South African Journal of Clinical Nutrition 2026; 39(2):108–115
https://doi.org/10.1080/16070658.2026.2639191

Open Access article distributed under the terms of the
Creative Commons License [CC BY 4.0]
http://creativecommons.org/licenses/by/4.0

SAJCN
ISSN 1607-0658 EISSN 2221-1268
© 2026 The Author(s)
RESEARCH ARTICLE

Child-directed food marketing in urban South African supermarkets: which techniques are used and what type of foods are promoted?

Mariaan Wicks*, Marésa Gilfillan and Edelweiss Wentzel-Viljoen

Centre of Excellence for Nutrition, Faculty of Health Sciences, North-West University, Potchefstroom, South Africa
**Correspondence: Mariaan.Wicks@nwu.ac.za*

Check for updates

Objective: To examine the extent and types of marketing techniques used on the packaging of child-directed foods sold in South African supermarkets and to assess the nutritional quality of these foods.
Design: Cross-sectional observational study in which child-directed pre-packaged food and beverages were identified and photographed.
Setting: Four retail outlets in South Africa (three supermarkets in Pretoria and one online store).
Outcome measures: Nutrient content, labelling information, and child-directed marketing techniques were extracted from high-quality photographs. Foods were categorised into predefined food groups, and the INFORMAS stepwise approach guided systematic sampling. Nutrient profiling models from the draft food labelling Regulation (R.3337) were applied to determine nutritional quality. Descriptive statistics were used to quantify the presence and type of marketing techniques and to compare their use on *healthy* versus *less healthy* foods.
Results: A total of 516 foods were included in the study, of which 66% were classified as *less healthy*. The food categories contributing the highest proportion of child-directed products were confectionery (36% of foods), cereal and cereal products (15% of foods), dairy (13% of foods) and beverages (9.3% of foods). The most common marketing technique used was promotional characters (95% of foods), followed by claims (63.3% of foods) and premium offers (28.9% of foods).
Conclusion: Most child-directed foods available in South African supermarkets were classified as *less healthy* and frequently used multiple marketing techniques. These findings highlight the need for comprehensive food marketing and labelling regulations that better support healthy food choices for children.

Keywords : child-directed food marketing, food labelling regulations, nutrient profiling models, pre-packaged foods

Introduction

The rise in overweight and obese children (from here on referred to as childhood obesity) has emerged as a global public health problem, with the rapid increase in low- and middle-income countries being of particular concern.[1] Unfortunately, this global trend is also present in South Africa, where a progressive rise in overweight and obesity among children of all ages is noted. A recent systematic review and meta-analysis of the anthropometric nutrition status of children in South Africa from 1997 to 2020 reported that childhood obesity rates ranged from 12.5% to 19% for children aged 2–19 years, with adolescent overweight prevalence increasing from 16.9% in 2002 to 23.1% in 2011.[2] Childhood obesity and diets high in unhealthy foods impact the health and well-being of children, increasing their risk of diet-related non-communicable diseases (NCDs), such as heart disease, diabetes and some forms of cancer later in life.[3] The impact of childhood obesity is often life-long, negatively affecting children's psychological and psychosocial well-being and increasing their risk of depression, low self-esteem and poor academic performance.[4,5]

Childhood obesity is complex, with numerous factors contributing to its increasing prevalence. The food system is recognised as a key driver in the global obesity pandemic,[6] with the globalisation of food systems driving a shift towards unhealthy food environments. These environments are characterised by the widespread availability, affordability and aggressive promotion of highly processed unhealthy foods, often referred to as ultra-processed foods.[7] The majority of highly processed foods are considered *less healthy* due to their high saturated fat, salt and sugar content,[7] as well as the substantial amount of evidence linking their frequent consumption to increased total energy intake[8] and higher body mass index.[9] Concerningly, the global shift towards unhealthy diets has also been observed among South African children, with research reporting an increased intake of highly processed foods such as sugar-sweetened beverages and salty snacks and a decreased intake of whole foods such as vegetables, fruits and milk.[10]

To address unhealthy food environments and the resulting unhealthy diets, the World Health Organization (WHO) has urged member states to implement comprehensive, evidence-informed regulations and policies that aim to improve the food environment. Such policies include the introduction of government-led mandatory front-of-pack (FoP) labelling schemes, taxation of unhealthy food and beverages, and restrictions on the marketing of unhealthy foods.[11,12]

The marketing of food and non-alcoholic beverages (hereafter referred to as food) is extensive, spanning various media channels and formats. The literature also indicates that food marketing predominantly focuses on promoting unhealthy products.[13–16] Food marketing, especially that of unhealthy products, has been shown to influence children's eating behaviours, including their food preferences, purchase requests and consumption.[16–18] Children's vulnerability to marketing is partly due to their limited ability to recognise the persuasive intent behind marketing. This skill typically develops around the age of 12 years, making them particularly vulnerable to marketing messages.[19] In this context, children often make food

choices based on visual and associative cues, such as colours, images, brand characters and promotional claims. These elements often evoke positive emotional responses and influence their product preferences, often without any critical evaluation of the product.[20]

Food packaging represents one of the most powerful and persistent marketing media. In addition to its role in conveying product information to consumers, packaging is present at the point of purchase and during consumption, allowing repeated exposure to marketing cues that can reinforce brand recognition, food preferences and product desirability, thereby giving it a unique influence over consumer behaviour.[21] Studies consistently show that children are disproportionately exposed to the marketing of unhealthy foods, while healthy foods, such as vegetables and fruits, are less likely to be promoted.[22,23] Child-directed food marketing in South Africa has been examined in several studies, which consistently show that children are predominantly exposed to the marketing of *less healthy* foods, both through television advertising and on food packaging.[24–28]

Evidence has demonstrated a causal relationship between exposure to food marketing and childhood obesity.[29] Given children's heightened susceptibility to persuasive marketing cues and their disproportionate exposure to the marketing of unhealthy foods, the WHO and other authoritative bodies have issued best-practice recommendations. In May 2010, the World Health Assembly adopted the WHO Set of Recommendations on the Marketing of Foods and Non-alcoholic Beverages to Children.[30,31] Recently, the WHO updated its guidelines, calling on all member states to implement mandatory policies that protect children of all ages from the harmful effects of food marketing. In response, the South African National Department of Health (SANDoH) Directorate: Food Control, published draft Regulation R.429, which proposed restrictions on the marketing of unhealthy foods to children.[32] More recently, in April 2023, a newer and more comprehensive draft Regulation (R.3337) was published for public comments; however, neither regulation has come into effect.[33] Policies such as R.429 of 2014 and R.3337 of 2023 hold significant potential to improve the food environment for South African children. But the effectiveness of such policies will ultimately depend on robust monitoring of child-directed food marketing activities.

This study therefore aimed to investigate the extent and nature of child-directed marketing on pre-packaged food sold in South African supermarkets and to assess the overall nutritional quality of these foods.

Methods

This study draws on data and methodology developed as part of the MSc mini dissertation by Gilfillan[33] and was guided by the International Network for Food and Obesity/NCD Research, Monitoring and Action Support (INFORMAS) Food Labelling Protocol.[34] Ethical approval for this study was obtained from the North-West University Health Research Ethics Committee (NWU-00972-19-A1).

Sampling of supermarkets

Shoprite, SPAR, Pick 'n Pay and Woolworths were identified as the four largest national supermarket chains in South Africa based on revenue and market share, together accounting for the majority of formal food retail sales in the country.[35] For data collection, one supermarket from each chain was selected in Pretoria East, an urban area characterised by access to multiple major food retailers. Although data were collected from a single outlet per chain, national retail in South Africa operates under centralised procurement, branding and product ranges, particularly for packaged foods. As a result, the food products available, packaging characteristics and marketing strategies are largely consistent across stores within the same chain. These retailers serve different income groups and were therefore considered to provide a representative sample of foods available in urban South African supermarkets.

Selection of child-directed foods

All child-directed pre-packaged foods sold in the selected supermarkets were considered for inclusion. Foods aimed at infants were excluded; alcoholic beverages, coffee and food supplements were also excluded.

For this study, children were defined as individuals between 1 and 18 years of age.[30] Child-directed foods were defined using definitions from similar studies,[36,37] as a food with the packaging containing *two or more* of the following:

- Pictures or cartoon images appealing to children.
- Specific or unusual shapes, colours, sizes or other iconography as well as the foregrounding or emphasis of any of these factors.
- Language, direct words or allusions referring to children, fun, play or school.
- Puzzles, games and premium offers such as competitions, toys and giveaways targeted at children.
- Cross-promotions or tie-ins with films, children's television programmes, celebrities, games, merchandise, websites and sports teams.
- Nutrient, health or health-related claims.

Data collection

Permission to collect data in-store was granted by supermarket managers from three of the four retailers. For the fourth retailer, which denied in-store data capturing, data were obtained using its online store. Data collection took place between March 2020 and January 2021 in Pretoria East, Gauteng. Product information on all foods that met the child-directed criteria was collected from the packaging. High-quality photographs were taken of the selected food, capturing all four sides of the product packaging. Additional information on premium offers not displayed on the food label (such as price discounts, etc.) was also recorded in-store and online.

For consistency, the smallest available package size was used. Two flavours per single food item were included, with each flavour included as a separate food item. Where more than two flavours were available, the most common flavour (e.g. vanilla, chocolate, strawberry) and the most unusual flavour (e.g. sour strawberry, tropical) were selected. Foods that were sold in more than one supermarket were only captured once.

Photographs were analysed and information was extracted and coded according to the INFORMAS food labelling framework and entered into electronic data sheets using Microsoft® Excel (Microsoft Corp, Redmond, WA, USA). The following labelling components were recorded:

- Product information, including the product name and manufacturer.

- The presence of child-directed marketing techniques on the packaging, coded as follows:
  (1) *Promotional characters* included, cartoon or company-owned character (e.g. Coco the monkey), licensed character (e.g. Dora the Explorer), Sportsperson or celebrity, movie tie-in (e.g. Shrek), historical or festive event (e.g. Christmas), 'for kids' (e.g. image of children, 'great for school lunches', etc.), awards (e.g. 'number one best-selling'), sports event.
  (2) *Premium offers* included game and app downloads, contests, pay 2 and take 3, 20% extra off or other, limited edition, social charity, gift or collectable, price discount and loyalty programmes.
  (3) *Claims* included nutrition, health, health-related or other claims.

- Nutritional information of predefined priority nutrients (energy, protein, total sugar, saturated fat, fibre and sodium) per 100 g/100 ml from the nutrient information panel (NIP).
- Quantitative Ingredient Declaration (QUID) for priority ingredients (fruit, vegetables, legumes, nuts and artificial sweeteners) from the ingredient list.

For data collection from the online store, product images available on the website were used. Information provided on the product page was considered part of the food packaging, and data from the food description, NIP and ingredient lists sections were included.

All foods were classified into their respective food categories according to the Global Food Monitoring Group classification system.

Data quality was ensured using the standardised INFORMAS-based data collection and coding protocol. High-quality photographs of all product packaging enabled verification of recorded information. During data capturing, uncertainties related to product inclusion and food category placement were flagged and discussed with a second researcher (46.2% of the included data), with final decisions guided by INFORMAS classification codes and consensus between the researchers. Foods displaying any child-associated words such as 'happy', 'smile', 'fantastical' and 'yay' were interpreted as 'for kids' and included in the study. Duplicate products were removed, and routine checks were conducted to identify inconsistencies or missing data. The final dataset was securely stored and accessible only to the research team.

Assessing the overall nutritional quality of foods

Nutrient profiling is defined as 'the science of classifying foods according to their nutritional composition for reasons related to preventing disease and promoting health'.[38] Nutrient profiling is widely recognised as a transparent and reproducible method of assessing the nutritional quality of foods.[39] Health agencies, governments and researchers have developed various nutrient profiling models (NPMs) to guide health strategies such as front-of-pack (FoP) food labelling, marketing restrictions, and the regulation of nutrition and health claims.[38]

For this study, two NPMs included in the draft South African food labelling regulations (R.3337) were applied using the NutriRank™ tool (https://nutrirank.co.za/).

The South African NPM for health and nutrition claims (SA_Claims_NPM) classifies the overall nutritional quality of foods by considering both nutrients to limit (saturated fat, sugar and sodium) and nutrients or food components to encourage (protein, fibre, vegetables, fruits, legumes and nuts) per 100 g/ml. This model is adapted from the United Kingdom Office of Communication (Ofcom) NPM, an NPM currently used to regulate food marketing in the United Kingdom. The SA_Claims_NPM has been tested and validated for this purpose in the South African context.[28,40]

The South African NPM for FoP labelling (SA_FoP_NPM) is proposed in R.3337 to support FoP warning labels and child-directed marketing restrictions.[32] It is based on the Chile Warning Octagon model (2019), which regulates the marketing of foods in Chile. This NPM identifies foods containing excessive amounts of nutrients and food components to limit, by considering total sugar, saturated fat, sodium and artificial sweetener content per 100 g/ml. This NPM was also tested in the South African context.[41]

All the included foods were assessed against the criteria of both NPMs by using the NutriRank™ tool. Foods classified as eligible to carry a claim by the SA_Claims_NPM were categorised 'healthier', whereas those classified as not eligible were categorised as 'less healthy'. The SA_FoP_NPM was applied to identify foods that would require a FoP warning label as per R.3337. Foods that did not display a NIP (6.5%) were classified according to the nutritional information sourced from comparable foods.

Statistical analysis

Descriptive statistics were used to determine (i) the extent of child-directed foods sold in South African supermarkets, (ii) the type and amount of marketing techniques used, (iii) the overall nutritional quality of the child-directed foods and finally, (iv) the use of marketing techniques on healthier and less healthy foods.

Results

Initially, 632 individual food products (including foods and beverages) were collected, of which 116 (18.4%) were excluded after deliberation among the researchers. In total, 516 child-directed foods were included in the study.Table 1 presents the proportion of foods included per food category. Food categories with the greatest proportion of child-directed foods were confectionery (36% of foods), cereal and cereal products (15% of foods), dairy (13% of foods) and beverages (9.3% of foods). Of the included foods, 95% ($n = 490$) displayed promotional characters, 63.3% ($n = 327$) displayed claims and 28.9% ($n = 149$) displayed premium offers.

The different marketing techniques used are described in food categories containing 30 or more child-directed foods. Only 5 food categories contained 30 or more child-directed foods, including confectionery, cereal and cereal products, dairy, beverages and snack foods (Figure 1). Across all five food categories, promotional characters (ranging from 90% to 100%) and claims (ranging from 45% to 90%) were the marketing techniques used most often. Nearly all child-directed foods in the confectionery category had a promotional character (90%), and about half (45%) displayed a claim. All the foods within the cereals and cereal products category displayed a promotional character, and more than 90% had a claim. Interestingly, a higher proportion of foods within the cereal and

Table 1: Proportion of child-directed foods included per food category (supermarkets in Pretoria and an online store, South Africa, 2020–2021).

Food category	Total products *n* (%)	
Beverages, non-alcoholic (powdered and liquid)	48	(9.3)
Bread and bakery products	27	(5.2)
Cereal and cereal products	78	(15.1)
Confectionery (chocolates, ice-cream, edible ices, sweets etc.)	186	(36)
Convenience foods (meal kits, prepared meals, frozen meals, soups)	13	(2.5)
Dairy products (milk, yoghurt and yoghurt drinks, cheese)	67	(13)
Fruit and vegetables	25	(4.8)
Meat and meat products (processed chicken, fish and meat)	8	(1.5)
Cooking and edible oils, and edible oil spreads (cooking oil, butter, margarine, peanut butter)	19	(3.7)
Savoury snack foods (crisps and salty snacks)	31	(6)
Sugar, honey and related products (icing and other sugar-based products)	14	(2.7)
Total	516 (100)	

cereal products category displayed a claim compared with the dairy category.

Table 2 describes the frequency of the different types of promotional characters and premium offers used on the included child-directed foods, with some foods containing more than one type of promotional character. The promotional characters predominantly used were cartoons/company-owned characters and 'for kids'/child-associated promotional characters.

The 'pay 2 take 3' or similar offers, price discounts, and games and application downloads were the predominant premium offers used. The game and application downloads included games on the food packaging itself or any messaging that refers children to websites or social media platforms.

The overall nutritional quality of the included foods and categorised by food category is presented in Figure 2. In total, 340 (66%) of the included foods were classified as less healthy by the SA_Claim_NPM. The categories with the highest proportion of less healthy products were confectionery (100%), sugar, honey, and related products (100%), savoury snacks (94%), beverages (90%), and bread and bakery products (85%). In contrast, the categories with the largest proportion of healthier foods included meat and meat products (100%), dairy products (96%), and edible oils and spreads (89%).

Additionally, the proportion of foods, overall and per category, that would require a warning label, based on the criteria outlined in the draft regulation (R.3337), is also presented in Figure 2. Notably, 418 (81%) of the included foods and all foods in the beverages, confectionery and sugar, honey and related products categories would be subject to mandatory front-of-pack warning labels. Almost all were also classified as less healthy. Interestingly, while all foods in the dairy (100%) and convenience foods (100%) categories would require a mandatory warning label, only 4% and 23%, respectively, were classified as less healthy. A similar discrepancy between nutrient profiling classifications was also observed in the meat products and edible oils and spreads food categories.

Discussion

This study provides insight into the extent and nature of child-directed marketing on pre-packaged foods sold in urban South African supermarkets. The findings of our research build upon previous studies and strengthen the calls for action to improve the food environment for South African children.

The food categories with the highest proportion of child-directed marketing, as indicated in Table 1, were confectionery (36% of foods), cereals and cereal products (15% of foods), dairy (13% of foods) and beverages (9.3% of foods). Concerningly, all

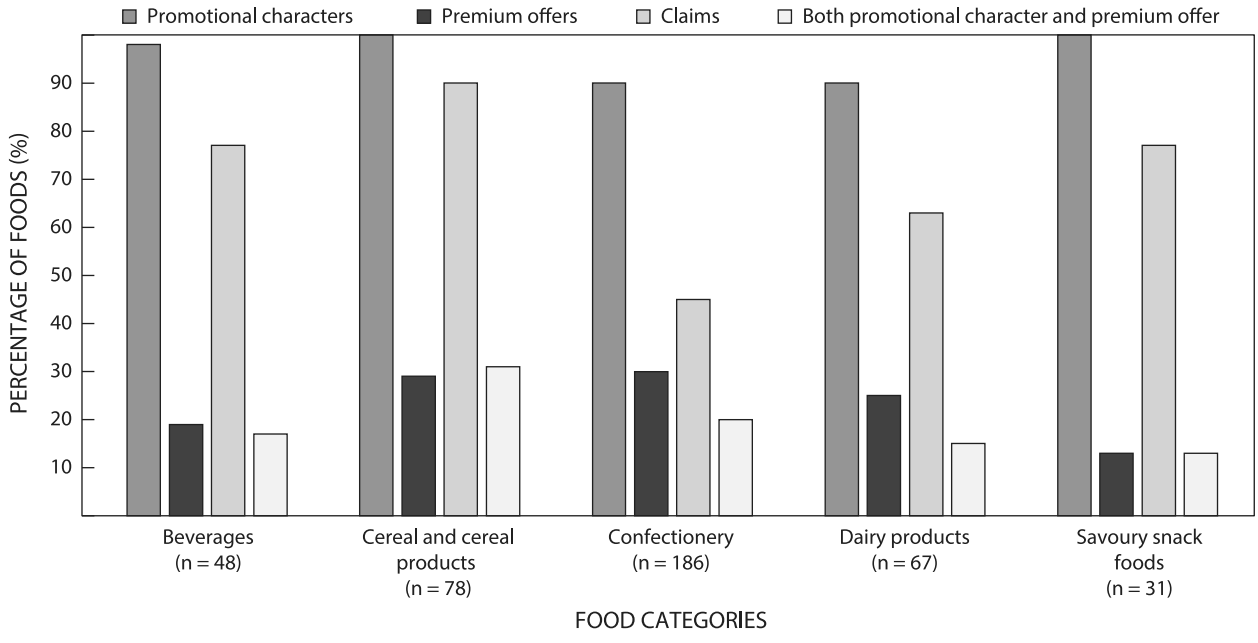

Figure 1: Proportion of marketing techniques used in food categories containing 30 or more child-directed foods (supermarkets in Pretoria and an online store, South Africa, 2020–2021).

Table 2: Type of promotional characters and premium offers present on child-directed foods (supermarkets in Pretoria and an online store, South Africa, 2020–2021).

	Total number of promotional characters (*n* = 528)	
Types of promotional characters	***n***	**%**
Cartoon/company-owned character	313	59.3
Licensed character	16	3.0
Amateur sportsperson	0	0.0
Celebrity (non-sport)	0	0.0
Movie tie-in	3	0.6
Famous sportsperson/team	8	1.5
Non-sport/historical event/festival	0	0.0
'For kids'/child-associated	182	34.5
Awards	3	0.6
Sport events	3	0.6
	Total number of premium offers (*n* = 150)	
Types of premium offers	***n***	**%**
Game and app downloads	30	20.0
Contests	15	10.0
Pay 2 take 3 or other	47	31.3
20% extra or other	1	0.7
Limited edition	3	2.0
Social charity	7	4.7
Gift or collectable	3	2.0
Price discount	40	26.7
Retail loyalty programmes	4	2.7

food products in the confectionery category, 90% of beverages and almost three-quarters (72%) of cereals and cereal products were classified as *less healthy* according to the SA_Claims_NPM (Figure 2). Furthermore, most foods in these categories (ranging from 86% to 100%) would be required to carry mandatory FoP warning labels under the draft Regulation (R.3337). These findings highlight the disproportionate marketing of *less healthy* foods to children in South Africa and align with previous studies, which similarly found that children in South Africa are predominantly exposed to the marketing of *less healthy* foods, whether through television advertising or food packaging.[24–28]

The marketing techniques most often used, as presented in Table 2, were promotional characters (95% of foods), followed by claims (63% of foods) and premium offers (29% of foods). The most common promotional characters included cartoons and company-owned characters (59% of foods) and child-associated words or phrases such as 'fun' and 'ideal-for-lunch-boxes' (35% of foods).

Within the cereals and cereal product category, all products displayed a promotional character, and 90% also carried a claim of some sort, demonstrating the frequent use of multiple marketing strategies that target both children (e.g. promotional characters) and parents (e.g. claims). Notably, 72% of these products were classified as *less healthy,* and 86% would be required to carry a mandatory warning label. The use of child-directed marketing on breakfast cereals has previously been studied in South Africa.[25] Khan et al.[25] found that 95% of breakfast cereals in supermarkets displayed child-directed marketing strategies of some kind, with nutritional claims (95.5% of foods) and illustrations (95% of foods) being the most prevalent. In contrast, characters (10.8% of products) and fantasy (8.6% of products) were less frequently used strategies. In our study, coding of child-directed marketing was based on the INFORMAS food labelling framework,[34] where illustrations, characters and fantasy were grouped under the sub-category 'cartoons/company-owned character'. Therefore, explaining the lower rate of character usage by Khan et al.[25] in comparison with our findings. Interestingly, Yamoah and colleagues[27] reported that promotional characters were also the most common strategy used in South African television food marketing directed at children. Concerningly, similar to our findings, they were mainly used to promote *less healthy* foods.[27] These findings are worrying, as promotional characters not only attract the attention of children and encourage 'pester power' and preferences for the product but also foster an emotional bond that strengthens brand recognition, which often persists into adulthood.[41,42]

In our sample, most of the child-directed foods (63% of foods) also carried a nutrition or health claim, with many displaying both promotional characters and claims. Abdool Karim and colleagues[24] analysed the on-package marketing of pre-packaged foods in four major supermarkets in Cape Town, South Africa, reporting a median of 1.996 instances of marketing per product, with claims being the most prevalent marketing strategy used. Health and nutrition claims have been shown to influence perceptions of a food product's healthfulness among both children and parents, thereby shaping purchasing decisions.[42,43] When such marketing strategies are applied to *less healthy* foods, this can strengthen unhealthy food choices and consumption patterns, increasing the risk of childhood obesity and diet-related NCDs.[44]

We found that the majority (66% of foods) of child-directed foods sold in South African supermarkets (see Figure 2) were *less healthy*, with 81% of these foods required to carry a mandatory warning label under draft Regulation R.3337. Foods from the confectionery category were most frequently marketed to children, and all of these were classified as *less healthy*. In contrast, only 2% of foods directed at children came from the vegetable and fruit category. These findings mirror international evidence, where food marketed to children in supermarkets is predominantly from the confectionery, breakfast cereals and dairy products categories, with vegetables and fruits rarely promoted.[45] This imbalance between the marketing of *healthier* versus *less healthy* foods raises ethical concerns, as it limits children's opportunities to develop a preference for healthy foods.

Child-directed food marketing is extensive and spans various settings, including food packaging, television, digital and social media, sports events, billboards and schools.[46] The extent and nature of child-directed marketing in South Africa, as observed in our and previous studies,[24–27] aligns with international evidence indicating that *less healthy* foods are disproportionately marketed in low- and middle-income countries.[47,48] To address the nature of child-directed food marketing techniques and provide children with the opportunity to develop healthier food preferences, many countries have implemented marketing restrictions on *less healthy* foods in response to the WHO's recommendations, many of these countries being low- and middle-income countries such as Chile and Mexico.[49] In 2016, Chile implemented the Law of Food Labelling and Advertising (Law 20.606), which restricts the marketing to children of *less healthy* foods containing

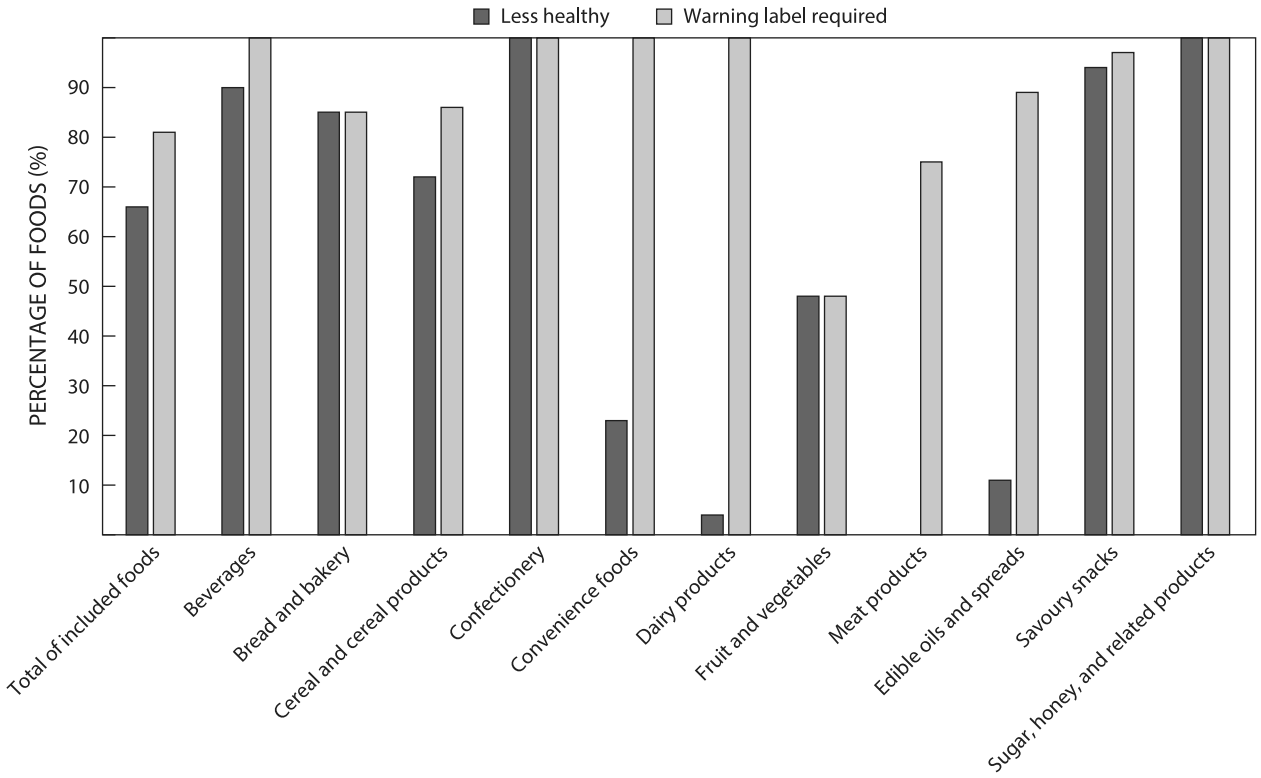

Figure 2: Nutritional quality and front-of-pack labelling requirements of promoted foods per food category (supermarkets in Pretoria and an online store, South Africa, 2020–2021).

excessive amounts of energy, saturated fat, total sugar and sodium.[50] Research indicates a significant reduction in children's exposure to television food advertisements since the introduction of these regulations.[51] The proportion of child-directed marketing on pre-packaged breakfast cereals is also significantly lower post-implementation (21%), when compared with pre-implementation (36%) of the regulation. The reformulation of products, to retain eligibility to use child-directed marketing techniques, was also observed.[52,53] In Chile, these restrictions on child-directed food marketing form part of a broader food labelling and marketing regulatory framework that requires pre-packaged foods to carry mandatory FoP warning labels when classified as *less healthy* by the NPM specified in the regulation. As it stands, the draft Regulation (R.3337) follows a regulatory framework that is very similar to that of Chile.

Interestingly, notable differences were observed between the classifications of foods using the two NPMs specified in draft Regulation R.3337. For example, while all foods within the convenience and dairy categories would require a mandatory FoP warning label, according to the SA_FoP_NPM, only a small proportion of these were classified as *less healthy* by the SA_Claim_NPM (23% and 4% of foods, respectively). Similar differences were noted in the meat and edible oils categories (see Figure 2). Differences in how foods are classified by NPMs are well documented and are mainly due to the differences in their underlying design. This includes the nutrients selected to classify foods, the use of thresholds versus scoring systems, and the manner in which foods are grouped and categorised into food categories.[39,40] These findings highlight the complexity of developing and applying NPMs and emphasise the need for careful selection and validation of the NPM used to support a food policy. Misalignment between NPMs and public health objectives may result in consumer confusion, inconsistent messaging, or unintended regulatory outcomes. It is therefore important that the chosen model aligns with the aim of the policy, encourages product reformulation and promotes nutrient-dense foods, while simultaneously excluding highly processed alternatives that merely meet numerical thresholds.[39] Further evaluation of how NPMs perform across food categories and how they align with public health objectives in South Africa is warranted.

Considering the rising prevalence of childhood obesity and the increased consumption of highly processed, *less healthy* foods among South African children,[10] restrictions on the marketing of unhealthy foods to children, as proposed in the draft Regulation (R.3337), are warranted. However, alignment between the NPMs used and the accompanying food messages and nutrition education is essential to ensure coherent and effective policy implementation.

Limitations

The fact that data were only collected in urban areas and from large retailers is a limitation of this study, as child-directed marketing on foods from smaller retail outlets and informal and rural food systems was not captured. In addition, the data were collected from 2020 to 2021, resulting in newer food products and marketing strategies introduced after this period being excluded. Additionally, we primarily focused on child-directed marketing by analysing three main marketing techniques, namely promotional characters, premium offers and claims. Inclusion of indirect marketing techniques, such as packaging size and expansion on the different types of claims used, would provide a more comprehensive understanding of child-directed marketing techniques used in South Africa. This would also enable future studies to evaluate the effectiveness of related regulations more effectively. The use of multiple

nutrient-profiling models, while strengthening the robustness of food healthiness classification, limited the possibility of inferential comparisons between healthy and less-healthy foods due to inconsistencies in product classification between the included models. Furthermore, this study analysed only the packaging of foods and did not include other forms of child-directed marketing, such as television marketing, digital and social media, sports events, billboards and school settings.

In conclusion, most of the child-directed foods available in South African supermarkets included in this study were classified as unhealthy. These products frequently displayed multiple marketing strategies, indicating a high level of exposure to child-directed marketing within the food retail environment. Although this study did not assess the behavioural impact of child-directed marketing, the findings raise concerns regarding the widespread availability of unhealthy foods promoted to children. The findings support the need for regulatory approaches to limit child-directed marketing of unhealthy foods, including the implementation of comprehensive food marketing and labelling regulations such as those proposed in draft Regulation R.3337. However, coherent and supportive food messages and nutrition education remain essential to enhance and sustain the impact of such policies.

Acknowledgements — The authors would like to thank the store managers for permitting them to collect data in their stores. They also thank the INFORMAS network for their protocol.

Authorship — All authors contributed to the conception, design, analysis and interpretation of the data. MW and MG prepared and contributed towards the final paper. All authors approved the final version of the manuscript for publication.

Ethical standards — This study was approved by the North-West University Health Research Ethics Committee on 13/11/2019 with ethics number: NWU-00972-19-A1.

Disclosure statement — The authors disclose that the NutriRank™ tool used in this study was developed and is owned by the North-West University.

References

1. Murray CJ, Aravkin AY, Zheng P, et al. Global burden of 87 risk factors in 204 countries and territories, 1990–2019: a systematic analysis for the global burden of disease study 2019. Lancet. 2020;396(10258):1223–1249. https://doi.org/10.1016/S0140-6736(20)30752-2
2. Kruger HS, Visser M, Malan L, et al. Anthropometric nutritional status of children (0–18 years) in South Africa 1997–2022: a systematic review and meta-analysis. Public Health Nutr. 2023;26(11):2226–2242. https://doi.org/10.1017/S1368980023001994
3. Daniels S. Complications of obesity in children and adolescents. Int J Obes. 2009;33(S1):S60–65. https://doi.org/10.1038/ijo.2009.20
4. Rankin J, Matthews L, Cobley S, et al. Psychological consequences of childhood obesity: psychiatric comorbidity and prevention. Adolesc Health Med Ther. 2016;7:125–146.
5. Sanders RH, Han A, Baker JS, et al. Childhood obesity and its physical and psychological co-morbidities: a systematic review of Australian children and adolescents. Eur J Pediatr. 2015;174(6):715–746. https://doi.org/10.1007/s00431-015-2551-3
6. Swinburn BA, Sacks G, Hall KD, et al. The global obesity pandemic: shaped by global drivers and local environments. Lancet. 2011;378(9793):804–814. https://doi.org/10.1016/S0140-6736(11)60813-1
7. Monteiro CA, Moubarac JC, Cannon G, et al. Ultra-processed products are becoming dominant in the global food system. Obes Rev. 2013;14(S2):21–28. https://doi.org/10.1111/obr.12107
8. Hall KD, Ayuketah A, Brychta R, et al. Ultra-processed diets cause excess calorie intake and weight gain: an inpatient randomized controlled trial of ad libitum food intake. Cell Metab. 2019;30(1):67–77.e3. https://doi.org/10.1016/j.cmet.2019.05.008
9. Louzada MLC, Baraldi LG, Steele EM, et al. Consumption of ultra-processed foods and obesity in Brazilian adolescents and adults. Prev Med. 2015;81:9–15. https://doi.org/10.1016/j.ypmed.2015.07.018
10. Kruger HS, Malan L, Zandberg L, et al. Dietary intake and nutritional status of children (0–18 years) in South Africa: a review of the literature from 1997–2019. In: Foods Procured, Nutritional Status & Dietary Intake of People Living in South Africa. Pretoria: National Department of Health; 2022. Pp 87–204.
11. Afshin A, Sur PJ, Fay KA, et al. Health effects of dietary risks in 195 countries, 1990–2017: a systematic analysis for the global burden of disease study 2017. Lancet. 2019;393(10184):1958–1972. https://doi.org/10.1016/S0140-6736(19)30041-8
12. World Health Organization. Report of the commission on ending childhood obesity: implementation plan – Executive summary. Geneva: WHO; 2017.
13. Kelly B, Vandevijvere S, Ng S, et al. Global benchmarking of children's exposure to television advertising of unhealthy foods and beverages across 22 countries. Obes Rev. 2019;20(S2):116–128. https://doi.org/10.1111/obr.12840
14. Potvin Kent M, Pauzé E, Roy EA, et al. Children and adolescents' exposure to food and beverage marketing in social media apps. Pediatr Obes. 2019;14(6):e12508. https://doi.org/10.1111/ijpo.12508
15. Boyland E, McGale L, Maden M, et al. Systematic review of the effect of policies to restrict the marketing of foods and non-alcoholic beverages to which children are exposed. Obes Rev. 2022;23(8):e13447. https://doi.org/10.1111/obr.13447
16. Boyland EJ, Nolan S, Kelly B, et al. Advertising as a cue to consume: a systematic review and meta-analysis of the effects of acute exposure to unhealthy food and beverage advertising on intake in children and adults. Am J Clin Nutr. 2016;103(2):519–533. https://doi.org/10.3945/ajcn.115.120022
17. Cairns G, Angus K, Hastings G, et al. Systematic reviews of the evidence on the nature, extent and effects of food marketing to children: a retrospective summary. Appetite. 2013;62:209–215. https://doi.org/10.1016/j.appet.2012.04.017
18. Sadeghirad B, Duhaney T, Motaghipisheh S, et al. Influence of unhealthy food and beverage marketing on children's dietary intake and preference: a systematic review and meta-analysis of randomized trials. Obes Rev. 2016;17(10):945–959. https://doi.org/10.1111/obr.12445
19. Carter OBJ, Patterson LJ, Donovan RJ, et al. Children's understanding of the selling versus persuasive intent of junk food advertising: implications for regulation. Soc Sci Med. 2011;72(6):962–968. https://doi.org/10.1016/j.socscimed.2011.01.018
20. Elliott C, Brierley M. Healthy choice? Exploring how children evaluate the healthfulness of packaged foods. Can J Public Health. 2012;103(6):e453–458. https://doi.org/10.1007/BF03405637
21. Chandon P. How package design and package-based marketing claims lead to overeating. Appl Econ Perspect Policy. 2013;35(1):7–31. https://doi.org/10.1093/aepp/pps028
22. Lavriša Ž, Pravst I. Marketing of foods to children through food packaging is almost exclusively linked to unhealthy foods. Nutrients. 2019;11(5):1128. https://doi.org/10.3390/nu11051128
23. Machado ML, Rodrigues VM, do Nascimento AB, et al. Nutritional composition of Brazilian food products marketed to children. Nutrients. 2019;11(6):1214. https://doi.org/10.3390/nu11061214
24. Abdool Karim S, Frank T, Khan AS, et al. An assessment of compliance with proposed regulations to restrict on-package marketing of packaged foods to improve nutrition in South Africa. BMC Nutr. 2025;11(1):17. https://doi.org/10.1186/s40795-025-01007-3
25. Khan AS, Frank T, Swart RE. Child-directed marketing on packaged breakfast cereals in South Africa. Public Health Nutr. 2023;26(10):2139–2148. https://doi.org/10.1017/S1368980023001507

26. Mchiza ZJ, Temple NJ, Steyn NP, et al. Content analysis of television food advertisements aimed at adults and children in South Africa. Public Health Nutr. 2013;16(12):2213–2220. https://doi.org/10.1017/S136898001300205X
27. Yamoah DA, De Man J, Onagbiye SO, et al. Exposure of children to unhealthy food and beverage advertisements in South Africa. Int J Environ Res Public Health. 2021;18(8):3856. https://doi.org/10.3390/ijerph18083856
28. Wicks M, Wright H, Wentzel-Viljoen E. Restricting the marketing of foods and non-alcoholic beverages to children in South Africa: are all nutrient profiling models the same? Br J Nutr. 2016;116(12):2150–2159. https://doi.org/10.1017/S0007114516004244
29. Norman J, Kelly B, Boyland E, et al. The impact of marketing and advertising on food behaviours: evaluating the evidence for a causal relationship. Curr Nutr Rep. 2016;5(3):139–149. https://doi.org/10.1007/s13668-016-0166-6
30. World Health Organization. Report of the commission on ending childhood obesity. Geneva: WHO; 2016.
31. Department of Health. Foodstuffs, Cosmetics and Disinfectants Act, 1972 (No. 54 of 1972): Regulations Relating to the Labelling and Advertising of Foods: Amendment (Notice R.429). Pretoria: Government Gazette; 2014.
32. Department of Health. Draft Regulations Relating to the Labelling and Advertising of Foodstuffs (R.3337). Government Gazette No. 48460, 21 April 2023. Pretoria: Government Gazette; 2023. Available from: https://www.health.gov.za/wp-content/uploads/2023/05/R3337-Draft-Labelling-Regulations-21-April-2023-sc-compressed-1.pdf [accessed 20 July 2023].
33. Gilfillan M. The extent and nature of food marketing to children in South African supermarkets. Master's mini-dissertation. North-West University, South Africa; 2022.
34. Rayner M, Vandevijvere S. INFORMAS protocol: food labelling module. Auckland: University of Auckland; 2017. Available from: https://auckland.figshare.com/articles/INFORMAS_Protocol_Food_Labelling_Module/5673643 [cited 30 Jan 2018]
35. Deloitte Touche Tohmatsu Limited. Global powers of retailing 2019. Available from: https://www2.deloitte.com/content/dam/Deloitte/global/Documents/Consumer-Business/cons-global-powers-retailing-2019.pdf [accessed 20 July 2023].
36. Elliott C. Assessing 'fun foods': nutritional content and analysis of supermarket foods targeted at children. Obes Rev. 2008;9(4):368–377. https://doi.org/10.1111/j.1467-789X.2007.00418.x
37. Mehta K, Phillips C, Ward P, et al. Marketing foods to children through product packaging: prolific, unhealthy and misleading. Public Health Nutr. 2012;15(9):1763–1770. https://doi.org/10.1017/S1368980012001231
38. Rayner M, Scarborough P, Kaur A. Nutrient profiling and the regulation of marketing to children: possibilities and pitfalls. Appetite. 2013;62:232–235. https://doi.org/10.1016/j.appet.2012.06.021
39. Labonté M-È, Poon T, Gladanac B, et al. Nutrient profile models with applications in government-led nutrition policies aimed at health promotion and noncommunicable disease prevention: a systematic review. Adv Nutr. 2018;9(6):741–788. https://doi.org/10.1093/advances/nmy045
40. Wicks M, Wright H, Wentzel-Viljoen E. Assessing the construct validity of nutrient profiling models for restricting the marketing of foods to children in South Africa. Eur J Clin Nutr. 2020;74(7):1065–1072. https://doi.org/10.1038/s41430-020-0566-y
41. Frank T, Thow A-M, Ng SW, et al. A fit-for-purpose nutrient profiling model to underpin food and nutrition policies in South Africa. Nutrients. 2021;13(8):2584. https://doi.org/10.3390/nu13082584
42. Kraak VI, Story M. Influence of food companies' brand mascots and entertainment companies' cartoon media characters on children's diet and health: a systematic review and research needs. Obes Rev. 2015;16(2):107–126. https://doi.org/10.1111/obr.12237
43. Hallez L, Qutteina Y, Raedschelders M, et al. That's my cue to eat: a systematic review of the persuasiveness of front-of-pack cues on food packages for children vs adults. Nutrients. 2020;12(4):1062. https://doi.org/10.3390/nu12041062
44. World Health Organization. Policies to protect children from the harmful impact of food marketing: WHO guideline. Geneva: WHO; 2023.
45. World Health Organization. Food marketing exposure and power and their associations with food-related attitudes, beliefs and behaviours: a narrative review. Geneva: WHO; 2022.
46. Boyland E. Is it ethical to advertise unhealthy foods to children? Proc Nutr Soc. 2023;82(3):234–240. https://doi.org/10.1017/S0029665123000010
47. Scapin T, Romaniuk H, Feeley A, et al. Global food retail environments are increasingly dominated by large chains and linked to the rising prevalence of obesity. Nature Food. 2025;6(3):283–295. https://doi.org/10.1038/s43016-025-01134-x
48. Reardon T, Tschirley D, Liverpool-Tasie LSO, et al. The processed food revolution in African food systems and the double burden of malnutrition. Glob Food Sec. 2021;28:100466. https://doi.org/10.1016/j.gfs.2020.100466
49. Faria NC, Andrade GMP, Ruas CM, et al. Impact of implementation of front-of-package nutrition labeling on sugary beverage consumption and consequently on obesity prevalence and related direct costs in Brazil: a modelling study. PLoS One. 2023;18(8):e0289340. https://doi.org/10.1371/journal.pone.0289340
50. Corvalán C, Reyes M, Garmendia ML, et al. Structural responses to the obesity and noncommunicable diseases epidemic: update on the Chilean law of food labelling and advertising. Obes Rev. 2019;20(3):367–374. https://doi.org/10.1111/obr.12802
51. Carpentier FRD, Correa T, Reyes M, et al. Evaluating the impact of Chile's marketing regulation of unhealthy foods and beverages: preschool and adolescent children's changes in exposure to food advertising on television. Public Health Nutr. 2020;23(4):747–755. https://doi.org/10.1017/S1368980019003355
52. Reyes M, Smith Taillie L, Popkin B, et al. Changes in the nutrient content of packaged foods and beverages after implementation of the Chilean law of food labelling and advertising: a nonexperimental prospective study. PLoS Med. 2020;17(7):e1003220. https://doi.org/10.1371/journal.pmed.1003220
53. Mediano Stoltze F, Reyes M, Smith TL, et al. Prevalence of child-directed marketing on breakfast cereal packages before and after Chile's food marketing law: a pre- and post-quantitative content analysis. Int J Environ Res Public Health. 2019;16(22):4501. https://doi.org/10.3390/ijerph16224501

Received: 13-11-2025 Accepted: 25-02-2026