Promoting Foods to Overweigt People? - An Assessment of the Advertising and Availability of Unhealthy Food in China

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Abstract

Obesity is an international public health problem because for obese people, excessive body fat promotes medical consequences and suffers a wide range of serious psychosocial costs. As levels of obesity have risen for Chinese community, this empirical study examined the impacts of unhealthy food advertising and marketing in China. First, this paper reviewed the effect of television advertising for evidence of exposure to food environment. It then analyzed the food television advertising and compared the availability on the level of convenience store. Particular questions were being raised about what type of food were advertised and sold at stores. Are unhealthy foods frequently advertised and found at stores? Research methods including television commercials content analysis and in-store audits were employed. The finding showed that fast food franchise outlets were the most advertised whereas a large proportion of beverages were provided at convenience store. The percentage of television commercial promotion of unhealthy foods was 71% as compared to the incidence of unhealthy food/drink availability accounted for 82.2% at convenience store. The result evidenced that TV food environment and retail status both being contributing to the increased risk for obesity. The objectives of this study were to inform decision makers about the nature of unhealthy products marketing to consumers and to identify practices that might raise policy concerns. Easy access and advertising unhealthy food without correcting any dietary imbalance targeting at overweight and obese consumers should be banned.

Key words: Advertising, Unhealthy food, Message Strategy, Obesity, China

Introduction

The American Medical Association, the largest professional society for physicians in the United States, classified obesity as a disease in June 2013, a move that effectively defined 78 million adults and 22 million children in America as having a medical condition requiring treatment (Fox, 2013). The obesity pandemic is not restricted to industrialised countries: in developing countries, over 115 million people are estimated to suffer from obesity-related problems. A recent report from the World Health Organization (WHO, 2013) revealed that 30 years ago, only 7% of the Chinese population was obese but now more than 38% of Chinese people above the age of 15 were overweight or obese (WHO, 2013). The largest population of consumers in the world live in China, as do one-third of the world's obese and overweight children. The total number of obese and overweight children in China is higher than that in the United States.

In an increasingly commercialised China, the prevalence of childhood obesity could be attributed to the Westernized food and lifestyle. The food environment plays a critical role in the development of overweight and obesity. Foreign and domestic retail stores have formulated large-scale expansion plans in China, focusing on the huge potential of the country's growing consumer demand and purchasing power. Chang (2012) concluded that the fat intake of Chinese adults has increased over time; food availability has substantially affected the fat intake of Chinese adults. In addition, people spend more time watching television and surfing the Internet, and have greater access to unhealthy food than previous generations.

Obesity is a global epidemic, and China must address the problem of increasing numbers of obese children and adolescents. Yu, Hu, and Yang (2011) observed that physical activity and television viewing were two critical factors associated with overweight and obesity among Chinese children; they reported that each 1-hr increment of television viewing was related to a 1%-2% increase in the prevalence of obesity in China. The problem of a dramatic increase in obesity rates is highly complex and might involve numerous factors, such as individual habits, family tastes, and the media and food environment. Abundant research in the United States, the United Kingdom, and Australia, has linked television viewing and obesity (Goris, Petersen, Stamatakis & Veerman, 2009; Townshend & Lake, 2009), but such research has remained sparse in Asia. This study conducted a comparative analysis of the media and food environment in China to determine a method to combat childhood obesity.

Literature Review

Waller et al. (2003) argued that Chinese children used to be less overweight, more active, and less likely to ingest high-calorie snacks than children in the United States did. In studying Chinese eating patterns, Adair and

Popkin (2005) showed the importance of urban-rural differences and the contribution of fast food and soft drinks to children's diets. Furthermore, the authors indicated that the globalisation of fast food and other modern food sectors was beginning to affect children's eating patterns, and children were undergoing a nutritional transition. Chen (2008) proposed that Chinese children, as consumers, are able to use growing financial resources to express themselves through hedonic consumption from early childhood. China has implemented a single-child policy in urban areas since 1979. These only children are often given a substantial amount of money to spend. Children are not only seen as independent consumers; they are gaining control over their own eating habits and their families' food choices.

Among Chinese children in Taiwan. Pan and other researchers (2007) concluded that obese children tended to consume higher levels of calories, watch more hours of television, and participate less in vigorous physical activities. Young (2003) proposed that behaviour is learned in line with Bandura's social learning theory, and contested the notion that eating habits portrayed in adverts induce similar behaviour among viewers. Social learning theory assumes that children develop as social beings, and are able to change and adapt to cultural norms. From an early age, children model their food choices on family or peer group behaviour, or on the behaviour of actors displayed in commercials. Food advertising aimed at children exerts an effect at the brand level and also operates at a pre-established set of food preferences and choices.

Obesogenic Environment and Behaviour

Decades ago, it was observed that population obesity was a product of the environment. The "obesogenic environment" is defined as the sum of influences that the surroundings, opportunities, or conditions of life exertion promoting obesity among and populations. The impact of individual environmental stimuli on obesity prevalence is affected to a certain degree by peoples' diets and activities, which are ultimately responsible for an imbalanced energy intake, and thus obesity (Edwards, 2010). Chaput et al. (2010) indicated that the preponderance of sedentary lifestyles is not merely a matter of calorie expenditure, but rather, modern sedentary activities promote food over consumption accompanied by watching television, playing video games, listening to music, inadequate sleep, and even reduced cognitive function in the current obesogenic environment.

Recent research has investigated the link between environmental factors and eating behaviours. Maher, Wilson, and Signal (2005) examined the content of outdoor food advertisements and food availability around a secondary school; 70% of the food advertisements they analysed were for food classified as unhealthy. Perace et al. (2007) conducted a national survey on retailing in New Zealand and observed a strong association between neighbourhood deprivation and geographic access to fast food outlets; moreover, the availability of healthier food at supermarkets was inversely correlated to deprivation. Townshend and Lake (2009) reviewed urban design, geography, and public health nutrition in the UK, and argued that many contemporary urban environments do not support healthy lifestyle choices. However, the contribution of environmental factors to the dietary mechanisms that result in the development of overweight and obesity remain unclear, because empirical studies with appropriate research designs to investigate the association of environmental factors with eating behaviours are lacking (Giskes, van Lenth, Avendano-Pabon, & Brug, 2011).

Advertising and Obesity

Advertising appears to catalyse problems of obesity in certain countries. In Switzerland, Keller and Schultz (2010) studied the product categories advertised during children's television programmes, and the types of food promoted using advertisements targeting children. They observed that children who view more food advertising consume more snacks and calories compared with children who see less television advertising. A number of studies have also evidenced that food promotion influences children's purchasing behaviours and food preferences, for example, their choice of daily snacks at playtime (Bridges & Briesch, 2006;Harker, et al., 2007; Hastings, Stead, & McDermott, 2003; Kunkel, 2000; Livingstone & Helsper, 2006; Palmer & Carpenter, 2006). These studies are in broad agreement that advertising influence is dependent on children's ages, particularly regarding food types and brand choices. Thus, Moon (2010) investigated health-related claims in advertising and food types in South Korea. Analysing the content of 403 television food commercials. Moon observed that even health-related information targeted to children advertised the consumption of unhealthy foods. Advertising strategy was observed to heavily emphasise sensory and emotional appeals.

Other studies also identified persuasive strategies employed in television food commercials. Kunkel and Gantz (1992) analysed television commercials targeted at children in a multi channel environment. By assessing commercials according to five categories (product type, appeal, visual format, premiums, and product disclosures), they concluded that fun, happiness, and premium offers were the main appeals commercials employed. Page and Brewster (2007) indicated 20 advertising promotional strategies used in television commercials appearing during children's programmes in the United States, three of which specifically advertised fast food children's meals.

It is assumed that children who frequently view a television commercial for a branded food item proportionately consume more of that food. Recent studies on the marketing of food to children have focused on television advertising. However, food promotion comprises substantially more than television advertising. Previous studies have been unable to account for the complexity of food preferences and choices, and their relationship with advertising. Moreover, food advertising to children is designed to increase or maintain the sales of a particular brand, and is not intended to increase the consumption of a particular category of food.

Questions and Methods

To explore what types of foods were advertised on television, and how branded foods were advertised, the following research questions were formulated:

RQ1. What categories of food and drink products are advertised on television? RQ2. What types of unhealthy foods and drinks

are advertised on television?

RQ3. What types of thematic appeals are frequently employed in television food advertising?

RQ4. What types of product attributes are emphasised by food brands in television advertising?

Further research questions were proposed to elucidate the food environment:

RQ5. What categories of food and drink products are sold in stores?

RQ6. What types of unhealthy foods and drinks are sold in stores?

RQ7. Is there an association between product types and product brands at stores?

RQ8. Are the food and drink products advertised on television to be sold in stores?

RQ9. Is there an association between the unhealthy food advertised on television and that sold in stores?

Content analysis is a method often used to investigate different types of advertising content. Numerous surveys have employed this method to obtain descriptive statistics of incidence, and conduct thematic analysis of food advertising messages directed at children. The coding categories analysed in this study were based on those in previous studies (Moon, 2010; Roberts & Pettigrew, 2007; Sandberg, 2011; Warren et al, 2008).The coding categories were: the presence of all food and drink, healthy versus unhealthy food, thematic appeal, product attributes, and local versus global brands.

The sampled brands in this study were derived from the World Brand Lab's list of the world's 500 most influential and China's 500 most valuable

brands. A total of 46 top food and beverage brands (34 local and 12 global) were analysed, and 489 television commercials were collected from the AD Topic database and the advertisers' websites between January and December 2011. All commercials were broadcast on nationwide channels or cable networks such as CCTV, SHTV, and GZTV in China. Three graduate students were trained as coders who were required to rate all sampled data and discuss disagreements. The results exhibited acceptable inter-coders' reliability (0.8).

An in-store audit was conducted at one convenience store located 500m from an urban school in Zhuhai, Guangdong Province, in fall 2011. Store records were reviewed, and an inventory analysis was performed to determine product movement and product location within the store. To enable comparison with previous studies, product categorisations used in previous studies were employed (Gebauer & Laska, 2011; Palmer & Carpenter, 2006). The audit categories consisted of the presence of all foods and drinks; healthy versus unhealthy food; promotion appeal; product attributes (price and single-serving packages); and local versus global brands.

A 7-Eleven retail outlet was analysed in this study because of the prevalence of 7-Elevens throughout China. Over 380,000 convenience stores were operational in China in 2009, and the total retail sales were valued at RMB 425 billion (US\$ 68.2 billion).By 2013, 633 7-Eleven stores were operational in Guangdong Province (Staff reporter, 2012, March 21).

Research Results

Ten categories of food products were observed to be most frequently advertised on television: fast food (35.8%, n=175), followed by fruit juice or vegetable juice/water (12.1%, n=59), dairy products (11.7%, n=57), tea/coffee/soft drinks (11%, n=54), cookies/desserts/snacks (10.2%, n=50) and ready-made food (7.4%, n=36). Of all the food categories, breads/cakes/pastries were the least frequently advertised on television (0.8%). Table 1 illustrates the frequency of various advertisements on television in China, organised by product category. Our results were consistent with content analyses performed by Roberts and Pettigrew (2007) and Zuppa, Morton, and (2003), confirming that it was an accurate Mehta assessment of food group representation, and was not affected by aberrations caused by aspects of the sampling method.

Advertised Product Category	Frequency	%	
Fast food	175	35.8	
Fruit or Vegetable juice/Water	59	12.1	
Dairy	57	11.7	
Tea/Coffee/Soft drinks	54	11.0	
Cookies/ Desserts/Snacks	50	10.2	
Ready-made food	37	7.6	
Candy/Chocolate/Gum	31	6.3	
Cereals/Beans/Rice/Pasta	13	2.7	
Meat/Fish/Poultry	9	1.8	
Breads/Cakes/Pastries	4	0.8	
Total	489	100	

Table 2 displays the percentage of commercials which advertised various categories of unhealthy food. Unhealthy food was advertised in 71% (n=347) of the commercials, whereas healthy foods were advertised in only 29% (n=142) of the commercials. The five unhealthy food product categories were fast food, tea/coffee/soft drinks,

cookies/desserts/snacks, ready-to-go food, and candy/ chocolate/gum. Fruit juice or vegetable juice/water, dairy, cereals/beans/rice/pasta, meat/fish/poultry, and breads/ cakes/ pastries were considered healthy food product categories.

Table 2 Food and drink television	commercials categorised	as unhealthy versus healthy

Product advertised	Frequency	%	
Unhealthy	347	71.0	
Fast food	175	35.8	
Tea/Coffee/Other soft drinks	54	11.0	
Cookies/Desserts/Snacks	50	10.2	
Ready-made food	37	7.6	
Candy/Chocolate/Gum	31	6.3	
Healthy	142	29.0	
Fruit juice/Vegetable juice/Water	59	12.1	
Dairy	57	11.7	
Cereals/Beans/Rice/Pasta	13	2.7	
Meat/Fish/Poultry	9	1.8	
Breads/Cakes/Pastries	4	0.8	
Total	489	100	

Several themes were evident in food and drink advertising. Table 3 compares the various thematic appeals employed by global versus local brands in television advertising. Global brands tended to employ humour (75.2%, n=121), followed by promises of mood alterations (65.9%, n=110), togetherness with peers (59.5%, n=166), and hedonic feelings (50.8%, n=153). Local brands tended to appeal to family togetherness (63.6%, n=70), followed by hedonic feelings 49.2% (n=148) and togetherness with peers (40.5%, n=113).

People are constantly surrounded by stimuli that affect their behaviour. The medical literature has highlighted the importance of avoiding food consumption as a means of mood management. Television commercials targeting young Chinese people contained several portrayals of food as providing emotional benefits. A campaign by a local brand, Lolo, modelled the use of snacking to relieve boredom, and a commercial for McDonald's encouraged children to improve their moods by consuming McDonald's products.

Table 3 Thematic appeals employe	/ed by food and drink television advertising i	n China
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Theme	Local		Global		Total
	N	%	Ν	%	Ν
Family togetherness	70	63.6	40	36.4	110
Peers togetherness	113	40.5	166	59.5	279
Hedonic feelings	148	49.2	153	50.8	301
Mood alterations	57	34.1	110	65.9	168
Humor	40	24.8	121	75.2	161
Total	428		590		

Note. x^2 =51.43, df=4; p<.001

Table 4 compares the product attributes advertised by local and global brands in commercials. Local brands heavily advertised the nutritional content of their products (75.2%, n=79), followed by the ability of their products to increase strength (50.8%, n=32). However, global brands emphasised the convenience (86.7%, n=26), newness (83.1%, n=26), and taste/flavour/smell (58.8%, n=157) of their products. Local brands frequently advertised the ability of their products to correct dietary imbalances, whereas few

global brand commercials did. Product attributes and thematic appeals are crucial in advertising messaging strategy. Young consumers are more likely to be influenced by these messages and convert future consequences into current motivators of their behaviour by performing the modelled behaviour. Therefore, analysing product attributes and thematic strategy was critical to our understanding of advertising factors for obesity.

Table 4 Product attributes advertised b	v food and drink brands in China
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Product Attribute	Local		Global		Total
	N	%	N	%	N
Nutrition	79	75.2	26	24.8	105
Power strength	32	50.8	31	49.2	63
Achievement	16	48.5	17	51.5	33
Taste/flavour/smell	110	41.2	157	58.8	267
Newness	23	16.9	113	83.1	136
Convenience	4	13.3	26	86.7	30
Total	264		370		

Note. x^2 =95.7, df = 5; p<.001.

Table 5 displays the food categories sold at 7-Eleven by percentage. Alcoholic beverages were excluded, because they are not targeted to children. The convenience store audit yielded a total of eight categories of food and drink products. Among the 324 products, the top five product categories were tea/coffee/soft drinks (45.4%, n=147), followed by cookies/desserts/snacks (18.2%, n=59), candy/ chocolate/gum (10.5%, n=34), and dairy (10.2%, n=33). Most products in these categories were observed to be small, accessible, and cheap, but high in sugar and calories.

Table 5 Food and drinks by product category's old at a7-Eleven convenience store in China

Food Category	Frequency	%	
Fruit or Vegetable juice/Water	20	6.2	
Dairy	33	10.2	
Tea/Coffee/Soft drinks	147	45.4	
Cookies/ Desserts/Snacks	59	18.2	
Ready-made food	21	6.5	
Candy/Chocolate/Gum	34	10.5	
Cereals/Beans/Rice /Pasta	3	0.9	
Breads/Cakes/Pastries	7	2.0	
Total	324	100	

Table 6 displays the types of unhealthy food sold at the sampled 7-Eleven store by percentage. Unhealthy food constituted 80.6% (n=261) of the total food available, whereas healthy foods accounted for only for 19.4% (n=63). The unhealthy types of food included tea/coffee/soft drinks (45.4%, n=147), followed by cookies/desserts/snacks (18.2%, n=59), candy/ chocolate/gum (10.5%, n=34), and ready-

made foods (6.5%, n=21). This outcome was consistent with the results of a previous study by Gabauer and Laska (2011), which indicated that healthier foods were less widely available at convenience stores. We analysed 324 items, a large proportion of which were sweetened drinks and a wide range of unhealthy foods such as chocolates, snacks, ice cream, and ready-made foods.

Table 6 Unhealthy versus healthy products available at a 7-Eleven convenience store in Chin

Product Sold	Frequency	%
Unhealthy	261	80.6
Tea/Coffee/Other soft drinks	147	45.4
Cookies/Desserts/Snacks	59	18.2
Ready-made food	21	6.5
Candy/Chocolate/Gum	34	10.5
Healthy	63	19.4
Fruit or Vegetable juice/Water	20	6.2
Dairy	33	10.2
Breads/Cakes/Pastries	7	2.2
Cereals/Beans/Rice/Pasta	3	0.9
Total	324	100

The inventory analysis of product types and brands available at the sampled 7-Eleven store reached statistical significance ($\mathbb{X}^2 = 19.5$; *p*<.01). Table 7displaysthe product categories (unhealthy vs.

healthy) related positively with brands (local vs. global) available at 7-Eleven. The 324 products were provided by138 brands (87 local and 51 global); 96 (69.9%) were unhealthy, and 42 (30.4%) were healthy.

Table 7 Cross-tabulation of brands and products categorised as unhealthy versus healthy available at a 7-Eleven convenience store in China

Unhealthy Categories of Food Groups	Product (n)	%	Brand (n)	%
Tea/Coffee/Other Soft Drinks	147	45.4	34	24.6
Cookies/Desserts/Snacks	59	4.0	31	22.5
Ready-to-go food (instant noodle)	21	6.5	14	10.1
Candy/Chocolate/Gum	34	10.5	17	12.3
Subtotal	261	80.6	96	69.6
Healthy Categories of Food Groups				
Fruit Juice/Vegetable Juice/Water	20	6.2	16	11.6
Dairy	33	10.2	18	13.0
Cereal/Beans/Rice/Pasta	3	0.9	2	1.4
Bread/Cakes/Pastries	7	2.2	6	4.3
Subtotal	63	19.4	42	30.4
Total	324	100.0	138	100

Note. x²=19.5; p<.01

Table 8 compares the local and global brands advertising on television and the brands available at 7-Eleven. A moderate relationship was observed between the brands advertising on television and brands of products available at 7-Eleven (\mathbb{X}^2 =3.8; *p*<.10). Among nine non-fast-food brands, five global brands (Coca-Cola, Hershey's,

Nestlé, Pepsi, and Wrigley) were found at 7-Eleven, whereas products from 63% (87) local brands were available. Limited numbers of branded products advertised on television were available at 7-Eleven. Therefore, we assumed that branded food and drink products advertised on television commercials were not widely available at 7-Eleven.

Table 8 A comparison of brands advertising on television and available at a 7-Eleven convenience store in China

	TV Ad % (n)	CS Sold % (n)	Row Totals	
Local Brand	28 (34)	63(87)	(121)	
Global Brand	15(9)	37(51)	(60)	
Column Totals	(43)	(138)	N=181	

Note. x²=3.8; p<.10

Cross-tabulation results were calculated using a chi-square test to determine the association between categorical variables (i.e., unhealthy and healthy, and local and global). The results are shown in Table 9. Unhealthy food advertised on television and sold at 7-Eleven exhibited a positive relationship that was statistically significant (x^2 =14.1, *p*<.01). Excluding fast food, 54.6% (n=171) of television advertisements promoted unhealthy food, whereas 80.6% (n=261) of products available at 7-Eleven were unhealthy.

Table 9 Cross-tabulation of unhealthy and healthy food advertised on television and available at 7-Eleven convenience store in China

	TV ad (n)	%	CS sold (n)	%
Unhealthy	171	54.6	261	80.6
Tea/Coffee/Other soft drinks	54	17.3	147	45.4
Cookies/Desserts/Snacks	50	16.0	59	18.2
Ready-made food	36	11.5	21	6.5
Candy/Chocolate/Gum	31	9.9	34	10.5
Healthy	142	45.4	63	19.4
Fruit juice/Vegetable juice/Water	59	18.2	20	6.2
Dairy	57	18.2	33	10.2
Cereals/Beans/Rice/Pasta	13	4.2	3	0.9
Meat/Fish/Poultry	9	2.9	0	0
Breads/Cakes/ Pastries	4	1.3	7	2.2
Total	313		324	

Note. x²=14.1; p<.01

Discussion

In this study, we observed that food products advertised on television were chiefly unhealthy foods, including soft drinks and foods with high amounts of energy, fat, and salt. In the United States, pre-sugared breakfast cereals, candy, soft drinks, confectioneries, and savoury snacks are the main types of junk foods promoted to children, whereas colds sweetened drinks, processed food, and snacks are the primary unhealthy products advertised to children in China.

Modern US-style television programming and advertising began to be broadcast in China in 1997. At present, television commercials in China could be

described as a "melting pot", exhibiting characteristics of both local and international advertising. An emphasis on convenience, expediency, and immediate gratification for young consumers was evident in television commercials advertising food and drink products. More than 70% of unhealthy products advertised were associated with global brands. Twelve global brands advertised using television commercials were *Cadbury, Coca-Cola, Danone, Hershey's, KFC, Kraft, Mars, McDonald's, Nestlé, Pepsi, Pizza Hut*, and *Wrigley*; 34 local brands were also observed to advertise on television. In their advertising, these global brands deliberately promise viewers fun, improved moods, friends, and peer acceptance.

In-store data revealed that unhealthy food was widely available (83%) at one sampled convenience store. The evidence constituted a realistic account of the availability and accessibility of unhealthy food in China. At a convenience store, locally branded products constituted a large proportion of the available products (63%, n=87), followed by products manufactured by U.S. and Japanese conglomerates, including Coca-Cola, Pepsi, Nestlé, Wrigley, Hershey's, Starbucks, and Fujiya. At the surveyed of 7-Eleven, the main in-store promotions were price deduction, limited-offer specials, "buy-one-get-one-free" deals, bonus points to be traded in for gifts, and cross-promotional activities involving movie characters. In store promotional message is intended to strengthen associations between brand names, and settings, relations, and moods desired by young people.

Advertising is often blamed for damaging public health by encouraging the consumption of unhealthy food. In this study, it was observed that commercials promoted certain types of foods and drinks through a variety of information sources. Chinese food and drink commercials and in-store advertisements aimed at young consumers often adopted interactive agents and promises of free gifts or coupons as rewards for buying a product. Marketing easily captures the minds of many young consumers; because children's preferences are not yet well-developed, food and drink advertisements and promotions on television and at retail stores exert an influence on their dietary habits in a number of ways.

Conclusion

Preschool children can demonstrate an understanding of cultural dietary rules. Young children, even at three years of age, can recognise and implement cultural rules regarding appropriate food choices for meals. Although children of all ages are affected by advertising, those between seven and eleven years of age are most likely to be targeted and persuaded by advertising. In this study, 71% of food advertising China was observed to advertise unhealthy products more frequently than healthy products. This imbalance of messages has affected children's consumption patterns and brand choices, leading to an increase in obesity or overweight.

Consistent with previous studies, most food commercials analysed in this study promoted unhealthy foods with high amounts of sugar and fat. Global brands were more prevalent on television, but locally produced and branded products were more available at convenience stores in China. In this study, we challenged current environmental research on obesity by focusing and reporting on advertising appeals and product accessibility in China. This study contributes an evaluation of the amount and the characteristics of the advertising and food retailing to which young consumers are exposed in China.

Childhood obesity is multi factorial, and often arises out of the interaction of two or more factors rather than the isolated effects of individual factors. A sedentary lifestyle, or a diet that facilitates obesity, interacts with environmental factors to produce an effect. The environments in which people live are complex, and their individual and combined elements exert a marked effect on people's behaviours and dietary intake. People interact with a variety of microenvironments or settings, such as schools, homes, fast food outlets, and restaurants. These in turn are influenced by broader macro environment at all levels, and social attitudes and beliefs.

Childhood overweight and obesity are preventable. Supportive environments and communities are fundamental in encouraging healthy choices of foods and regular physical activity. Traditional Chinese society, which emphasises paternal familial control, might offer a possible solution to this problem. The portrayal of family togetherness and parents in commercials seems to be effective for promoting a healthier eating environment. Moreover, such portrayals also help to regulate children's engagement in sedentary activities. Lau, Lee, and Ransdell (2007) proposed that the influence of Chinese parents, particularly role modelling by the father, was closely related to the inclination towards physical activity among overweight Chinese children.

It would be unrealistic to expect an individual child or family to change its behaviour within the context of a community milieu that is inhospitable to healthy lifestyles. In urban areas, vending machines, corner shops, and convenience stores all sell large quantities of sweetened beverages, snacks, and other high-calorie, high-fat food low in nutritional value. Obesogenic environments tend to gradually facilitate obesity among the people who live in that environment. School environments might help to reduce exposure to cues that encourage overeating or sedentarism, and provide access to healthy food. Modifying the larger context and the microenvironments associated with education, health, knowledge and practice is critical.

It is unlikely that the Chinese government will restrict all forms of food and drink advertising targeted to children. Children's understanding of advertising is part of their natural development; the removal of advertising might actually harm child welfare, as this would eliminate a crucial form of consumer socialisation. However, various levels of government must actively and aggressively eliminate misleading advertisements to consumers attempting to maintain healthier diets and weights. In addition, to enable consumers to obtain healthier foods, both the government

the relations between a

and the food and drink industry must ensure that companies promote their products in balanced manner. Messages aimed at correcting dietary imbalances must be more frequent, both in retail outlets and in the mass media, to remind and instruct consumers regarding healthy eating.

Convenience stores operated by franchisees were observed to tailor their stores to local tastes. In future research, determining the main similarities and differences between universal factors and those that are culturally defined is warranted, to further examine the relations between advertisements, products, consumption behaviour, and high rates of obesity. To determine the causal relations between foods and drinks and obesity among children, the impact of advertising on food categories and total diets must be further explored. A longitudinal approach would provide more robust evidence concerning the links between commercials and obesity. Tackling obesity requires a concerted multidisciplinary effort, to integrate interventions that target individual behaviours within a healthy environment.

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