capture additional marketing on the side or back of packages. Whilst the side and back panels typically include nutrition information panel and ingredient list, they can also include additional marketing techniques. However, evidence suggests the front-of-pack is a key focus for food manufacturers. Analysis of marketing trends on children's food packages in Canada revealed that between 2009 and 2017 the number of products with any front-of-pack nutrition claim increased from 31.4% to 86.6% while back- or side-of-pack claims did not differ significantly.⁴²

Data for this study were collected from two major supermarkets that collectively hold 65% of Australia's total grocery market.⁷ As we were testing a novel method for monitoring that relied on the use of online data, it was not possible to include products available in grocery chains that do not offer an online option. Whilst the sample examined in this study does not include all infant and toddler food products on the Australian market, it provides a strong indication of the marketing practices to which young children and their caregivers are exposed.

Policy recommendations

To adequately protect children's diets from the harmful influences of food marketing, and promote development of optimal feeding behaviours, comprehensive government-led food marketing controls are required. The scope of these controls must include all unhealthy food marketing that children are exposed to *and* all food marketing intended to influence children's dietary consumption of unhealthy foods. In the context of infant and toddler foods, this includes regulation of all front-of-pack marketing directed to children and caregivers.

Conclusion

The findings of this study reveal that infant and toddler food packages in Australia are saturated with promotional marketing, predominantly targeting caregivers. These findings provide important technical details that can inform the design of food marketing controls that protect children's diets from the harmful impacts of food marketing. We argue that the premise of food marketing controls should be to protect children's diets from the influence of all forms of harmful marketing, regardless of whether the marketing content is intended for them or not. In the context of marketing on infant and toddler food packages, this includes regulation of all front-of-pack marketing techniques that target children and caregivers.

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Authorship

AC conceptualised the study, designed the methods, conducted the analysis and wrote the original draft of this article. JM contributed to analysis and writing (review and editing). HS provided supervision and contributed to writing (review and editing). KB provided access to data and contributed to study design and writing (review and editing).

Conflicts of interest

The authors declare the following financial interests/personal relationships which may be considered as potential competing interests: Alexandra Chung reports financial support was provided by Victorian Health Promotion Foundation (VicHealth).

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