

**The ‘Obesity Epidemic’: Complex Causes, Controversial Cures
– Implications for Marketing Communication**

Technical Report 03.03

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We would like to thank Professor L. Rose, Head of Department, Department of
Commerce, for his constructive comments on earlier drafts of this report.

Executive Summary

This paper examines the current controversies surrounding the worldwide increase in obesity rates. We focus on both criticisms of marketing / marketing communication activity as a factor that may impact on obesity levels, and on the role marketing communication may play in strategies designed to combat obesity.

We have examined academic, practitioner and consumer literature and highlight the following:

- There is no single cause of obesity; there will therefore not be a single, simple solution
- The relative impact of a range of factors that are believed to have an effect on obesity are poorly understood, with most research demonstrating, at best, some level of correlation.
- A major concern is that correlation is being mistaken for / misreported as causation, with the potential for interventions and ‘reforms’ to be misdirected and ineffective.
- A further major concern is poor reporting and, at times, outright distortion of research findings both by the media and by extremist lobby groups.

In terms of specific factors that have been identified as having a major influence on obesity levels, television viewing is correlated with obesity only to the extent that viewing may replace more active pastimes. Viewing levels among children are not increasing as claimed and have been static, if not in slight decline, for several years.

Many research studies regarding television’s presumed role in influencing types of food consumption fail to separate out influence on individual brand preferences versus total category sales levels, in spite of substantial empirical studies that support the former but not the latter.

Claims that food advertisers deliberately mislead consumers about health risks are unfortunately becoming commonplace, spurred by recent (but unsuccessful) attempts at litigation against fast food restaurants in the USA. These claims are usually unsubstantiated but receive uncritical media coverage. The worst recent example of ‘junk reporting’ of ‘junk science’ took laboratory animal food studies and performed a substantial unsupported and unsupportable leap of credibility and commonsense to claim that fast food was addictive. The researchers involved in the misreported studies have issued unequivocal rebuttals of the media ‘findings’ – yet these rebuttals seldom receive the media coverage that the original, sensationalized, claims enjoyed.

Advertising restrictions, or outright bans, together with excise taxes continue to be advocated by lobby groups, in spite of a considerable body of research that indicates that these actions would be unlikely to achieve the objectives desired. Similarly, claims that excessive fat consumption is a cause of obesity appear considerably exaggerated; with several reports indicating that fat consumption levels have declined. Many of the solutions proposed have also focused on dieting and weight loss strategies, in spite of evidence that permanent weight loss is difficult to sustain. In addition, the dangers of dieting and weight loss fluctuations are poorly understood.

The Body Mass Index is widely used as an indicator of weight categories. It is less precise than many of its users acknowledge. It does not distinguish between fat, bone

and muscle (thus the current All Black squad are technically all overweight; some would be classified as obese). Similarly, there are several differing versions of the Food Pyramid, and a growing amount of criticism of what it indicates and how it should be used, particularly in relation to dietary composition and serving size.

While there is recognition that exercise is desirable as part of a healthy lifestyle, the type and amount of exercise that is beneficial is subject to considerable debate. Attempts to 'drill' children into regular exercise behaviours appear to be unsuccessful in the long term as numerous reports show exercise rates decline as children mature into adolescence and adulthood. Even among adults, long-term commitment to exercise appears to be difficult to maintain, not the least because many regard it as boring.

Parental / family influences on diet and exercise are stronger than policy makers appear to recognize. Overall motivation to adopt long-term dietary and lifestyle changes appears to rest largely on the level of motivation. A key driver in this appears to be recognition of both rational and emotional factors and the need to ensure that messages aimed at generating long-term behavioural change are seen as having personal relevance to the individuals targeted.

There is a very real danger that well-intended interventions will be put into place to address the obesity issue but will achieve very little positive effect. There is also a strong possibility that results may be contrary to what is intended, particularly if these initiatives are put into place in an environment where conflicting messages, sensationalized reporting of pseudo science and unwarranted accusations of blame continue to be made. Coordinated multiple strategies are needed, with cooperation between all stakeholders and interest groups.

In addition , there is a need for an integrated research programme to address the considerable gaps in knowledge and understanding of the impact of a wide range of factors that may impact, either positively or negatively, on diet, lifestyle and overall health issues.

Index	Page
Introduction	5
Television Viewing: Cause or Effect?	7
What is the Role of Advertising in Promoting Food Choices?	10
Advertising Bans / Sales / Excise Taxes	13
Psychological Reactance Theory	17
Dieting / Weight Loss	18
Food Technology and Cultural Changes	20
Is It Really a 'Weighty Problem'?	21
Food Pyramid	23
Exercise	26
Family Environment	28
Motivation	30
So what can / should be done and by whom?	32
Interventions: Public Health / Public Service Campaigns	33
Unintended Effects / Consequences	35
Conclusions and Recommendations	36
Directions for Future Research	38
References	39
Appendix A: Is Fast Food Addictive? An Example of Selective and Distorted Use of Research to the point of Junk Science	50
Appendix B: Statement from Dr Martin Yeomans, University of Sussex, regarding reports of research findings of 'Food Addiction' August 2003	52

Introduction

“Obesity is not a single disorder. Individuals become obese as a result of a unique mixture of inherited genes that confer susceptibility and years of complex interactions with an environment that is increasingly more ‘obesogenic’.... Preventing it and treating it will require persistence, patience and understanding” (Whitaker, 2002: 924).

There is agreement that obesity rates, and associated health problems are increasing worldwide (see, for example, Danner and Molony, 2002; Sibbald, 2002; New Zealand Ministry of Health, 1999). Ahmad (1997) claims that obesity across adults and children accounts for \$40 billion of total treatment costs for heart disease, diabetes, high blood pressure, gallbladder problems and some types of cancers in the USA alone.

There is however, little agreement regarding the exact causes of the growing ‘obesity epidemic’, although there is a growing recognition that there may be a number of inter-related genetic and environmental factors that contribute to the problem (see, for example, Ebbeling, Pawlak and Ludwig, 2001). Further, the widespread assertion that obesity is responsible for a number of deaths annually (some 300,000 annually in the USA alone) may not be as clear-cut as often reported (Gaesser, 2003; Kassirer and Angell, 1998). However, there is a very real danger that, in criticizing the current focus on weight loss, that obesity and its associated dangers will be trivialized.

Nevertheless, the body of evidence supporting the significant health risks of excess weight in the context of overall poor quality lifestyles should not be ignored (Jonas, 2002). The quote below perhaps sums up some of the frustrations experienced by those searching for effective solutions.

“We are lazy; we overeat; we don’t prioritize what is truly important to us in our lives; and we don’t have a clue as to the steps involved in making proper fitness a consistent part of our daily and hectic lifestyles” (Jackowski, 2003: 60).

There is considerable debate regarding possible solutions to the obesity situation, but minimal agreement, with calls for advertising bans, taxes on foods perceived as being of low nutrient value among the range of options put forward (Eagle and de Bruin, 2001; Ahmad, 1997).

This paper builds on the growing literature on the broad range of issues such as diet, exercise, sedentary pursuits such as television viewing and the communication of both problems and potential solutions that should be considered by industry and consumers alike. It must be recognized that, as with the causes of obesity, there will not be one single, simple solution and that gaining long-term attitudinal AND behavioural change is extremely difficult. Our focus is not on morbid obesity, for which the most effective treatments require specialist, often surgical, interventions (see, for example, Martin, Robinson and Moore, 2000). We concentrate instead on the communication implications inherent in growing calls for some 50% of populations throughout the world who are classified as overweight (see, for example, New Zealand Ministry of Health, 1999) to examine their weight, fitness and overall lifestyles. We briefly examine the discussions and arguments put forward in the academic, practitioner and

consumer literature, focusing on reviewing and assessing the potential efficacy of a range of solutions proposed to date. We then focus on the literature regarding the effectiveness of a range of public health communications programmes with a view to providing guidelines for the development of future mass communications programmes.

The literature reveals considerable speculation and numerous studies that indicate correlations of a range of factors with obesity. It also reveals how little we actually know about the relative impacts of these factors, such as genetics, family influence and lifestyle choices such as diet and physical activity levels (King and Hayes, 2003; French, Story and Jeffrey, 2001; Martinez, 2000; Dietz & Gortmaker, 1985). By focusing on one specific potential factor as a presumed 'cause', King and Hayes (2003: 29) warn "we do both children and adults a disservice by presenting 'simple' solutions to these complex issues". It is probable that no single solution exists, and that no intervention will achieve major changes in behaviours in the short term.

An area that warrants further investigation is the growing recognition and debate in the literature that the focus on obesity per se, to the point of 'lipophobia', deep seated anxiety about fat and fatness (see, for example, Askegaard, 2003; Tiggemann and Rothblum, 1997) and associated weight prejudice (Wann, 2003). There appears also to be growing recognition that focusing efforts primarily on the goal of weight loss may be self-defeating (Ebbeling, Pawlak and Ludwig, 2002; Cogan and Ernsberger, 1999). There is a parallel call for recognition of more holistic approaches to healthy lifestyles and a refocusing on factors such as aerobic fitness and other lifestyle issues rather than on weight loss per se (Elks, 1998).

It is of concern that many studies claim, but fail to demonstrate causality between factors studied and obesity. Such studies illustrate at best some level of correlation between such factors as amount of television viewing and body mass index, but are misinterpreted to suggest cause and effect - see, for example, the review of unwarranted causality and "subtle errors of method and inference" in relation to claims made about the impact of advertising on actual behaviour across several product categories (Wilde, 1993: 989). Yet 'prospective analyses' that are intended to suggest research agendas that would allow the relative impact (if any) of a range of factors that may impact on obesity (see, for example Ludwig, Peterson, and Gortmaker, 2001) are enthusiastically embraced by lobbyists and some policy makers (see, for example, Smith, 2003; Centre for Science in the Public Interest, 2002). The assumptions that these groups make with regard to a demonstration of cause and effect are then used to support various 'reforms', with the danger that considerable resources may be deployed in futile activity.

A further concern in an increasingly divisive debate is the lack of rigour in reporting research findings, ranging from simplistic summaries, through extremely selective use of research, to sensationalizing, if not distorting results to support claims. This latter activity does a total disservice to the entire debate about the obesity conundrum and potential solutions. The worst excesses in this regard are such that reports can no longer be considered 'populist', but rather 'junk science'. The claims that fast food is addictive (Physicians for Responsible Medicine, 2003) is an example of this, in that the authors of the studies that are used to 'support' the claim point out that their studies made no such assertion. This particular claim, trumpeted in many media

(although the range of denunciations that followed, including reported official censure by the American Medical Association were not), and the findings of the actual research studies purported to provide evidence for the claim, are analyzed in more depth in Appendix A. Appendix B contains a statement from one of the scientists whose reported findings have been taken totally out of context.

Television Viewing: Cause or Effect?

French, Story and Jeffrey (2001: 309) assert that “it is an accepted fact that the changes in eating and exercise behaviours that are driving the obesity epidemic are largely due to an environment that encourages the former and discourages the latter”. Television viewing is seen as a ‘pathogen’ in this regard with numerous writers indicating that there is a link between the amount of television viewing and obesity prevalence (see, for example, Campbell et al., 2002). Zuppa, Morton and Mehta (2003: 78) suggest that the amount of advertising to which children are exposed “has the potential to influence children’s health attitudes and behaviours”. They then cite an Australian National Health and Medical Research Council report which suggests that “television may be more influential than families in setting children’s food preferences”, yet they fail to acknowledge (other than in their reference list) that this report was released more than twenty years ago, in 1981. Dietz and Gortmaker (1985) suggest that obesity links to hours of television viewed, with obesity prevalence increasing by approximately 2% for each additional hour of television watched. Although they suggest that there is a correlation between viewing and between-meal-snacking, they acknowledge that their data does not imply causation and caution that other unmeasured variables may be involved.

Epstein et al. (1995) clarify the link by identifying a correlation, but not causation, between television viewing and obesity. They note that sedentary activities such as television viewing can be substituted for active behaviour such as physical exercise. They further observe that obese children, if given equal access to sedentary or physical activities, will choose sedentary options. Statistics such as television in children’s bedrooms increases the children’s viewing by 38 minutes per day are also cited (Ebbeling, Pawlak and Ludwig, 2002), without considering the role that such viewing may have within holistic lifestyle activities. Dietz and Gortmaker (1985: 811) acknowledge that “television viewing only accounts for a small proportion of the variance of childhood obesity”.

Samuelson (2000) notes the increase in video (rather than television) watching and in computer related activities, especially computer games but makes no comment regarding the impact on physical activity levels. (Lord, 2000) reports that American children are far less involved in physical activities and spend considerably more time than ever sitting before a TV screen / watching videos (the classic ‘couch potato’ syndrome) or in front of a computer screen (‘mouse potatoes’). This increase in sedentary rather than active pursuits, regardless of what specific electronic device they are using, should be noted. Cassidy (2003) reports that American children aged 2 – 18 years spend almost 5 and a half hours per day (some 38 hours per week) watching television, playing videogames, surfing the Internet or listening to music. Dietz and Gortmaker (1985) report that children aged 6 – 11 years watched on average 24 hours of television in 1982.

Television viewing among children aged 5 – 14 years appears to be static, rather than increasing as some critics allege (e.g. Dietz et al., 2002). Children’s use of free-to-air (commercial) channels has actually declined over the last decade, with subscription-based channels (Sky, with more than 30 channels) increasing. The following table shows the average hours and minutes per day of all New Zealand television channels viewing for the period 1992 – 2002. It should be noted that the number of minutes of advertising available per hour has not changed in the last decade. The figures in Table 1 suggest that demonising television, as an implied cause of unhealthy lifestyles, is erroneous.

Note 1: The figures in Table 1 do not include time spent at other sedentary electronic pastimes such as computer and electronic games usage.

Note 2: These are average figures and we might expect variations of high / low / no viewing amongst demographic subgroups such as socio-economic status, age (young children versus older children), family circumstances etc (this type of breakdown is not available within the current database). However, average figures indicate that there is no increase in viewing, therefore we can surmise that there are unlikely to be any major increases in viewing habits among the subgroups themselves.

Table 1: Hours and minutes per day of television viewing, children aged 5 – 14 years. Source: Nielsen Media Research. Only major Sky channels are shown separately – all others amalgamated under ‘Sky Network’.

Year	TV ONE	TV2	TV3	TV4	Prime	Sky Movies	Sky Sport 1	Sky Sport 2	Sky 1	Sky Network	Horizon Pacific	MTV	All TV	Potential	Sample
1991	0:24	1:33	0:25	-	-	0:00	0:00	-	-	0:01	-	-	2:23	512,000	183
1992	0:24	1:17	0:24	-	-	0:01	0:00	-	-	0:01	-	-	2:06	512,000	178
1993	0:22	1:19	0:25	-	-	0:01	0:01	-	-	0:02	-	-	2:08	512,000	195
1994	0:23	1:24	0:23	-	-	0:01	0:00	-	0:00	0:02	-	-	2:12	508,000	195
1995	0:22	1:19	0:23	-	-	0:03	0:01	-	0:01	0:05	0:00	-	2:11	516,000	183
1996	0:19	1:13	0:33	-	-	0:04	0:01	-	0:01	0:06	0:00	-	2:13	524,000	179
1997	0:17	1:12	0:36	0:04	-	0:02	0:01	-	0:02	0:06	0:00	0:01	2:16	531,000	194
1998	0:17	1:05	0:32	0:05	0:00	0:05	0:02	-	0:03	0:11	0:00	0:01	2:11	561,000	195
1999	0:16	1:08	0:26	0:02	0:00	0:05	0:03	-	0:04	0:13	-	-	2:07	561,000	179
2000	0:20	1:01	0:33	0:03	0:01	0:03	0:02	0:00	0:03	0:09	-	-	2:08	569,000	182
2001	0:15	1:01	0:31	0:04	0:01	0:04	0:03	0:00	0:04	0:18	-	-	2:11	617,000	197
2002	0:15	0:58	0:31	0:03	0:02	0:02	0:03	0:00	0:02	0:17	-	-	2:05	610,000	202
2003 ytd	0:12	0:56	0:31	0:02	0:02	0:02	0:02	0:00	0:02	0:18	-	-	2:01	610,000	195

2003 ytd : Date period is from 1 January to 02 August
 "-" represents a zero

Table 2 shows that almost half of the total viewing detailed in Table 1 actually occurs in prime time where (hopefully) children are watching with older family members who may model, or give advice on, healthy eating practices. The data in Table 2 also illustrates the erroneous beliefs of lobbyists and policymakers (see, for example, Toomath, cited in Smith, 2003; Kedgley, 2000) that children watch considerable hours of programmes aimed specifically at them, such as Saturday mornings or after school times. The data in both Table 1 and 2 suggests that, of the approximately 2

hours per day of television viewed, only slightly over one hour is spent watching non-peak time programmes.

Table 2: Average Time Spent Viewing by 5 – 14 year olds Per Day, Peak time (6pm – 10.30pm) in Hours and Minutes. Source: Nielsen Media Research, 2003.

Year	TV ONE	TV2	TV3	TV4	Prime	Sky Movies	Sky Sport 1	Sky Sport 2	Sky 1	Sky Network	Horizon Pacific	MTV	All TV	Potential	Sample
1991	0:15	0:42	0:11	-	-	0:00	0:00	0:00	-	0:00	-	-	1:08	512,000	183
1992	0:14	0:33	0:11	-	-	0:00	0:00	-	-	0:00	-	-	0:59	512,000	178
1993	0:14	0:38	0:11	-	-	0:01	0:00	-	-	0:01	-	-	1:03	512,000	195
1994	0:14	0:38	0:11	-	-	0:00	0:00	-	0:00	0:00	-	-	1:04	508,000	195
1995	0:12	0:38	0:11	-	-	0:02	0:00	0:00	0:00	0:02	0:00	-	1:03	516,000	183
1996	0:11	0:33	0:14	-	-	0:02	0:00	-	0:00	0:02	0:00	-	1:02	524,000	179
1997	0:11	0:31	0:17	0:02	-	0:01	0:00	-	0:00	0:02	0:00	0:00	1:03	531,000	194
1998	0:11	0:32	0:14	0:03	0:00	0:02	0:01	-	0:00	0:03	-	0:00	1:03	561,000	195
1999	0:11	0:32	0:11	0:01	0:00	0:02	0:01	-	0:00	0:04	-	-	0:59	561,000	179
2000	0:12	0:29	0:12	0:02	0:00	0:01	0:01	0:00	0:00	0:03	-	-	0:59	569,000	182
2001	0:09	0:28	0:12	0:02	0:00	0:01	0:02	0:00	0:01	0:06	-	-	0:58	617,000	197
2002	0:09	0:26	0:13	0:02	0:01	0:01	0:02	0:00	0:01	0:05	-	-	0:57	610,000	202
2003 ytd	0:08	0:24	0:15	0:01	0:01	0:01	0:01	0:00	0:01	0:05	-	-	0:55	610,000	195
2003 ytd : Date period is from 1 January to 02 August															
"-" represents a zero															

There have also been numerous claims since the 1970s (Goldberg, Gorn and Gibson, 1978; French, Story and Jeffrey, 2001) that television viewing may result in increased food intake, both by prompting eating behaviours through exposure to multiple food advertisements and as a conditioned stimulus, particularly if people repeatedly eat in front of their television sets. Classical conditioning theory (Hawkins, Best and Coney, 2001) states that using an established relationship between a stimulus and a response to bring about the learning of the same response to a different stimulus, thus eating meals or snacks in front of the television will result in television viewing becoming associated with eating. Further, it is suggested that exposure to television advertising may not only encourage snacking but also influence viewers' food choices towards higher-fat or higher-energy food although these authors acknowledge that "few data are available to address these hypotheses" (French, Story and Jeffrey, 2000: 316).

Ignored in this debate are studies that indicate that the claimed link between physical activity and 'fatness', usually measured by the Body Mass Index (BMI) is not as clear-cut as proponents portray. For example, Anderson et al. (1998) found a relationship between the amount of television viewing and body fat, but also found that boys who reported the highest levels of physical activity also had the highest BMI scores. Lowry et al. (2002) found that, among black high school children, TV viewing was associated with *greater* participation in physical activity. The cultural dimensions of the assumed linkages between media usage, physical activity and overall health do not appear to have been systematically explored in the literature, yet, as Lowry et al. (2002) caution, cultural factors must be considered when developing appropriate interventions.

What is the Role of Advertising in Promoting Food Choices?

It is claimed that advertising manipulates consumer preferences, thereby reinforcing the biological pressures driving obesity (Anon, 2003). This type of claim is a not uncommon example of how some writers misrepresent scientific knowledge and play to audiences who may be encouraged to mistrust business motives – particularly in the light of continued exposure to sensationalized pseudo-science. The assertion noted above, of course assumes that people are easily manipulated and that advertising acts as a strongly persuasive force. For a detailed discussion of the evidence regarding the impact of advertising for low-involvement products in mature markets, see Eagle and Rose (2003).

The same anonymous authors who make the above assertion (Anon, 2003) specifically blame high profile fast food brands for manipulation of consumer perceptions:

“For example, McDonald’s exploits the affect heuristic (i.e. emotional aspects of learning about the brand - via trial and error - acquired by consumers and then used as a shortcut in subsequent decision making – explanation added) by advertising a family friendly environment and generating positive associations that may cause consumers to devalue their perceptions of the risks arising from unhealthy diets” (Anon, 2003: 1168).

They further claim that advertisers can market good taste of foods as the primary reason for repeat purchase “while misleading consumers about the health risks that their products pose” (Anon, 2003: 1170). A point often lost in all the criticism is one that McDonald’s itself often points out – that the experience of McDonald’s is often positive. It is a kids-friendly family restaurant, popular because of the way in which it is differentiated from most others in the industry. Most restaurants have playgrounds, and McDonald’s observe that children, almost without exception, spend large amounts of time in them. More than any other food retailer, McDonald’s claims that it demonstrates the commitment to provide a balance between energy input with energy output, providing the opportunity for both on site. McDonald’s attributes much of its popularity with families to the way in which it interacts with all ages, welcoming younger children in particular who are discouraged from visiting many other food outlets (Jeory, 2003).

To assert, without offering specific evidence, that food advertisers such as McDonald’s deliberately mislead consumers about the health risks of their products is a disservice, if not a distortion of an important debate, especially given that the anonymous article cited above appeared in the prestigious *Harvard Law Review*.

Recent (unsuccessful) attempts in America to sue companies such as McDonald’s for failing to warn consumers of health dangers claimed to be associated with consuming their food are now being acclaimed as being the drivers for the provision of better nutritional information and a change to healthier menus (Weekend Herald, 2003). These claims are incorrect. Nutritional information has been provided in McDonald’s restaurants for more than fifteen years. In addition, it is over a decade since McDonald’s first attempted to introduce menu items that would be perceived as healthier than traditional menu items. However, the initial trial was not successful and the new menu items were discontinued. Worldwide, the restaurant chain offers

variations on its menus to accommodate local taste preferences and menus are regularly updated and new concepts or menu items trialed. Menu changes are driven by changing consumer tastes and also by competitive pressure. For example, in 2002, McDonald's New Zealand introduced the concept of McCafes, with a full range of coffees and café foods to supplement the more 'traditional' range of hamburgers, fries and drinks. It has broadened its food range to include salads, low fat drink and dessert options. It is currently trialing a range of chilled gourmet dinner meals. These items will, however, only remain on the menu if consumer demand indicates the products are viable. As an extension of its defence of the nutritional value of its meals, in July 2003, McDonald's New Zealand published a table (reproduced below as Table 3) comparing its largest selling children's Happy Meal with other typical children's lunches.

Table 3. Comparison of McDonald's Children's Happy Meal with Range of Other Children's Lunch Options. Source: McDonald's Restaurants (New Zealand) Limited

Lunch option	Energy kJ	Total fat g	Sat fat g	Sugar g	Protein g	Sodium mg
Mince pie / afghan biscuit / popular-brand orange & apple juice (apple based) (453g)	3967	39.8	15.8	84.9	8.9	644.2
Ham roll (buttered) / slice of banana cake / popular-brand blackcurrant cordial (426g)	2566	21.5	13.0	53.8	11.7	923.6
McDonald's Hamburger Happy Meal(tm) served with small fries & small orange juice (438g)	2532	25.7	12.9	24.8	21.0	728.5
Peanut Butter sandwich (buttered) / banana / milk (460g)	2252	22.3	10.1	42.2	18.8	557.3
Peanut Butter sandwich (unbuttered) / banana / milk (455g)	2097	18.2	7.3	42.2	18.8	533.3
* McDonald's Chicken McNuggets(tm) Happy Meal served with small fries & small soft drink (377g)	1935	22.2	9.9	21.8	12.2	549.0
McDonald's Hamburger Happy Meal served with small salad & small orange juice (423g)	1667	13.7	6.4	24.7	19.1	589.2
Popular-brand yeast spread sandwich (buttered) / chips / apple (213g)	1426	15.2	8.3	14.3	5.9	642.1
McDonald's Chicken McNuggets Happy Meal served with small salad & small orange juice (318g)	1010	10.2	3.4	19.2	11.4	406.2

* Chicken McNuggets Happy Meal is the most popular McDonald's children's meal.

Analysis supplied by Jeni Pearce & Associates, based on The Concise NZ Food Composition Tables 2003. Calculations are based on per serve. The analysts /authors have made the following caveats:

This comparison is not a complete nutritional breakdown. It addresses public concerns over energy (kilojoules), sugar and fat. This information is provided solely for the purpose of comparison and is not making a judgement on the nutritional quality of the listed food products.

Buchholz (2003: 21) provides the following extract from the decision in the recent obesity lawsuit (Pelman v. McDonald's Corporation, 2003):

“The dangers of over-consumption of... high-in-fat foods, such as butter, are well known. Thus any liability based on over-consumption is doomed if the consequences of such over-consumption are common knowledge... Thus in order to state a claim, the Complaint must allege that either the attributes of McDonald's products are so extraordinarily unhealthy that they are outside the reasonable contemplation of the consuming public or that the products are so extraordinarily unhealthy as to be dangerous in their intended use. The Complaint – which merely alleges that the foods contain high levels of cholesterol, fat, salt and sugar, and that the foods are therefore unhealthy – fails to reach this bar.”

Buchholz (2003) also notes that McDonald's readily provide information on the nutritional content of its foods, a point he observes was also made by the judge in the above case. He also stresses that claims of 'super-sizing' directed at fast foods should be viewed in context, citing USDA survey data that indicates that, while hamburgers exceeded official estimates of recommended serving sizes by 112 percent, pasta portions exceeded official estimates by 333 per cent and muffins by 480 per cent.

Advertising Bans and Sales / Excise Taxes

In spite of a growing body of evidence that banning advertising of foods perceived to be of low nutrient value and / or foods targeted at children would be both inequitable and ineffective (e.g. Eagle, de Bruin and Bulmer, 2002; Young, 2003), there remain lobbyists who maintain that such bans “are central to any serious strategy to reduce the incidence of advertising-related chronic diseases such as obesity, diabetes and cardiovascular diseases” (Commercial Alert, 2002: 2).

This approach is typical of those who perceive that there is a direct link between advertising food products and weight gain (see also McLellan, 2002). More seriously, the WHO position appears to continue to support such a move, while acknowledging the complex causes of obesity (WHO, 2003). As already noted, many critics fail to distinguish between correlation and causation (see, for example, Ludwig et al., 2001) yet such assumed relationships are enthusiastically embraced by lobbyists and some policy makers (Jones, Williams and Buckley, 2003).

In parallel with calls for advertising bans are calls for the imposition of some sort of ‘sin tax’ on foods deemed to be unhealthy (see Ahmad, 1997). The WHO’s position is that, having taken expert advice, including from the World Bank, they are unlikely to recommend taxation as a solution to growing obesity rates as it would create distortions in the food market and also possibly undesirable unintended effects (Jones, Williams and Buckley, 2003). However, this has not stopped some supporters of bans continuing to push for this option (see, for example, Toomath, cited in Smith, 2003).

The World Federation of Advertisers (2003: 3) adds to the warnings of unintended consequences if taxes were introduced, asserting that “imposing a tax on certain types of food or food advertising would be equivalent to dictating consumer diets, by judging for them what they should and should not be eating”. For an in-depth discussion of the theoretical implications of an advertising tax, see Allen, Eagle & Rose, 2002.

We have provided an analysis of the potential impact of both advertising bans and sales / excise taxes in an earlier report (Eagle et al., 2002). The following extract from that document (pages 8 – 10) is repeated here. Since originally compiling this material, ongoing literature searches have provided no additional empirically supported data that would suggest that our comments should be revised in any way.

Advertising Bans

Advertising revenue plays an important role in funding television programme production. A total ban on television advertising during children's programmes would mean the loss of money to support these programmes that potentially affects programme quality and the volume of ‘local’ as opposed to programmes produced overseas.

Dignam (1999: 27) argues that the "intellectual argument for banning TV ads to children is in itself infantile". He notes that such bans will not prevent children from seeing ads in other media, nor on television outside children's programme slots. In addition, he asserts that it will not prevent pester power which has been around long before advertising, nor will it prevent children from being swayed by other elements in the marketing mix - such as branding, point of sale and packaging.

The standard economics arguments on the social value of advertising centres on reduced search and information costs to consumers arising from advertising; higher sales of advertised products leading to economies of scale and lower prices (if the advertiser's monopoly power does not operate to the contrary (see e.g. Comanor and Wilson, 1974); advertising resulting in a increased price elasticity of demand for the advertised products in contrast to the price inelasticity of demand exhibited by lesser advertised products and the level of advertising acting as a signal for quality (Telser, 1964; Nelson, 1974). A well-known example is the case of spectacles where some states in the US banned advertising of prices by sellers. In states where there was no ban on advertising the average price of spectacles was lower (Benham, 1972).

More particularly in relation to this paper, the toy industry states that television-advertised toys are sold at lower prices than toys not advertised on television as high demand volumes created by advertising allows for volume component purchasing. TV-promoted toys are also used as loss leaders to build general store traffic (see, e.g. Toy Industry, 2000). Furthermore, bans may lessen competition, thus raising prices and potentially reducing dollars invested in research and development (Abernethy and Frank, 1998). These authors also note that advertising can have a major influence on the types and features of products marketed, such as high-fiber breakfast cereals, reduced fat and low cholesterol foods – all of which showed substantial share gains after their product attributes were advertised.

To estimate the impact of bans, it is necessary to draw on the experiences of bans on other products. This presents a problem, as bans on other product areas such as tobacco products do not offer an exact parallel. The experiences in these areas do, however, offer some insights into the complexity behind what appears to be perceived as a simple problem for which a simplistic solution is proposed.

The impact of anti-smoking policies and advertising bans on tobacco products have been extensively examined (e.g. Bardsley and Olekalns, 1999; Calfee and Scheraga, 1994). These studies conclude that advertising does not have a substantial effect on tobacco sales. Far stronger effects come from social factors such as the attitudes and behaviours of parents and peers - and the addictive nature of tobacco products per se. Tremblay and Tremblay (1999) acknowledge that advertising bans generally have had no significant effect on market demand. These authors propose a theoretical model that shows that advertising bans may reduce cigarette consumption but this would be accomplished by hampering competition and thus producing higher profits for major cigarette producers. They conclude that such bans do not represent 'optimal policy'.

Ambler (1996) discusses whether banning advertising can reduce alcohol misuse. He reviews a number of studies and concludes that such bans would not achieve either a significant reduction in alcohol consumption or in its misuse. Ambler notes the impact of entrenched cultural, dietary and social rituals as being more strongly correlated with alcohol consumption than advertising alone. It is extremely likely that the factors identified by Ambler are also considerably stronger influences on dietary practices than advertising.

b. Would sales / excise tax on food be better?

The philosophy behind a direct tax on high fat / low nutrient foods is simply to gain a mechanism whereby revenue can be raised to fund health care and / or public education programmes while at the same time being seen to be actively attempting to discourage consumption of these foods. Sales taxes on soft drinks and foods high in fat are already in place in some states in America and California is currently considering a 'fat tax' (Siudzinski, 2001; Tyre, 2002), yet there appears to be no report on success (or otherwise) in reducing obesity as a result of the taxes already in place. Greenberg (2002) notes that those who call for such measures as sales taxes expect to raise significant revenues, but publicly expect little or no direct effect on sales of affected foods – yet there are suggestions that taxes should be extended to wider ranges of foods.

Ahmad (1997) notes that policy makers hope that taxing junk foods would have a similar correlation between price and consumption levels as has been achieved via price increases on tobacco and alcohol. There are some major assumptions regarding price elasticities in this, often justified by no more than blaming the fast food and restaurant industries for seducing consumers into a “diet that is high in fat, high in calories, delicious, widely available and low in cost” (Reiland, 1998: 22). The rise in popularity of fast foods lies in its affordability, location and convenience – Schlosser (2001) appears to miss this point while acknowledging that the advent of fast food chains meant that working class families could afford restaurant food for their families. Chui (2002) acknowledges that it is sometimes cheaper to eat at these types of restaurants than to prepare home cooked meals. Increasing the price of these foods is unlikely to force their replacement by foods perceived to be healthier and such a move may indeed have several unexpected consequences,

Supporters of a 'sin tax' argue that such taxes are justified because of externalities, in that the costs of consumption are borne by the community in indirect costs such as productivity loss and by the health service in treating problems such as heart disease. Marshall (2000) argues for this approach, acknowledging that such taxes are regressive, impacting mainly on those dependent on welfare benefits or on low incomes. He therefore argues for compensation via higher benefit payments to offset additional expenditure costs.

His views are challenged strongly by others in the medical profession. O'Rourke (2000) argues that restoring spending power to those on welfare will result in their buying exactly the same foodstuffs – while those on low wages would receive nothing. He cautions that there are multiple factors that contribute to health problems such as heart disease and therefore that it may be dangerous to concentrate on a single factor. Stanley (2000) expands on O'Rourke's proposition, taking issue with Marshall's identification of whole milk (proposed as taxable by Marshall) as one of the main sources of saturated fats in diet. He stresses that whole milk can actually lower blood cholesterol concentrations. Further, he asserts that whole milk contains several anticancer agents that are not present in skim milk (proposed as a non-taxable substitute by Marshall). Thus, in seeking to reduce the risks associated with obesity, the risks of developing other diseases could be increased.

We have been unable to locate any studies that indicate that punitive taxes or advertising bans have made any impact at all on dietary habits or obesity levels in the countries or states (of America) in which they have been implemented. Standard price elasticity considerations however must be considered with the impact of excise taxes are assessed. The extent to which the burden of the taxes can be shifted to the consumer is crucial to understanding the effectiveness of the tax. Tax incidence analysis is therefore necessary before any conclusion can be reached on any potential benefits of proposed taxes.

Reproduced from: Eagle, L.C., de Bruin, A.M. & Bulmer, S.L. (2002). 'The Children-Nutrition-Marketing Ethics Conundrum: Identifying the Issues'. Massey University, College of Business, Department of Commerce Working Paper Series, Vol. 02.16.

Psychological Reactance Theory

Attempts to force change through social engineering is, at best, problematic. One of the many claims made in support of legislation, such as advertising restrictions or outright bans, aimed at forcing change, is that education will not work (Toomath, cited in Redwood, 2003). The theory of psychological reactance (Rummel et al., 2000) states that people become motivated to assert their freedom by performing behaviour when it appears that their freedom might be threatened or restricted. Thus, parental disapproval of particular television shows or foodstuffs can be interpreted by children as threatening their freedom of choice – and may motivate them to consume more of the product disapproved of – precisely because of the disapproval.

Psychological reactance theory has particular relevance in the context of proposed bans. Any attempt to regulate diets is likely to be seen “as a paternalistic infringement on their autonomy” (Anon, 2003: 116). George (2003: 2) states this argument somewhat bluntly by asking:

“Who on earth do these people think they are? What do they imagine gives them the right to even suggest that they should have the power to dictate to the rest of us what we stock in our tuck shops and dairies, let alone what we or our children eat? There is a vast body of evidence to prove that prohibition of any consumables – and especially those which bring us sensory pleasure – has exactly the opposite effect to that which the wowsers would want.”

Mills (2001) posits that children (and perhaps also adults) like unhealthy food *because* it is unhealthy or that they note some form of parental disapproval with regard to its consumption, perhaps linking to the ‘forbidden fruit’ hypothesis (Cantor and Nathanson, 1997). It is possible, therefore, that attempted restrictions may actually encourage consumption rather than successfully limit it.

Common strategies such as rewarding children with sweets or biscuits for performing desired behaviours has been shown in several studies across the last twenty years to significantly increase preferences for the ‘reward’ foods; conversely, where activities (such as watching television) are used contingent on eating particular foods (such as vegetables), preferences for those foods decline substantially (Birch, 1999; Birch, Marlin and Rotter, 1984).

Fisher and Birch (1999) caution that restricting access to specific foods in an endeavour to encourage moderate consumption of those foods actually resulted in increased consumption once children were given free access to them. Thus enthusiasm for making television viewing contingent on physical activity (Faith et al. 2001) could have the reverse effect to the intended voluntary increase in physical activity in the long term.

These experiences should be borne in mind when considering the objectives, versus the probable realities of any form of forced physical education in the hopes of instilling lifelong habits of regular exercise. As will be shown in later sections, this theory has considerable relevance in developing any public health intervention programmes.

Dieting / Weight Loss

There is at any time, extremely high numbers of people dieting, whether they needed to or not. Gaesser (2003: 8) estimates that the number of Americans dieting at any one time is close to 120 million. Kassirer and Angell (1998) provide a very broad estimate of between 15% and 35% of the population may be dieting at any one time and they suggest that the percentage figure among adolescent girls is substantially higher. Bacon et al. (2002: 855) highlight the increase in dieting over time, citing a steady 14% of women actively dieting at any one time between 1950 – 1966; this rose to 26% in 1988 and 44% in 1996. Dieting, while the most common means of attempted weight reduction, is not the only method used. A range of means is employed from dieting, to exercise, herbal and ‘alternative’ remedies through to more conventional medications. Levitsky (1997) notes an increase in ‘pharmacological agents’ / diet drugs with the emphasis moving from appetite suppressants to direct weight reduction.

A considerable amount of this effort may be in vain. For many people, permanent weight loss is difficult, perhaps impossible (Jonas, 2002). Cogan & Ernsberger (1999) warn that there is a considerable body of research indicating that weight loss programmes do not have long-term positive results for the majority of people. This view is supported by numerous longitudinal studies, such as Jeffrey et al. (2000) who review twenty years of weight control research, noting short-term efficacy but not long-term success.

Klem et al. (1998) review a growing body of evidence that body weight is not readily adjusted. Set point theory suggests that body weight, for both obese and normal weight individuals is physiologically regulated. Any deviation from one’s body weight set point, in the form of weight loss or weight gain, will lead to adjustments on energy intake and expenditure as the body attempts to defend against these changes and attempts to return to its original weight. Kelner and Helmuth (2003) note that the body’s biological control mechanisms are stronger in stimulating calorie intake than they are in limiting it, perhaps explaining why weight gain is considerably easier than weight loss.

Cogan and Ernsberger (1999) further caution against weight fluctuations in the light of identified health risks. There is an assumption that weight loss is preferable to excessive weight, yet numerous studies have identified considerable evidence that weight loss itself may involve risks of which many people are unaware. For example, Berg (1999: 277) cautions that “weight loss itself can cause physical changes that may be adverse to health or may escalate the risk of death”. A less severe, but still significant side effect is that dieters may experience negative feelings regarding their psychological well-being (McFarlane, Polivy and McCabe, 1999).

Among the ‘villains’ frequently cited in the obesity battle is the level of fat in diets. The link here is also not as clear-cut as it would appear. Fat plays an important role in the diet. According to the Nutrition Services of the University of Pittsburgh Medical Centre (2003), “Believe it or not, cholesterol and fat are both necessary for good health. Fat is necessary to carry fat-soluble vitamins through the bloodstream. Fat also

supplies energy, cushions your vital organs, offers insulation against cold, and satisfies your hunger”. Although it is popularly believed that fat consumption has increased, Anand and Basiotis (1998) support the assertion that the percentage of calorific intake from total fat has declined since the mid 1980s, but assert that reported overall caloric intake has increased, primarily due to increased carbohydrate consumption. Prentice and Jebb (1995) add to this by noting that the inconsistency between reported calorie intake and obesity is even more marked in England, where obesity rates doubled between 1980 and 1991, while both calorie intake and percentage of fat in the diet have actually declined.

Clarke (2000) extends this argument further by stating that “The average calorie intake has not changed over the past two decades in the United States; we can only conclude that this increase in obesity is due to a reduction in physical activity. Thus, increasing physical activity is the key to the prevention of weight gain in adults.”

The World Federation of Advertisers (2003) provide support for the assertion that physical exercise may be more significant than has been acknowledged to date, reporting that the U.K.’s 2000 National Diet and Nutrition Survey found that the intake of fat by children was actually at levels in line recommended by the U.K. government. However, they note that physical activity was some 30 – 50 percent below levels recommended by the government.

Food Technology and Cultural Changes

One of the many factors driving changes in food consumption patterns is the gradual shift in mindset from 'eating to live' to 'living to eat'. Food has taken on greater importance in modern lives as a pleasure and a recreational activity in itself. Over 40 years ago Levy (1959) suggested, "it is increasingly fashionable to be a connoisseur or gourmet of some kind". The questions faced in the consumption of foods (and other goods and services) have changed from "do I need this?" to "do I like this?" (Levy, 1959). Complex cultural changes in attitudes towards eating and the role of food in everyday life are themselves driven by a multiplicity of factors.

Affluent Western consumers have also become used to the increased availability of foods due to advances in food science and manufacturing. Improved storage technologies have led to reasonably priced fruit and vegetables being available throughout extended periods of the year. Instead of being restricted in food options according to season, consumers are faced with a huge array of products every day of the year. Furthermore, foods that once were treats have become mainstream, everyday foods. Breads, cakes and biscuits do not go stale within hours of baking; instant milkshakes can be bought as sweetened flavoured milks from chill cabinets or in long-life forms; pasta and noodle meals can be prepared at work in a minute; crispy fried snack foods such as potato chips and pork crackling can be kept without going soft or rancid; frozen roast dinners, single serve pizzas and gourmet pies can be eaten within minutes using microwave technology. It is certainly quicker and easier than ever before to satisfy a gourmet appetite.

However, changes in technology have meant that we have made some kind of Faustian bargain. Historically, most food preservation was based on drying and the use of salt and sugar e.g. cured hams, salami, salted fish, olives, jams and fruit preserved in syrup. In moving away from the traditional technologies and the high levels of sugar and salt in part of our diet, we now potentially consume more starchy and fatty foods. In a world of choice and variety, consumers have the option to turn to sugary, salty and fatty foods out of preference. Today's consumers eat so many foods that were not available to their grandparents.

Is It Really a ‘Weighty Problem’?

A somewhat simplistic commentary on what is actually a complex issue is provided by Jackowski (2003: 60) who contends that “a great exercise program can make up for a poor diet, but a great diet can never make up for lack of exercise”. Fraser (1996: 7) illustrates that there is not a simple relationship between weight and health risk by reporting an empirical study that found that when physical fitness was factored in “thinner men who were out of shape were nearly three times more likely to die young than the fat men who exercised regularly”. His view is supported by Gaesser (2003: 8) who asserts “many of the cardiovascular and metabolic problems associated with obesity can be resolved independently of weight loss”.

Cogan and Ernsberger (1999: 188) summarise growing concerns with the apparent preoccupation with weight loss:

“The monolithic focus on the elimination of obesity through weight loss has led to a high rate of dieting and other weight loss behaviours of concern to many health professionals.... Evidence continues to accumulate that weight loss through restrictive dieting and other methods:

- 1. has not cured obesity in a significant portion of participants*
- 2. is unsuccessful in producing even minimal permanent weight loss in the majority of cases, and*
- 3. is not critical to improving health for those considered obese relative to exercise and healthful diet choices”.*

Their concerns are supported by Miller (1999: 207) who further cautions against measuring the effectiveness of any interventions against “medically ambiguous variables like body weight or body composition”.

The Body Mass Index (BMI), although widely used, is less precise as an indicator than many of its users would suggest. It is an index number, originally devised in the nineteenth century (Bagust and Walley, 2000) that shows body weight adjusted for height. It is calculated by dividing an individual’s weight (in kilograms) by the square of their height (in metres). It is used for adults aged 20 years or older, and provides the following categories: underweight (BMI less than 18.5), BMI normal (between 18.5 and 25), overweight (BMI exceeds 25), or obese (BMI exceeds 30). Note: BMI for children and teens is based on gender and age specific charts (National Center for Chronic Disease Prevention and Health Promotion, 2003; Friedman, 2003). The NZ Ministry of Health (2002) give several definitions adjusted for ethnicity: 32 for Maori and Pacific peoples is considered overweight. A BMI greater than 30 for NZ European and Other and a BMI greater than 32 for Maori and Pacific peoples is considered obese.

However, Hoby (2003) comments that the BMI test does not distinguish between fat, bone and muscle, so results should be treated cautiously for some groups of people. These include: Pacific Islanders (who often have large bones) and Asians (who often have small bones), athletes with well-developed muscles, pregnant or breastfeeding women or people over 65, who may need extra weight reserves. We applied the standard BMI formula (BMI, 2003) to the All Blacks, New Zealand’s national rugby team (All Blacks, 2003). Of the twenty-seven players for whom data was available, 4 would be classified as obese and the remaining 23 overweight. Conversely, a 2002

Obesity, Fitness & Wellness Week (2002) editorial reviews evidence that Asians have more fat content compared with Caucasians and that the standard BMI index may mask health risks among Asian communities. The levels at which the BMI may indicate concerns is also called into question by Kassirer and Angell (1998), who suggest that, while an optimal BMI appears to be about 21, there is little evidence of an increased risk of death until a BMI of about 27 – 28 is reached.

The BMI indicators appear to have changed over time. Berman (2002) criticises reports of major increases in reported obesity levels, claiming that the standard at which a person would be considered obese according to the BMI was lowered in 1998, resulting in almost 30 million Americans being reclassified as overweight. This is not the only incidence where a change in measurement classification is reported as potentially distorting medical statistics. The (non-advertising supported) American Consumers' Union editorial in September 2001 highlights the impact that new guidelines for treating high cholesterol may have – the new criteria nearly triples the estimated number of adults who should be undertaking some form of cholesterol reduction treatment, be it via medication, changes to diet and lifestyle or a combination of these. Similarly, Berndt (2001) notes that the American Diabetes Association decreased the diagnostic criteria for diabetes by 10% in 1997, again substantially increasing the number of people likely to be recommended some form of diabetes control action. Such changing benchmarks, as well as overstating 'problems' must also increase confusion as to what are indicators of health.

Robinson (2003) supports the move away from a predominant focus on weight and advocates the holistic view of health espoused by a growing "Health at Every Size" (HAES) approach. He provides the following comparison (Table 4).

Table 4. Comparison of 'Traditional Weight Loss' Paradigm and 'Health at Every Size' Paradigm

Traditional Weight Loss Paradigm	Health At Every Size paradigm
Everyone needs to be thin for good health and happiness	Thin is not intrinsically healthy and beautiful, nor is fat intrinsically unhealthy and unappealing
People who are not thin are 'overweight' because they have no willpower, eat too much, and don't move enough	People naturally have different body shapes and sizes and different preferences for physical activity
Everyone can be thin, happy, and healthy by dieting	Dieting usually leads to weight gain, decreased self-esteem, and increased risk for disordered eating. Health and happiness involve a dynamic interaction among mental, social, spiritual, and physical considerations

Source: Chart reproduced from Healthy Weight Journal, January / February 2003, p. 4
Robinson (2003: 4)

Food Pyramid

Further confusion may be due to the nature of information provided regarding what foods should be eaten in what quantity. People may in fact be misinformed about what constitutes a healthy diet. This issue is multi-faceted, and whilst the public have seemingly poor basic knowledge of how to eat well, controversy surrounds the nutritional messages being promoted to the public, particularly in regards to the Food Guide Pyramid (U.S. Department of Agriculture, 1992).

The pyramid, which critics are now claiming is imperfect, lacks guidance on the specifics of each food group, when certain foods should be eaten, what other foods they should be served with and the recommended portion sizes. Willet and Stampfer (2002) imply that the Food Guide Pyramid released in 1992 by the U.S Department of Agriculture (USDA), aimed at helping the American public make wise dietary choices, is in fact grossly flawed. They support this with the fact that the traditional pyramid is based on a high consumption (six-eleven servings per day) of complex carbohydrates – bread, cereal, pasta, and rice – and that scientists had found little evidence to show that a high intake of carbohydrates is beneficial. Therefore by promoting the consumption of all complex carbohydrates and encouraging people to abstain from fats and oils the pyramid is misleading (Willet and Stampfer, 2002). However, it should be remembered that authorities have always advocated variety and balance in the diet, trying to encourage consumption of varied foods within the levels of the pyramid in order to ensure better nutrition.

A major point Willet and Stampfer (2002) raise is that not all fats are bad and likewise not all carbohydrates are beneficial. Similarly, Hall (2001) believes the Food Guide Pyramid is both too simplistic and too complex to be of benefit. Whilst the foods are categorised correctly from an origin standpoint, Hall (2001) notes that the actual nutrient content and biological effects of the food can vary greatly – half a cup of celery and half a cup of scalloped potatoes are both considered “one serving of vegetables”, even though the celery will have only about 20 calories and no effect on blood sugar, blood lipids or hunger, whilst the potatoes will have about 150 calories and will drastically increase blood sugar and lipids.

Harvard University School of Public Health researchers have compared the rates of chronic diseases in people who follow the standard US Department of Agriculture guidelines with those who followed a Harvard alternative, finding lower risks with the Harvard diet for several diseases. The Harvard diet is claimed by its authors to be “as effective as some cholesterol-lowering medication” (Harvard Women’s Health Watch, 2003: 7). They support the criticisms of the USDA Food Guide Pyramid and suggest that it should be used only in conjunction with the detailed guidelines that accompany it (and of which most people are probably unaware). The standard USDA Pyramid and the alternative Harvard model are reproduced in Figure 1. An additional concern is the possibility that the Diabetic Food Pyramid may also be flawed, with potential harmful consequences for users (Mayers, 2003).

Figure 1: Comparison of Standard USDA Food Pyramid and Harvard University Alternative Pyramid

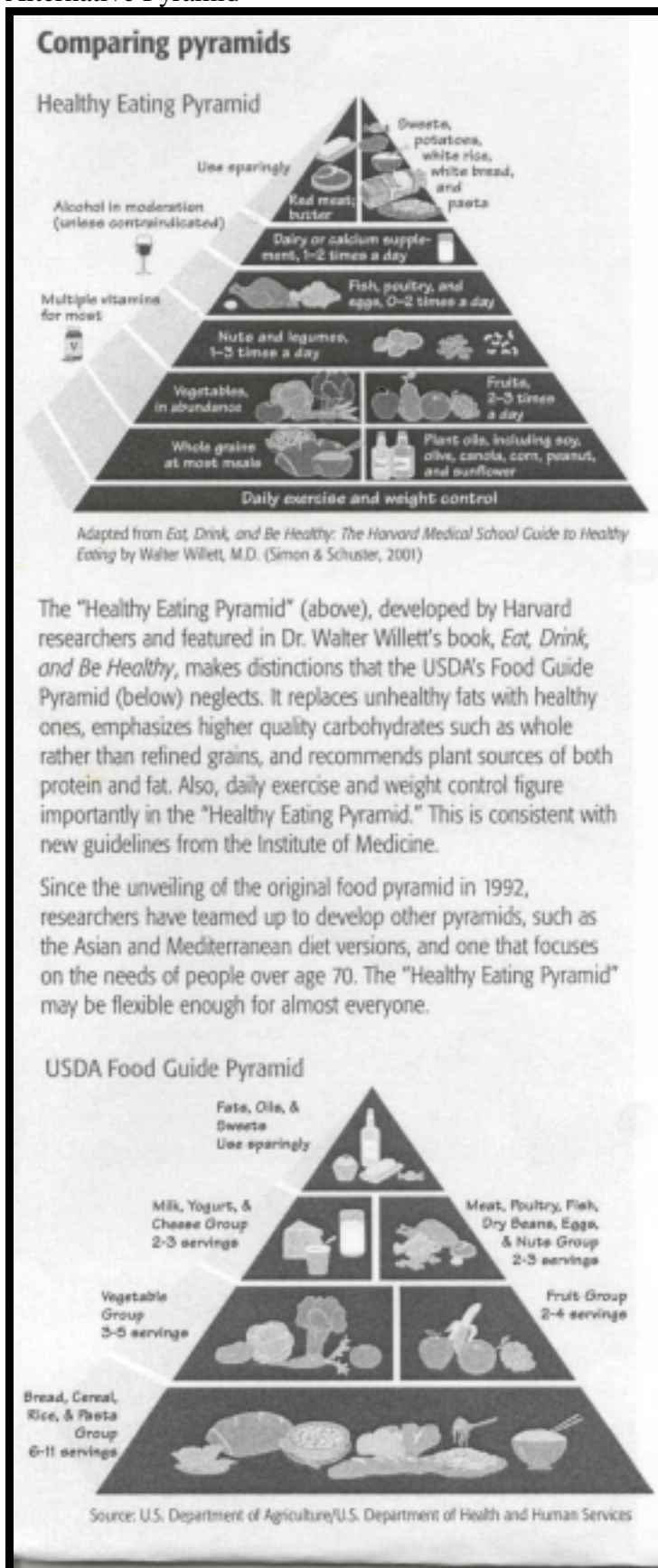


Chart reproduced with permission of Harvard Women's Health Watch

Hall (2001) also comments on two further oversights of the USDA Food Guide Pyramid; there is no mention of preferable meal timing and size in the explanation of how to use the pyramid and there is no explanation as to how servings within each food category should be combined. Therefore, as far as the guide is concerned all the recommended servings for one day could be eaten as a large evening meal before bed, or all servings of meat could be eaten for breakfast followed by all servings of bread for dinner (Hall, 2001). However, the pyramid was never intended as prescriptive for 'everyman', being intended more as a statement of general principles.

Perhaps one of the most important issues is that of serving size. The serving sizes in the pyramid are out of date, and do not realistically reflect what Americans are serving themselves "...Americans are eating in triple-sized servings and mistakenly thinking they are consuming just one serving" (Schieszer, 2001: 122). This suggests that whilst people may be attempting to eat the right food groups, they are simply eating too much food in one sitting. Willet and Stampfer (2002) acknowledge that the Food Guide Pyramid is being reassessed by the USDA's Center for Nutrition Policy and Promotion, but that this effort is not expected to be completed until 2004. A further challenge will be to ensure that the information about nutrition given to the public is based on scientific evidence - Willet and Stampfer (2002) suggest that the food pyramid be rebuilt in a setting that is well insulated from political and economic interests.

Exercise

The need for exercise is a modern phenomenon, whereby people pay money, and / or set aside (or are directed to use) specific parts of their day to accomplish what their grandparents managed in everyday living (through physical rather than sedentary work, walking rather than driving, and everyday activities such as housework and gardening). In contrast to the lives of our forebears, most of us have sedentary jobs and use cars or public transport even to get close to destinations.

The link between physical exercise and weight change is unclear. Fortier, Katzmarzyk and Bouchard (2002) review several studies and note confusion and sometimes-conflicting results, including that, in a large scale, longitudinal Canadian study, neither physical activity / aerobic fitness levels nor changes in these across the study period were predictors of changes in body mass. This perhaps illustrates the complexity of the factors underlying obesity. However, the under-recognised role of aerobic fitness (as opposed to weight reduction) as a result of exercise is well documented in longitudinal studies (see, for example, Johnson et al., 2000). Another, unexpected, benefit from aerobic fitness is that it also reduces brain tissue loss as people age! (Colcombe et al., 2003).

Conversely, while there is an increase in interest in exercise programmes, there is also a considerable body of literature documenting the tendency for many people to drop out of exercise programs. The reasons for this are undoubtedly myriad. Among the principal reasons given are highly rational ones such as lack of time and pressure of work. Kelly and Harrison (2003) identify the latent motives that include the fact that their expectations from the exercise programme, such as rapid or steady weight loss were not being met. This may be due to the expectations having been unrealistic in the first place. They identify a further reason that should be of concern in developing a range of potential interventions: many people simply find exercise boring! Kilpatrick, Bartholomew and Riemer (2003) caution that goal orientation in exercise may impact substantially on exercise behaviour. They caution, however, that further work is needed into factors such as exercise enjoyment.

Hovell et al. (1999) report on a large-scale study of school students and found that total energy expended and activity levels consistently decreased, as children grew older, particularly into teenage years. Further, they found that girls preferred individual rather than competitive team activities, reporting comments related to fearing being laughed at in exercise classes. Undoubtedly, part of this relates to fragile self-esteem and self-consciousness. Samuelson (2000) reports similar findings in terms of decreasing physical activity from younger to older adolescents. Thus, expecting children and adolescents to have inculcated the desirability of regular exercise, when they do not appear to enjoy it – and attempt to do less of it as they grow older, may be an unjustifiable assumption.

Unsurprisingly, Wilcox et al. (1999) reports findings from an extensive study of middle aged and older adults and conclude that the most effective physical activity programmes are those tailored to individual preferences. They further note that the majority of respondents did not prefer exercise classes, but preferred individual exercises with some personalized guidance / tuition. Thus the challenge in developing effective programmes to encourage exercise / aerobic fitness is to develop programmes which are interesting, varied, can be learned quickly, can be performed

individually (with a minimum of equipment) and for which ongoing positive reinforcement messages can be given to encourage persistence with programmes.

Gerrard (2003) notes common misconceptions about firstly, potential dangers from exercising and secondly, that exercise must be vigorous – and take a substantial amount of time. He suggests that regular moderate physical exercise can provide demonstrable benefits and take as little as half an hour per day. Fleck (2003) reports the WHO guidelines recommending an hour per day. The distinction is not insignificant. Pi-Sunyer (2003: 859) stresses that, if recommendations for life-style changes are to be successful, the changes must be “realistic and doable”. Further, he stresses that goals must be reasonable, such as a 10% weight loss, rather than achievement of normal weight, given that “risk factors for chronic disease that are associated with obesity tend to improve with even modest weight loss”. Young (2003) notes that physically active lifestyles enables tolerance of diets with higher fat contents than would be possible without weight gain in sedentary people.

Whilst the benefit of planned exercise is well accepted, there are real problems in actually gaining sustained commitment to long-term regular exercise. The challenge for policy makers is to show how easily a variety of exercise options can be incorporated into existing daily lives with the minimum of equipment and cost. In addition, policy makers and planners must consider longer-term urban design factors such as the provision of safe walkways, cycle ways and park areas.

Family Environment

Southern and Gordon (2003) observe that food preferences and the social context within which children associate foods (i.e. which foods are eaten at which times / occasions) are well established by the time children begin kindergarten. O’Dea (2003) provides an interesting insight in that, while children understand the benefits of healthy eating, and readily acknowledge negative effects of ‘junk food’, they perceive many health foods as poor in taste, appearance and smell. This may indicate some post-rationalization on the part of O’Dea’s study participants, but, more importantly, it also indicates yet another barrier to be overcome in terms of changing attitudes and behaviours.

Huon, Wardle and Szabo (1999: 156) provide an analysis of both Australian and American children’s diets, finding that:

“Some 14 to 18% of all (Australian) children did not consume any vegetables on the day of the study. Furthermore, only 56.1% of 12-year old boys and 65.5 % of 11-year-old girls consumed any fruits”. ... In the US the current daily fruit and vegetable intake among children is typically half of that which is thought to be desirable for good health.”

These authors further note that improvements in knowledge and self-efficacy among children are achievable, but that actual behavioural changes, while often positive, may be of a lower magnitude than desired. This indicates the importance of the wider environment. The importance of the family environment in shaping food preferences is highlighted by Sullivan and Birch (1990), who stress that experience with a food drives preference in children. However, they warn that common tactics such as adding sugar or salt to a particular food to encourage the acceptance / consumption of that specific food type on a routine basis may have unintended effects. They report on an experimental study that indicates that the food is likely to be less accepted without the added flavouring (such as salt or sugar). Campbell et al. (2002) and Southern and Gordon (2003) extend this by stressing the importance of the family environment not only in terms of modeling food related attitudes and behaviours but also in prompting and assisting family members in weight loss.

Dietz and Gortmaker (2001) advocate family meal times / occasions as a means of ensuring healthier diets, a view supported with research data by Ebbeling, Pawlak and Ludwig, 2002. Such simplistic assertions fail to take into account the realities of many family’s lifestyles. There has been an increase over the last few decades in the number of single parent households and the pressures of work, including the many instances where both parents work out of financial necessity, mean that family meals are likely to be the exception rather than the norm in many households. Indeed, the increasing number of adolescents working regular part time jobs, either out of necessity or personal preference means that family influence at meal times may be absent.

Adolescents are also likely to have irregular meal patterns. Samuelson (2000) reports that, in Nordic countries at least, skipping breakfast and lunch (even if the latter is provided free by schools) is common, with snacks and light meals contributing some 25 – 35% of daily energy intakes. He suggests that dieting, common among adolescent girls, possibly impacts on both irregular meal patterns and on types of foods consumed. He also identifies an unexpected (and largely unexplained)

correlation: adolescents who smoke are more likely to skip breakfast and to have unhealthier food habits than non-smokers (Samuelson, 2000). This link warrants further investigation in a wider range of countries.

Parental inactivity strongly predicts child inactivity; similarly, parental exercise patterns strongly influence their children's patterns (Southern and Gordon, 2003). These authors also note the strong correlation between parental obesity and child obesity, although they note that the relative influence of environmental influences versus genetic predispositions are unclear. A further factor to be considered in child activity levels is the location of schools relative to housing. Dietz et al. (2002) observe that locating new schools at the edge, rather than at the centre, of residential areas may increase the number of students who cannot, or chose not to, walk or ride bikes to school. They cite a 40% reduction from 1977 – 1995 in the number of American students walking or biking to schools.

Ebbeling et al. (2002: 473) offer the reminder that urban poor might be especially vulnerable to health problems associated with obesity “because of both poor diets and limited opportunities for physical activity”. Sobal & Stunkard (1989) provide a meta-analysis of studies of the links between socio-economic status and obesity and stress that a strong inverse relationship is consistently evident across studies in developed countries in relation to women, but that the relationship is less clear for men and for children.

However, there are perceptual variances across socio-economic status that warrant further investigation prior to any public health interventions being developed. Jain et al. (2001) highlight unexpected perceptions about young children's obesity among (American) low-income mothers. Children were not perceived as overweight if they were active and had what their mothers saw as a healthy diet. Mothers also believed that inherited tendencies towards excess weight were strong, uncontrollable factors.

Motivation

At one level, people are aware of potential health problems relating to obesity, the lack of adequate exercise and the need to adopt healthier lifestyles. However, in terms of actual behaviour, attitudes and knowledge do not translate into sustained commitment to lifestyle changes. At one extreme, there is a tendency to post-rationalize behaviour rather than to acknowledge a lack of self-control with regard to diet, or lack of commitment to change diet or activity behaviour (Baumeister, 2002). At another extreme, Barlow and Dietz (2002) note a range of problems with individuals, including children and adolescents, who are identified as having, or being at high risk of developing, potentially severe health problems but who do not want to control their weight and resist any attempts to do so.

Part of the problem lies in trying to develop a common solution to a multi-faceted problem that can then be applied to as much of the total population (which is far from homogenous) as possible. However, as the discussions in the previous sections of this paper have shown, there is unlikely to be one single solution. A series of integrated small steps may, in the long term, be more effective than one single major initiative.

Brouwers and Sorrentino (1993) stress the need to acknowledge the range of individual differences and the difficulties of determining both the message characteristics and associated conditions that will lead to greatest attitude and behavioural change. Chew (1994) cautions against sweeping assumptions that may undermine mass communication initiatives such as public service campaigns. Among the more common assumptions she identifies is that better educated segments of society have better nutrition knowledge and therefore less educated segments have to be 'taught' about nutrition (knowledge gap theory). She reviews a number of studies that have consistently shown that, if interest is equalized across segments, the knowledge gap will be narrow. Further, she reports on a specific study which indicated that a single television programme on diet and health was able to achieve both short and long term positive impacts on nutrition knowledge. These results were revalidated in a more recent study (Chew, Palmer and Kim, 1998).

However, knowledge does not necessarily translate into behavioural change. As we have observed previously (Eagle, de Bruin and Bulmer, 2002), underlying the obesity problem is widespread inertia amongst a population that fails to see a problem relating to themselves or their family. There is a lack of personal relevance and widespread apathy when long-term health problems and current changes to diet and lifestyle are linked (Ruiter, Abraham and Kock, 2001). Menon, Block and Ramanathan (2002: 1533) extend this by stressing the need to show personal relevance in messages in order to encourage cognitive efforts that may lead to buy-in to the messages being sent and caution that "one of the greatest challenges in advertising health related information is overcoming the target audiences' self-positivity bias (i.e. the tendency for people to believe that they are invulnerable to disease)". For young adults, the social context of their decisions, including group identification and group norms appears to be a major moderating factor on behavioural intentions (Astrom and Rise, 2001).

Jayanti and Burns (1998) highlight the difficulties in convincing consumers to change their lifestyles, given that unhealthy habits such as poor eating patterns and lack of exercise are firmly entrenched. They caution against the traditional wisdom of

relying on the premise that behaviour is determined by purely rational beliefs and argue for the inclusion of emotional and perceptual factors in a model of health behaviour change. The challenge for all stakeholders grappling with these issues is to identify ways of providing a mix of education, awareness-raising and motivating factors that will be seen as being personally relevant to a wide range of people AND that can be sustained in the long-term.

So what can / should be done and by whom?

One small part of the problem is the constant barrage of often-conflicting material in the media. For example, as previously noted, the food pyramid is criticized; the Atkins diet has been recycled (and reviled in some quarters); the BMI as an effective tool has also been criticized. Consumers have every right to feel confused and skeptical about each successive iteration of ‘reports’. If behavioural change is the desired result of any future activity, then a multi-disciplinary approach to determining what the real major influences on obesity are must be developed. This would involve policy makers, marketers, the media, food stores (of all types), the health and fitness industries, communities and schools.

The media have a responsibility to ensure that their discussions of health-related issues are not, as it is often suggested, misleading and misinforming their customers (Giles, 2003). The value of the media is in “their ability to influence what the public thinks about as opposed to what to think” (Wilde, 1993: 990). Marketers have the responsibility to ensure that all marketing activity meets the highest ethical standards in terms of disclosure of nutritional information. In addition, given that marketing activities are the focus of much of the ‘demonizing’ of fast food marketers in particular, they must also be seen to be responding to legitimate concerns and cooperate with policy makers in developing strategies for communicating with all stakeholders.

Schools

In New Zealand, at least, the primary school health curriculum incorporates elements of healthy eating and exercise into class activities for every year and level. Children are also taught about the media and the role of advertising. Many schools are proactive in setting healthy eating policies that are reflected in the choices of food available from school lunch providers and in tuck-shops. Anecdotal evidence suggests that many schools ban chocolate and chocolate biscuits as well as pre-packaged snacks and chippies in lunch boxes. Some even go as far as banning drinks from home – they insist on tap water being drunk instead.

School-based interventions have shown positive changes in knowledge and attitudes and self-reported behaviour, but often minimal actual behaviour change has been accomplished (see, for example, Sahota et al. 2001). Southern and Gordon (2003) also observe the contradiction between knowledge and behaviours, finding that although children as young as those in kindergartens were able to demonstrate an understanding of the relationship between diet, body fat and health, their knowledge did not translate into actual food preferences.

This view is confirmed by parents who participated in a 2001 survey (de Bruin and Eagle, 2002) regarding their perceptions of the influence of advertising on their children, for example one parent made the following observation regarding their 8 year old daughter: “She is informed, but not yet good at wise choices”.

Of even greater concern are the mixed messages sent to children and the community at large when schools support and adopt “junk food” fundraisers. Many schools are careful about school lunches but exhort families to buy chocolate, pies, pizzas and cookies throughout the year in order to supplement government funding grants. It is

rare to find schools selling sacks of apples and mandarins. Whilst schools do their best in the formal education process children may be learning to value and consume the “eat less foods” through informal school activities.

Interventions: Public Health / Public Service Campaigns

The need for interventions is unlikely to be in dispute. The nature of interventions that are likely to be effective requires careful examination. The evidence is mixed regarding the success or otherwise of educational campaigns aimed at changing diet or lifestyle. While undoubtedly some of the variance is due to differing objectives and measurement instruments, it is interesting to note that success is possible, such as in changing dietary composition via some, but not all US educational campaigns (Patterson, Kristal and White, 1996).

Proponents of regulation rather than education claim that “only a small group of the population would be affected by education. Lack of even the most basic nutritional knowledge means a number of parents are, in effect, incompetent and beyond education” (Toomath, cited in Redwood, 2003: 16). Buchholz (2003) provides an interesting counter-perspective, asserting that:

“In fact college educated, not poorly educated people account for the most rapid growth in BMI scores between the 1970s and the 1990s – though poorly educated people still have a higher overall incidence of obesity”.

As we have already stressed, the link between knowledge, attitudes and manifest behaviour is often weak. Wilde (1993) suggests that this may be partially due to measurement issues, but also to social pressure factors such as perceptions of the norms of others in relationship to the behaviour or behavioural change advocated via activities such as mass media public service programmes.

Bagozzi and Moore (1994: 68) review theories of how public service advertisements are perceived by individuals, particularly the relative effectiveness of emotional advertising appeals. They warn that when appeals “create strong negative emotions such as fear, anger and distress, these feelings can become more intense as the ad is repeated, thus leading to early wear-out and possible negative attitudes towards the ad”.

LaTour, Snipes and Bliss (1996) suggest that high-anxiety messages are more effective than messages producing low levels of anxiety in health promotion activity. This is qualified somewhat by Keller (1999) who offers advice regarding the specific use of fear appeals. Keller suggests that high fear arousal and the presentation of consequences of not following recommendations, followed by the recommendations in detail is most effective in terms of persuasion and reinforcement for those already following the recommendations. However, low fear arousal and the presentation of the specific recommendations, followed by the portrayal of consequences is more effective for ‘persuading the unconverted’.

We have discussed the relative merits of positive and negative framing in media communication in detail in earlier reports (Eagle et al, 2002). We now summarise

into a checklist, a useful review of factors (Wilde, 1993: 986) that should be considered in any mass media campaign:

Source factors:

- Source credibility, expertise and trustworthiness
- Perceived similarity in characteristics, needs and goals between source and receiver

Message content:

- Psychological distance between the source and recipient (finding common views / agreement on issues)
- Latitude of acceptability (how much change is advocated)
- Agreement or otherwise with the message
- Primary effects (arguments for an issue are more effective when presented before any counter-arguments are dealt with)
- Paternalistic / lecturing approaches should be avoided
- Concrete / specific actions should be advocated rather than general slogans
- Targeted behaviour should be modeled (social learning theory)
- Novel stimuli should be used to catch attention

Media

- Messages are more likely to be effective close to the time in which the behaviour advocated can actually be undertaken (principle of immediacy).
- The range of population subgroups should be considered, together with their media usage habits
- Opinion leaders, particularly those able to model the desired behaviours will be important

There are a number of campaigns directed at children that take these factors into account. Anchorville advertising, Healthy Breakfasts, Eggs, Red Meat and 5+a day campaigns are appealing and credible. However, consumers are increasingly bombarded with confusing scientific terminology that obscures rather than illuminates the healthy food decision-making process. Responsible advertisers need to make sure that they provide balanced information – one high fat chocolate spread is currently being promoted as being superior due to its low glycaemic index. The implication is that it is a healthy choice based on this attribute alone. The fact that it is high in sugar and fat (total calories) is likely to be missed by the average TV viewer. However, the glycaemic index is a “measurement of the effect of food on the blood sugar level. The index measures glycaemic response to carbohydrates. Different foods have different effects on the blood sugar level, therefore they have different glycaemic indices” (Duncan and Perera, 1994: 12). As such, the glycaemic index cannot be used as a single measure of nutrition value.

Unintended Effects

Policy makers and the marketing / communications industry alike must take cognizance of past experiences with efforts to elicit behavioural change. Ringold (2002) reviews a number of studies into the effectiveness of public health interventions and intervention programmes. She notes that some have not achieved the objectives set for them but, more seriously, some have had the opposite effect from that intended. There are a range of psychological theories that are relevant here. Ringold suggests that psychological reactance theory best explains this 'boomerang effect' which has been found in areas such as increased smoking among teenagers with high knowledge of warning labels on cigarette packets, i.e. the warnings and associated activity are seen as intruding into personal rights and freedom of choice. These boomerang effects have also been found in drug abuse programmes and in alcohol programmes.

Conclusions / Recommendations

There is incontrovertible evidence that the incidence of obesity is increasing in many developed countries. Obesity has become a serious concern to parents, health professionals and policy makers, particularly in relation to child health and subsequent adult life quality. In the public conversation surrounding this topic, the food industry and, more particularly, the marketing activities that they employ, have attracted attention as the biggest culprit driving the so-called obesity epidemic. Whilst US based multinationals such as McDonald's are vilified, the marketing and communication activities of many in the food industry have been called into question. Although they are easy targets to blame, there is little evidence to suggest that restrictions / bans on food advertising, 'sin taxes' or other punitive measures would significantly impact on the obesity problem. We suggest that much wider issues are impacting on the incidence of childhood obesity.

Evidence proving the specific causes of obesity is non-existent. However, we can be relatively certain that there is no single cause of obesity and no simple solution. The range of factors that are popularly supposed to impact on obesity, such as television viewing, consumption of highly fatty and sugary foods, reductions in daily exercise and activity patterns are poorly understood, and the interactions between these factors have been superficially investigated at best. Moreover, the reports of such studies are often poorly reported and misrepresented in the public arena such as the recent false claim that fast food is addictive. This, coupled with the other confusing sources of information about nutrition - where terms such as 'calories' and 'energy' are referred to as opposites rather than synonyms – has led to climate of suspicion and even conspiracy theories regarding the marketing activities of the food industry.

The question of whether television viewing is a cause or effect, with respect to obesity, is not as clear-cut as critics might suggest. Television viewing is correlated with obesity only to the extent that viewing may replace more active pastimes. Sales statistics and other empirical data have demonstrated that most television advertising for foods has an influence only on individual brand preferences rather than total category sales levels. Furthermore, average viewing levels among children are not increasing as claimed and have been static, if not in slight decline, for several years. Those children whose families allow excessive television viewing are likely to be exposed to more programmes, more food ads and, concomitantly, spend less time on physical activities. Thus the role of families and caregivers in regulating exercise and sedentary activities cannot be overemphasised. Parental / family influences on diet and exercise are stronger than policy makers appear to recognize.

Levels of physical activity required to conduct everyday life have fallen as fewer people walk to school / work / shops. Amounts of physical activity have also changed since the advent of household labour-saving devices and electronic forms of entertainment. Exercise is now perceived as another chore or time-consuming commitment for many adults and children. Long-term enthusiasm for exercise appears to be difficult to maintain, not the least because many regard it as boring. Moreover, while there is recognition that exercise is desirable as part of a healthy lifestyle, the type and amount of exercise that is beneficial is subject to considerable debate. Finding ways of reincorporating more vigorous physical activity within the framework of everyday activity is part of the solution to the obesity problem.

We propose that a range of factors be considered in designing strategies to combat obesity – or at least to stop its continued increase. Multiple initiatives and incremental steps are needed, with cooperation between parents, educators, public health professionals, sports and recreation organisations and the food industry. Clearly, a total focus on dieting and weight loss is not necessarily helpful. A key driver in personal weight reduction appears to be recognition of both rational and emotional factors that influence behaviour. Marketing communications can be used effectively to ensure that messages aimed at generating long-term behavioural change are seen as having personal relevance to the individuals targeted. Public service messages may be used to good effect with regard to eating and exercise habits.

Whilst we do not believe that there is any reason to blame the obesity phenomenon on the food industry, they need to be part of the solution. Product development of tasty low calorie foods, offering moderate serving sizes and improved nutrition information may play a small part in helping families make healthy food choices. Marketing communications that reinforce the message of moderation and variety in the diet can play a role in supporting the other education programs through school curricula and public health promotions.

Longer term initiatives in town planning and environmental design may be part of the solution. Safer walking routes, pedestrian access to ‘car only’ shopping precincts and other such measures may help reintroduce exercise into daily life.

To summarise, those who seek a revelation or blueprint to a guaranteed, successful solution to the current obesity-related problem, will be disappointed. There is no single, simple solution. The problem is complex and multi-factorial, and poorly understood. What is needed is agreement on the need for all stakeholders to work together to develop a range of interventions that will, incrementally, achieve both attitudinal and behavioural change over time. This should be coupled with an integrated research programme that will address the multitude of gaps in knowledge and understanding of the impact of a range of factors potentially impacting on diet, lifestyle and overall health issues.

Directions for Future Research

As we have noted, the complexities of the factors that cause obesity are acknowledged in many studies, as is the need for more research in a wide range of areas. Investigation of many of these issues requires specialist investigations in areas well beyond the scope of this paper or the expertise of this research team. There is a need for the identification of key areas for research and, given the perennial problems of adequately resourcing all the studies that proponents would like to carry out, a coordinated approach and adequate funding. For example, the range of unresearched or partially researched areas put forward as possible factors that have been identified in the broad communications related literature reviewed in this paper, include topics as diverse as:

- the food pyramid
- BMI index – especially its applicability across ethnic boundaries
- systematic evaluation of success factors for interventions attempted to date such as the Health at Any Size programme
- influence of early adiposity rebound – increase in body mass index around 6 years of age
- parental over-nutrition
- specific programmes such as eating 100 fewer calories per day.
- factors impacting on sustained exercise involvement
- influence of all media on attitudes to diet, exercise and healthy lifestyles.

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Appendix A: Is Fast Food Addictive? An Example of Selective and Distorted Use of Research to the Point of Junk Science

A number of media articles have appeared in recent months with somewhat sensational headlines, a sample of which are shown below:

- *“Fast Food as Addictive as Heroin” (BBC News, 2003)*
- *“Could Fast Food Be Addictive?” (TV One News, 2003)*
- *“Is Fast Food Addictive?” (Daily News, 2003)*
- *“Junk Food May be Addictive – Research” (Food Ingredients, 2003)*

These articles leveraged off the publicity given to the 2002 lawsuit filed against fast-food chains (see Buchholz, 2003, as previously cited) and support for the complainants from organizations such as the Physicians Committee for Responsible Medicine (Limbaugh, 2002).

The evidence behind the claim of possible addictive propensities of fast food related to reviews of several American laboratory studies (most assessing the impact of different diets on laboratory rats), in which links between foods, such as sugar, and brain biochemistry, particularly physiological changes linked to feelings of pleasure and reward, were found.

These findings were then extrapolated to suggest that the human brain may react to sugar and fat in a similar way to addictive drugs, given the ‘withdrawal’ symptoms shown by the rats studied when the foods being tested were withheld.

Few media covered the responses and rebuttals of these claims. Those that did provided somewhat less than objective evaluations, linking the stance of the fast food industry to the tobacco industry’s long history of denials of harm and deception by observing that:

“So far the science claiming that fast food can be addictive is questionable, relying for its conclusions on experiments with rats. But evidence about the true ingredients of fast food and its effects is dripping out in a direct echo of the tobacco litigation process. All that needs to emerge now is proof that the industry suppressed reports showing links between cancer and chips and the comparison will be complete” (English, 2003).

What has been reported in several specialised medical media and on health related websites, but not in the mass media, is that the reported studies were not revealing anything new – the links between foods and biochemical reactions are well known.

In addition, both the over-simplification of the findings and the claimed parallel with foods and humans appears to have taken the original researchers by surprise, as the following extracts show:

Obesity Policy (2003:1) report the reaction of Rockefeller University (New York) to one of the studies authored by Dr Sarah Leibowitz:

Her research “has nothing to do with addiction her research does not show that dietary fat is addictive. There’s been a misunderstanding somewhere....”

Similarly, the University of Sussex is reported (BUPA, 2003) as stating, in regard to reports on a study by Dr Martin Yeomans:

“The impression we get is that the newspapers grossly simplified the research. He’s presenting some aspects of his research ... but he’s not announcing that fatty foods are addictive and isn’t announcing anything new”.

Dr Yeomans released a statement regarding the misinterpretation of reports of his findings. This statement is reproduced in its entirety as Appendix B.

Most significantly, Obesity, Fitness & Wellness Week (2003) report that the Physicians Committee for Responsible Medicine have been officially censured by the American Medical Association for their claims that some foods are physically addictive.

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**Appendix B: Statement from Dr Martin Yeomans, University of Sussex,
regarding reports of research findings of 'Food Addiction' August 2003**

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Opioid peptides and “addiction” to food

Several recent reports in the media have suggested that high-fat, sweet foods are “addictive”. This conclusion seems to have been based on two sets of data, firstly previous work conducted by my group at Sussex and others on the role of opioids and eating in humans and secondly data from studies in animals.

Our own research has explored, over some 10 years, the role of opioid peptides in control of eating, and has concluded that opioids are an important neurobiological substrate of the pleasurable aspects of eating. That is, opioids play some role in the way the brain takes sensory information arising from food cues and evaluates whether these sensations are liked or disliked. The “addiction” argument takes this finding and extrapolates it to suggest that the pleasure experienced while eating maybe so strongly linked with opioid release that consumers become “addicted” to those foods which are associated with the greatest opioid effects. This simplistic view is not supported by our work, or by the broader human scientific literature. Although the definition of addiction is complex, an essential element in the clinical definition of addiction is that an addicted individual will experience strong withdrawal symptoms when drug consumption ceases. To make a case for opioid-mediate food addiction as a general explanation for the current obesity epidemic, we would expect to see numerous reports of opiate-like withdrawal symptoms in obese people. For example, these should occur when they attempt to diet. We are unaware of any such reports. A strong test of the opioid-food addiction model would be to examine whether administration of drugs which block opioid receptors elicit withdrawal symptoms. All opiate drug addicts show these effects. None of the extensive literature on the effects of these drugs on eating in normal consumers has reported any opiate withdrawal-like effects. These drugs have also been tested as potential agents for treatment of obesity, and none of the obese participants in any of those studies exhibited opiate-like withdrawal symptoms. Thus the scientific case that opioid release during eating leads to food addiction for normal consumers does not stand up to scientific scrutiny. In short, there is no scientific evidence that humans are addicted to high-fat sweet foods.

The confusion in the recent press has, I believe, stemmed from a simplistic interpretation of opioid function which equates opioid release with heroin use. However, the level of pleasure experienced when eating is mild enjoyment, in contrast to the intense high produced by opiate drugs. Indeed, opioid-related pleasure is not

limited to eating, but is also associated with many, mild pleasurable experiences such as exercise, listening to music or even taking a sauna.

The recent article in the Sunday Telegraph also suggested that food companies were aware of the role of opioids in food intake control, and implied that they had used this information to develop “addictive” foods. On the first point, the human opioid literature dates back some twenty years, and it would be surprising if scientists in food companies were not aware of these data. However, I know of no situation where companies have sought to exploit these findings to generate “addictive” foods. Indeed, our evaluation of the literature would suggest that such products would be impossible to produce. Food companies, of course, work hard to make sure that products are tasty, otherwise consumers would not buy them. However, the focus of research by food companies is to develop foods which help consumers develop and sustain a healthy life-style.

The current obesity crisis makes new research into the causes of obesity a high priority for government and society world-wide. Attributing this increase to food addiction could undermine more serious attempts to identify what it is in our environment that has changed in the last 20 years to result in the catastrophic increase in obesity.

Martin Yeomans