Commercial food advertising on the campus of Ghana's largest University

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Abstract

Background

Non-Communicable Diseases (NCDs) are a leading cause of death globally. NCD mortality attributable to unhealthy food environments (FEs) is significant. Heavy marketing of unhealthy foods is an important contributor to unhealthy FEs.

Aims

We examined the extent of commercial food advertising, messaging, and signage on the campus of Ghana's oldest and largest university.

Methods

We cross-sectionally collected data on all sighted advertisements. Advertisements/signage were categorised as food or non-food adverts, and as healthy or unhealthy (if they were food).

Results

Of 503 advertisements recorded, 238 (47.3%) were food ads. Advertised food products were categorised as healthy (38.7%), unhealthy (57.6%), or other/miscellaneous (3.8%). The most advertised food product was sugar-sweetened drinks (37.0%). Different promotional techniques deployed included the use of claim pronouncement, promotional characters, emotional appeal, premium offer, and price promotion.

Conclusions

The preponderance of unhealthy food advertising on the campus of Ghana's largest university has public health implications. Advertising may influence purchasing behaviour and consumption of unhealthy foods. Publicity and advocacy that motivate development of local policies to regulate various food promotion activities within this, and other Ghanaian food environments are urgently needed.

Introduction

The prevalence of non-communicable disease (NCDs), which include type 2 diabetes, hypertension, heart disease and stroke, have reached profound levels and are the leading cause of mortality globally (WHO 2018a). Even though preventable, NCDs are responsible for almost 70% of all deaths, with most deaths occurring in low- and middle-income countries (WHO 2018b). Obesity, a known risk factor for other NCDs, is increasing at a very fast rate (GBD Obesity Collaborators 2017). In Africa, some 39% of adults aged 18 years and over are overweight, and 13% are obese (WHO Regional Office of Africa 2014). This trend is not different from what is observed in children and adolescents in other regions of the world, therefore posing substantial present and future population health risks (Chooi, Ding, and Magkos 2019).

Risk factors such as poor-quality diets have consistently been recognised as important for overweight and obesity (Swinburn et al. 2004, Forouzanfar et al. 2016). These factors are inculcated into daily life partly as a result of various exposures within the physical environment, particularly, the food environment (Glanz 2009). Swinburn and Egger (2002) define the food environment as "the collective physical, economic, policy and socio-cultural surroundings, opportunities and conditions that influence people's food and beverage choices and nutritional status". Accordingly, modifying the food environment toward healthy food choices can be a key approach to preventing obesity and/or excess weight gain.

Modifying the food environment is critical in countries in Africa which are still battling with the consequences of undernutrition, and in addition, experiencing a nutrition transition toward a sedentary lifestyle (Adeboye, Bermano, and Roiiand 2012). Populations are shifting towards intake of more processed foods which are known to have high content of salt, saturated fat, and sugar. This phenomenon is dominant in urban areas where industrialisation and economic development are on the increase (Cockx et al. 2019). New diets, also known as the "western" diet, are available and easily accessible at sources such as fast food joints/restaurants. Most of these food outlets have limited healthy food options. In Ghana, an audit of food shops in a study examining dietary transition in Ghanaian cities recorded energy dense nutrient poor (EDNP) foods, particularly fried foods, processed foods and sugar sweetened beverages, as the most commonly available sold food (Holdsworth et al. 2019).

An important environmental factor that influences dietary habits and intake is exposure to food marketing and advertising practices (Larson and Story 2009, Boyland et al. 2016). Our spaces are heavily saturated with such activities either trying to inform us or persuade us to buy into an idea or product. These practices are used by food marketers in promoting their products through different channels; a prominent form being television advertising (Cairns et al. 2013). Advertising through television has been extensively researched in the developed countries. In the US, food advertising through television accounts for the second largest industry spending (Harris et al. 2002). Evidence from studies consistently report a predominance of marketing on television channels of unhealthy foods such as EDNP foods high in sugar, salt and fat, notable

among which are sugar-sweetened beverages mostly targeted to children and the youth (Scully et al. 2016, Kelly et al. 2010). These populations are preferentially targeted by marketers partially because of their spending power, their purchasing influences and as potential adult consumers (Cairns et al. 2013). Preliminary findings also from a pilot study assessing the healthiness of foods and beverages advertised on four Ghanaian Television Networks also identified indiscriminate promotion of EDNP foods, especially sugar-sweetened beverages, on children-specific programmes (Kumi and Laar 2020).

In defining foods as "healthy" or "unhealthy", various nutrient profiling approaches exist. Defined by the World Health Organisation (WHO), nutrient profiling is "the science of classifying or ranking foods according to their nutritional composition for reasons related to preventing disease and promoting health" (WHO 2018c). Nutrient profiling models available include the WHO nutrient profiling model (WHO 2015) and the Pan American Health Organization (PAHO) nutrient profiling model (PAHO 2016) which classify foods based on their nutrient composition. The International Network for Food and Obesity/Non-communicable Diseases Research, Monitoring and Action Support (INFORMAS), classifies foods as healthy if they fall within five core food groups (grains and grain products; vegetables and legumes/beans; fruits; milk and milk products; lean meat, fish, poultry, eggs, nuts, and legumes) (Sally, Janine, and Stefanie 2017). Other existing models include NOVA food classification which classifies food according to the extent and purpose of food processing, rather than in terms of nutrients (Monteiro et al. 2016). The application of these models is useful in different circumstances including enabling governmental bodies to generate nutrition-related policies to regulate food marketing especially to children, to guide food product labelling, and other nutrition and health claims (Labonté et al. 2018).

Even though it has not gained much consideration in the literature compared to television, other channels like the internet, social media, traditional mobile phone messaging and outdoor advertising (e.g. posters, billboards, free-standing signs, banners, flyers, or stickers) are also used by food marketers (Espinoza, Cevallos, and Tusev 2017). Some researchers have highlighted that these other channels are meant to complement one another to achieve the same goal since marketers have recognized the cumulative effect of multiple media in reinforcing messages to the target audience (Lane and Kevin 2001). Outdoor advertising has the ability to geographically target potential consumers. This is seen as particularly impactful since it is embedded into the physical environment and one cannot avoid being exposed to it easily as compared to that of advertisements on broadcast media platforms like the television or radio (Wilson and Till 2011).

Outdoor advertising as a means of promoting food is heavily placed in close proximity to places like schools, bus stations, roadsides, and other places where they can be repeatedly seen by large numbers of people (Isgor et al. 2016). In a study examining the commercial food landscape around primary schools in Australia, dominating advertised products were products classified as "unhealthy" such as soft drinks, alcoholic beverages, coffee, ice cream, and iced confections (Kelly et al. 2008). Studies also conducted in New Zealand on outdoor advertising

within the school environment reported 70% to 80% of food advertisements to not be in line with national nutritional guidelines (Maher, Wilson, and Signal 2005).

Given that these factors shape dietary intake, interventions to ensure healthy food environments in and around schools, as well as other places people live are required. Recognizing the documented relationship between unhealthy food environments and health, there have been calls for population-based approaches/interventions to promote healthy diets by international bodies like the World Health Organization (WHO). The WHO, during its sixty-third assembly, endorsed a resolution (WHA63.14) urging Member States to restrict unhealthy food marketing to children by taking necessary measures as part of a proposed wider strategy to halt the rise in obesity and other diet-related diseases (WHO 2010). Globally, countries are actively implementing WHA Resolution 63.14, albeit with challenges, though very few are from Africa (WHO 2020b). Only Morocco has fully achieved implementation of NCD progress monitoring indicator #7C "marketing to children restrictions" (WHO 2020b). Government policies exist in other African countries (e.g. Ghana and Kenya) to restrict exposure and power of promotion of unhealthy foods to or for children across diverse settings. The Ghana Food and Drugs Authority (FDA) requires that products must be registered, and advertisement scripts approved by the FDA before they can be advertised (FDA 2016). A related policy intervention is sugar sweetened beverage taxation. Of note, only South Africa within the African Region has been able to introduce such a tax where it took concerted effort, resources, and alliances of civil society, academia, and government to defeat resistance from food companies (Du et al. 2018). It is predicted that the taxation would lead to a reduction in energy intake by about 36Kj per day and a reduction in obesity by 3.8% in South African adults (Manyema et al. 2014). Morocco attempted, but was forced to repeal its sugar sweetened beverage tax in November 2018 prior to implementation in January 2019 due to pressures from the agri-food industry (Bazza 2018).

In Ghana, misleading marketing of EDNP foods predominate in urban settings (Bragg et al. 2017). There are however, no published studies on outdoor food advertising within any Ghanaian setting—despite some research looking at obesogenic environment in some schools (Alangea 2014, Fernandes et al. 2017). Adult-focused studies examining promotional techniques used in food advertisements are scant. Our literature search reveals little research has been done focusing on young adult population (Jernigan et al. 2017, Hafez 2004); most of which have analysed promotional techniques used to advertise alcoholic drinks and tobacco products. This study therefore examined the nature and extent of commercial food advertising on the campus of Ghana's largest University.

Methods

Study design and site

This study was observational, using a descriptive cross-sectional design. Purposive sampling was used in a tertiary level educational setting, the University of Ghana. This campus (Fig.1) is situated at Legon, a highly urbanised community in Accra, Ghana's capital city. The university is the premier and largest of the 13 public universities in Ghana with a student

population of over 38,000. Other child-serving units (e.g. the University Primary and Junior High Schools) are present on the University's campus.

Summary of field procedures

Prior to data collection, the research team obtained details of the university geographical boundaries from the university Physical Development and Municipal Services Directorate (PDMSD) to familiarise themselves with the study site.

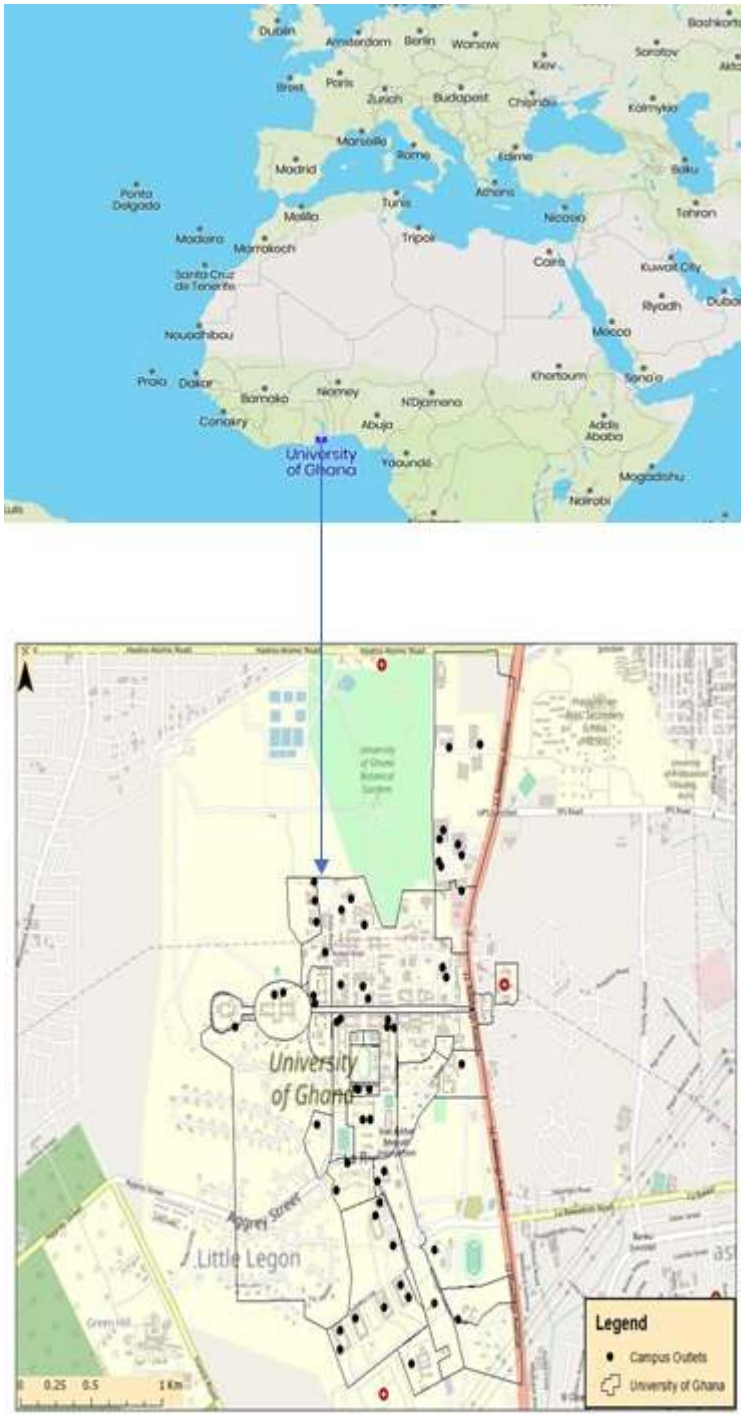
Data collection was conducted through direct observation during school hours (Monday-Friday 7:00 am to 5:00 pm) from April to May 2019. This period ensured survey activities were conducted whiles full academic session was ongoing. This was done by two trained field data collectors together with a supervisor, all of whom had a minimum educational qualification of a bachelor's degree.

In this study, advertisement was defined as any image of branded food products/companies displaying information that aimed at creating awareness about a product/service. This included different formats such as billboards, posters, banners, free-standing signs, painted buildings, and digital/LED signs. Even though store signs were excluded, those signages meant for store identification having a product/company logo also displayed on them were considered as advertisement. Non-food advertisements were also collected as part of this study.

Data collectors, together with the team supervisor, independently inspected and coded all advertisement within a selected location outside the University boundaries during a pretesting exercise. We used a mobile application (Open Data Kit-ODK) installed on a mobile tablet device with a camera and GPS function during data collection. A data collecting template, a Standard Outdoor Advertising Audit tool adopted from the INFORMAS Outdoor Advertising Protocol (Kelly et al. 2010), was programmed onto the mobile device. This approach allowed a concurrent recording of images, as well as their descriptive information (i.e. type of advert, size of advert, form of advert, location of advert, product and brand name, promotional character, premiums offer) and GPS location for each sighted advertisement.

Reliability estimate was calculated from the pretesting data to assess advertisement coding reliability. This was done by comparing data collected between the two data collectors for inter-rater reliability and also comparing with the supervisors for validity, using the field supervisor data as the reference (the 'gold standard'). Some disagreements (23%) were identified in the data collected during pretesting among team members, hence, a repeated training was organised during which discrepancies were discussed and attended to. Actual data collection was conducted after 85% inter-rater reliability was achieved between data collectors.

During the actual data collection, all sites and streets within the university were surveyed during a onetime visit to each site. Data collectors navigated the study site by walking and scanning through the streets and facilities on the university campus, recording all visible advertisements present.



Fig, 1: Map showing the location of study area.

Food product categorisation

Food products depicted in advertisements were assigned to three major food groups: Healthy, Unhealthy and Other/Miscellaneous, based on a food classification system adopted from INFORMAS (Sally, Janine, and Stefanie 2017) but refined to include branded foods sold in Ghana. Classification was completed after field data collection. This classification approach was also used in previous research involving outdoor advertising (Kelly et al. 2008). The field

supervisor together with a nutrition expert with knowledge on marketed products within Ghana categorised all food advertisements, ensuring consistency across all coded advertisements. For food advertisements without sufficient information to enable classification, an additional category—unspecified was created and assigned to those advertisements.

Ethics

Ethical approval to conduct this study was obtained from the Ghana Health Services Ethics Review Committee (GHS-ERC019/01/19).

Data Analysis

Descriptive statistics from univariate analyses were conducted using IBM SPSS Statistics for Windows version 21 to assess the prevalence and relative proportion of each food advertisement attribute. Categories of food products advertised were compared using percentages.

Results

Overall, all 503 outdoor advertisements recorded in this study were distributed in the area within the university but mostly at places where the university populace lives.

Characteristics of food advertisements

Of the 503 ads, 47.3% (238/503) were of food, a majority of which were located at food outlets (75.2%) and along road networks (15.1%) - See Fig.2. The most prevalent medium of display of these advertisements was posters (47.5%). Store merchandising (which includes food-branded refrigerators, bins, chairs, umbrellas) was a distant second – See Fig.3. There were proportionately more (58%) small (>A4 but <1.3m x 1.9m) size advertisements – See Fig.4.

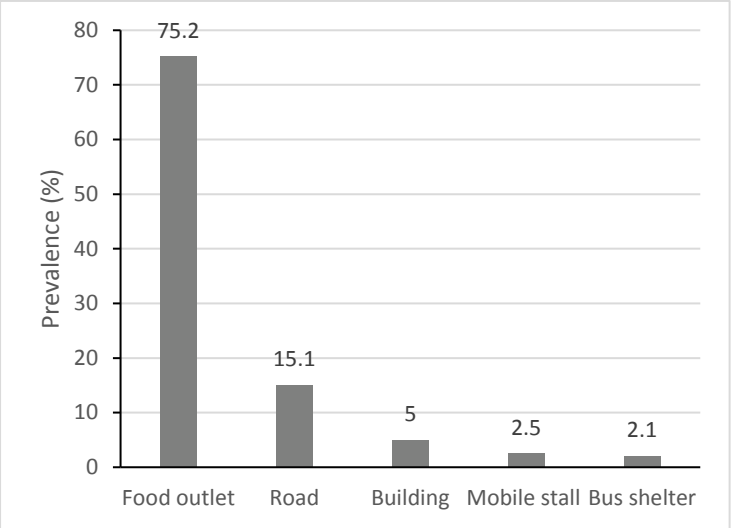


Fig.2. Food advertisements by setting

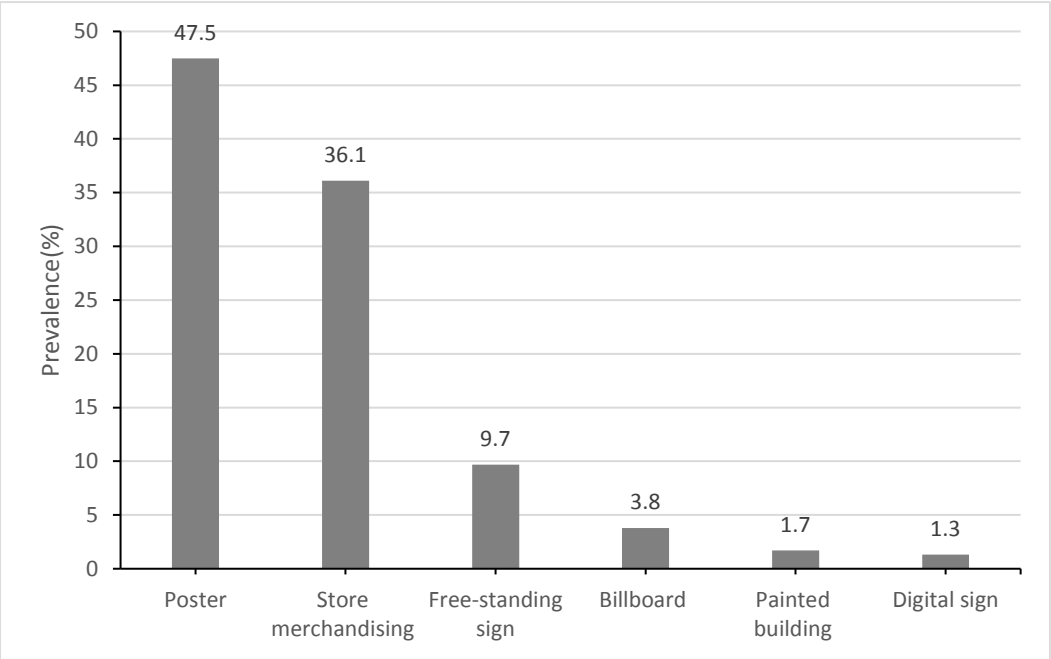
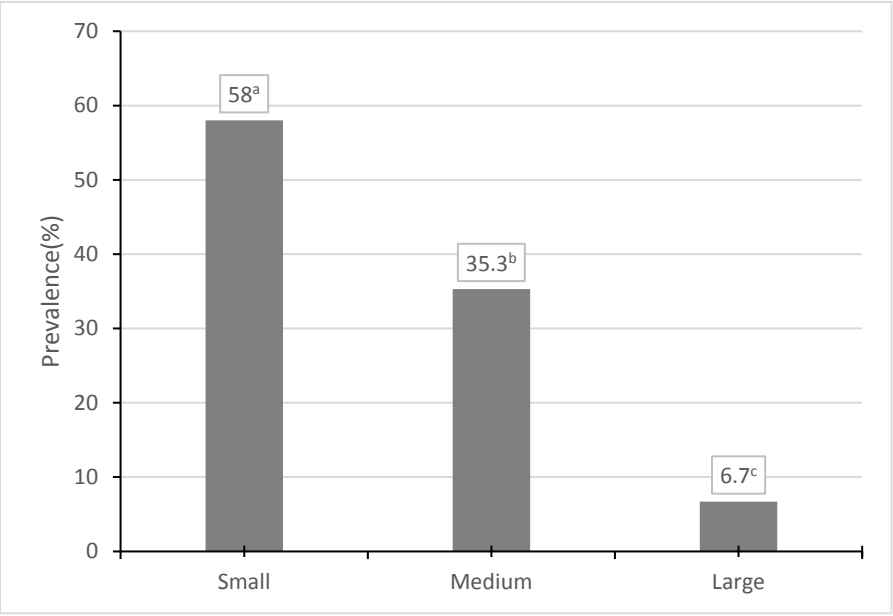


Fig.3. Food advertisements by advertisement medium

Advertisements by food category

The distribution of major food categories is shown in Fig.4. Of the food advertisements identified, nearly 60% were classified as unhealthy food; 38.7% were healthy foods and 3.8% classified as other/miscellaneous.

The most advertised food product was sugar-sweetened drinks (37.0%). A small number of bottled water advertisements were observed (4.6%) See Table 1.



[a] (>A4 but <1.3m x 1.9m); [b](>A4 but <1.3m x 1.9m), [c](> 2m x 2.5m)

Fig.4. Food advertisements by size

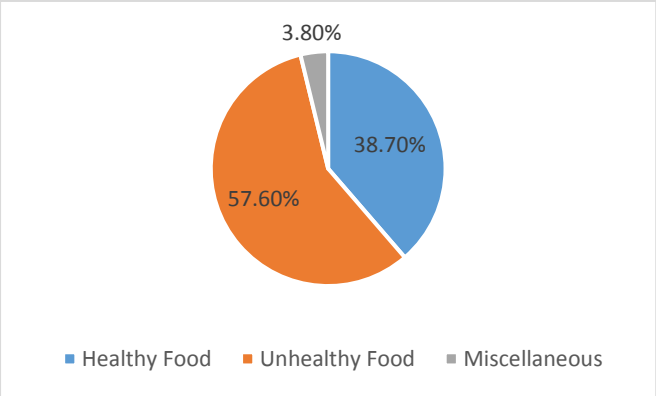


Fig.4. Distribution of food advertisements by food category

Promotional techniques used in food advertisements

Of the food advertisements, promotional techniques were identified for 131/238 (55%) of them. Claim pronouncement was the most prominent (92/131) of all promotional techniques, including sensory based (39/92); health and nutrition (31/92); and "made from natural products" (15/92). See Fig. 5.

As Fig. 5 also shows, 39/131 promotional techniques made use of promotional characters. Two-thirds of these promotional characters depicted an adult-based actor (26/39); others included child-based actors (3/39) and cartoon/licensed based characters (10/39)

Aside from claim pronouncement and use of a promotional character, the other types of promotional techniques recorded were emotional appeal (17/131) and price promotion (10/131). Premium offer was the least commonly used technique recorded (2/131).

Discussion

Research on outdoor advertising of food and beverage products is gaining attention in the public health literature, with most findings from studies conducted in developed countries. To the best of our knowledge, the present study is the first to examine outdoor food advertising in any tertiary institution in Ghana. Our findings indicate that outdoor advertising of products is an ongoing

marketing activity within the university's space and young adults could be influenced. Food advertisement accounts for almost half (47.3%) of all outdoor advertisement identified and the majority (57.6%) of these foods were unhealthy; 37.0% being sugar sweetened beverages. This is of public health concern, given that exposure to food advertisements has been shown to influence food choices, brand preferences, and dietary behaviour (Sadeghirad et al. 2016, Cairns et al. 2013, Smith et al. 2019).

Table 1: Distribution of advertised food products (n = 238)

Food products	***Frequency***	***Percentage***
Healthy food category		
Cereals: without added fat, sugar or salt	*16*	*6.7*
Low sugar and high fibre breakfast cereals	*5*	*2.1*
Fruits and fruit products without added sugars or salt	*14*	*5.9*
Milks and yoghurts and their alternatives (≤3g fat/100g)	*34*	*14.3*
Oils high in mono- or polyunsaturated fats	*12*	*5.0*
Bottled Water	*11*	*4.6*
Unhealthy food category		
Flavoured/fried instant rice and noodle products	*12*	*5.0*
Sweet breads, cakes, muffins, sweet buns	*1*	*0.4*
Meat and meat alternatives (processed/preserved in salt)	*1*	*0.4*
Savoury snack foods (added salt or fat)	*3*	*1.3*
Fruits and fruit products with added sugars, fats or salt -– fruit juice/drinks <98% fruit.	*8*	*3.4*
Milks and yoghurts and their alternatives (>3g fat/100g)	*9*	*3.8*
Ice cream and iced confection	*10*	*4.2*
Chocolate and candy	*1*	*0.4*
Fast food	*4*	*1.7*
Sugar-sweetened drinks: soft drinks, energy drinks, powdered flavour additions (e.g. *sweetened tea or coffee powders),*	*88*	*37.0*
Miscellaneous		
Recipe additions (including soup cubes and seasonings)	*8*	*3.4*
Tea and coffee (unsweetened)	*1*	*0.4*
Total	*238*	*100*

Universities are mostly densely populated and clearly advertising of products in these high dense areas will be of great value to food marketers. The prevalence of advertised unhealthy foods within the university environment, whether intentionally or inadvertently, means high exposure of these advertisements to students and pupils who have the autonomy to make dietary decisions, and, in the Ghanaian context, have high purchasing power. Unhealthy food advertising within this environment can also influence the children and adolescents who live in residential facilities for faculty, staff, and their families or visit the university community (Sadeghirad et al. 2016). Though they may not have purchasing power, they have pester power (Nash and Basini 2012). These unhealthy advertisements may defy all effort to encourage

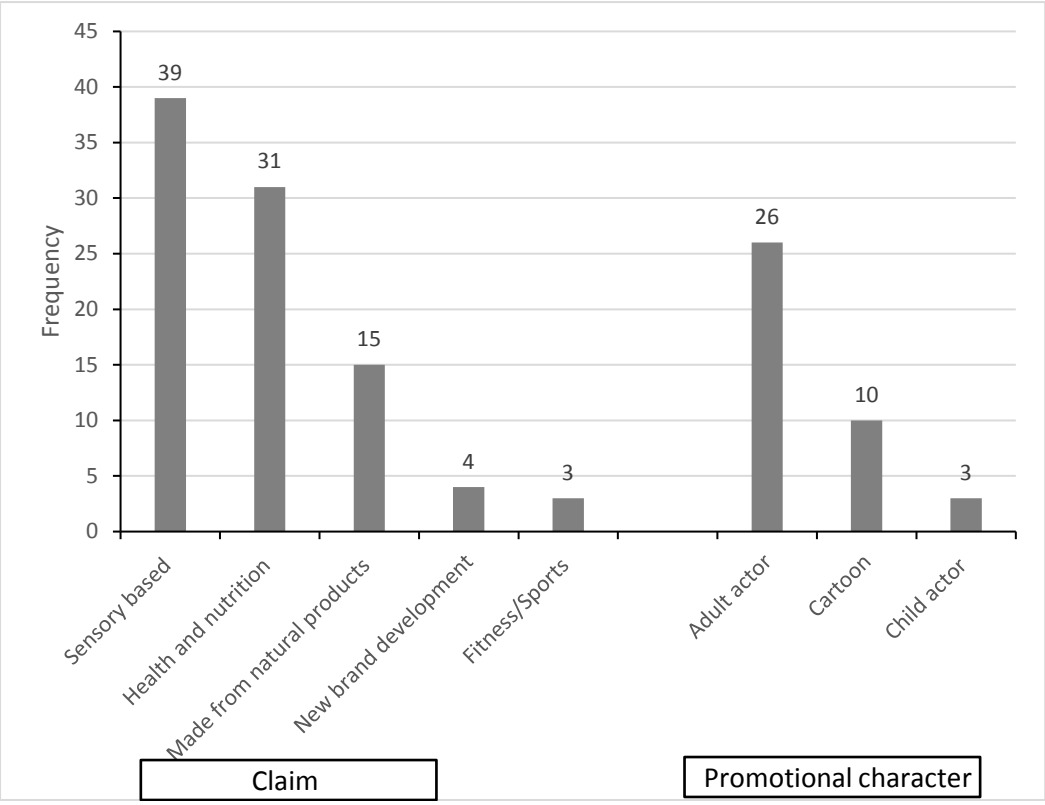


Fig.5. Claims and Promotional characters featured on food advertisement (n =131)

healthy eating, and therefore potentially contributing to poor diet and subsequently, diet related-NCDs.

Our finding of sugar-sweetened beverages, particularly soft drinks been the most advertised food product (37.0 %) supports previous research by Green et al. (2018), reporting sugar-sweetened beverages as the most commonly marketed food product in urban Africa (Ghana inclusive). Recently, a study examining the determinants of dietary behaviour in Ghana also found food advertising to be one of the factors that influenced unhealthy dietary behaviour in Ghanaian cities (Holdsworth et al. 2019).

This state of unhealthy food advertising does not align with global nutrition recommendations on food advertisement (WHO 2010). Sugar-sweetened soft drinks have been identified as a probable causal factor in weight gain and obesity (Osei-Assibey et al. 2012). This led to Member States of the World Health Organisation (Ghana inclusive), in 2010, to endorse a resolution (WHA63.14) to reduce the impact of marketing of unhealthy foods (WHO 2010). Clearly, our finding shows a noncompliance to this recommendation. In addition, the high level of sugar-sweetened beverage advertisement contradicts the global nutrition guidelines recommending that consumption of free sugars and fats should be less than 10% and 30% of total energy intake respectively (WHO 2020a). The pervasive nature of unhealthy food advertisement within the university, therefore, is an indication of inadequate action on the part of the university authorities and also on the part of government in enforcing these recommendations.

Exposure to food advertisement in this study primarily occurs at food shops (75.2%). The high occurrence of advertisements at food shops speaks to the importance of these food shops in not just serving as a place for acquiring food, but also as marketing units deployed by food vendors and marketers to increase exposure to their products. In the US, Isgor and colleagues (Isgor et al. 2016) found 73% of food shops having advertisements in and around them. Such settings give consumers an opportunity to immediately act upon the advertisement message and subsequently indulge in the purchase and consumption of the product being advertised (Beleva et al. 2019). Students frequently visit these food outlets to make food purchases, and food products depicted in advertisements at food shops were usually the same products sold in the food shops. These findings therefore suggest that food shops within the University community are potential places to consider when implementing food policies aimed at ensuring a healthy food environment within the University.

The use of different promotional techniques in promoting products was evident in this study. Such techniques have been shown to make advertising communication very effective (Hebden, King, and Kelly 2011). To date, research on techniques used in food advertisement (mostly on television) have mainly been child-focused with accumulating evidence on the impact of specific marketing techniques on children (Cairns et al. 2013, Sadeghirad et al. 2016, Hebden, King, and Kelly 2011). Our literature search revealed little research focusing on the young adult population, most of which have analysed promotional techniques used to advertise alcoholic drinks and tobacco products (Jernigan et al. 2017, Hafez 2004). We recorded the use of claim pronouncement – mainly sensory based and health/nutrition claims. Unlike for children, the influence of such techniques on young adults' food consumption patterns or weight has not been well assessed (Freeman et al. 2016).

Additionally, as reported in previous studies (Hebden, King, and Kelly 2011, Jenkin et al. 2014), our study reveals the use of fun and fantasy in advertising food products. Young adults are undergoing personal identity formation and can be receptive to marketing depicting any desirable character trait or mood, especially those with emotional appeal. Such "image marketing'' sells not only a tangible product, but also image attributes and symbols of consumption (Pechmann et al. 2005).

Research has shown that exposure to food advertisement describing the sensory attributes leads to craving for such food by initiating thoughts and desire for the advertised food product even if one has no need for food at that moment (Moore and Konrath 2014). Claims on product advertisements have been demonstrated to be influential mostly among children (Chhabra and Singha 2017) and have also been reported to likely inflate perceived healthfulness of nutritionally poor foods (Nestle and Ludwig 2010). In Ghana, the Food and Drugs Authority, being aware of the implications of the effect of claims, especially when used in promoting unhealthy food products, have guidelines to ensure advertisement of foods are conducted in a manner which is responsible and does not mislead consumer (FDA 2013). Some of these advertisements adhere to the health claim regulatory guidelines in that they mention the actual component (vitamin or mineral) that brings about the health benefit, but others were exaggerated. More than half of the advertisements that had health claims promised

improvement of well-being. This is misleading as well-being is a broad area that involves a balance of mental, social and physical well-being.

One positive finding of this research is the existence of a policy regulating the placement of advertising within the university (University of Ghana, 2012). This policy prohibits placement of advertisements at academic areas like faculty and departmental buildings, lecture halls and other main avenues like the university's main entrance. However, this policy had no focus on the kind of foods permitted to be advertised.

Data reported here are only representative of the University of Ghana Legon campus. Given that the results of this study point to a large quantity of unhealthy product advertisements, we recommend further investigation to understand the extent and nature of this phenomenon in other institutions, particularly child serving institutions, if possible, at different time intervals.

Conclusions

The preponderance of unhealthy food advertising on the campus of Ghana's largest university has public health implications. Advertising may influence purchasing behaviour and consumption of these unhealthy foods, perhaps even setting the stage for poor life-long food habits. Publicity and advocacy that motivate development of local policies to regulate various food promotion activities within this and other food environments in Ghana are urgently needed. We recommend that within the current advertisement regulations the university authorities incorporate restrictions on unhealthy food advertisement. Food outlets present an ideal setting where such changes can be easily implemented because they will want to retain their right to be located on campus. Also monitoring systems should be put in place to ensure food vendors and food marketers within the university adhere to these regulations.

Declarations

Availability of data and materials

Study dataset available for deposition in a public repository if needed

Competing interests

All authors declare no competing interests

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Authors' contributions

AL conceived the manuscript idea. GA and AL implemented the study. GA drafted the manuscript. AL and WQ critically reviewed the draft manuscript. All authors approved the final version.

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