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Childhood Obesity Prevention – What will it take to change our food environments and where do we start?

What's driving the obesity pandemic?
The prevalence of obesity in adults and children has increased markedly in the last 30 years with nearly one in three children and two in three adults in New Zealand being obese or overweight. This trend is not something that has occurred only in New Zealand but is part of a global phenomenon that is affecting developed and developing countries. Worldwide, from 1980 to 2013 there has been a 47% increase in childhood obesity (WHO, 2015a).
It's commonly thought that the obesity pandemic is simply because "*we are eating more than we should and exercising less than we should*" with proposed solutions typically focussing on personal choices, willpower and individuals' behaviours (often accompanied by a measure of victim-blaming).

However, international literature and commentary from experts provides a strikingly different perspective. There is an increasingly supported view that the main drivers of the obesity pandemic relate to changes in the food industry and the food environment. That is, changes to the composition and type of foods and beverages produced and marketed have been the main drivers of obesity rather than any decline in physical activity or global outbreak of moral weakness in controlling our diets. Obesity is increasingly being referred to as "*a normal response, by normal people, to an abnormal environment.*"

The "flipping point" hypothesis
Swinburn *et al.* (2011) provide useful insights into how the obesity pandemic is being driven by increased energy intake related to changes in food production and the food environment.

In the early 20th century, due to developments in technology (for example, the automobile and other labour saving devices) and work becoming more sedentary, energy expenditure reduced. However, people did not start to put on excess weight until the 1970s. Instead, it appears that in the early 20th century, on average, people moderated their energy intake as a natural adaptive response to their decreasing physical activity and energy needs.

The energy balance "*flipping point*" occurred with the escalation in mass food production. Cheaper, energy-dense foods became increasingly available, and 'pushed up' energy consumption as people started to consume energy in excess of their needs. While increased sedentariness remains part of the equation, the key change that triggered and drives the energy imbalance and so the increase in the prevalence of obesity was a change in food supply that made cheap calories widely-available.

There is substantial support for these ideas among leading international epidemiologists and along with the shift in emphasis to the energy intake side of the equation, there is a shift to support intervention that focuses on the food environment rather than primarily trying to influence individuals' eating and exercising habits.

Luke and Cooper (2013) provide a comprehensive review of the epidemiological evidence and conclude that:

"Until recently … discourse about the underlying aetiology of this quintessential modern epidemic has been confined primarily to commentaries on bad dietary habits and low levels of physical activity, suggesting a failure both to restrict energy intake and to maintain high levels of energy expenditure. On closer scrutiny, the empirical data have been insufficient to support either element of the aetiological pathway characterised in those terms. … From both perspectives - physiological theory as well as observational data and trials….energy expenditure in activity appears to be playing no role in either causing or moderating the obesity epidemic." (Luke and Cooper, 2013, p1831).

They agree with the alternative explanation articulated by Swinburn *et al.* (2011) that:

"Changes in the global food system, including reductions in the time-cost of food, seem to be the major drivers of the rise of the global obesity epidemic during the past 3 – 4 decades (p804)."

Luke and Cooper (2013) go on to implicate the rise in consumption of foods that bypass our satiety mechanisms (such as sugar sweetened beverages (SSBs) and other high sugar content foods) and the increase in consumption of energy dense foods – an increase driven by the food industry through '*inducements to eat high calorie items.'* They conclude that to address the obesity epidemic the focus should be on the food environment and that this focus should be '*decoupled'* from the physical activity messages. They state that there is a need to "*focus with great urgency and vigour on the challenge of altering the modern food environment.*"

In similarly strong language Swinburn (2013) describes the trans-national, ultra-processed food and beverage corporations as *Big Food* and suggests *Big Food* is responsible for '*the push effect of food supply on obesity',* which is '*one of the modern day industrial epidemics driven by corporate disease vectors promoting unhealthy commodities'*. Swinburn (2013) further suggests that the underlying causes of obesity are best described in terms of '*structural and corporate determinants'* rather than social determinants.

The problem, therefore, is the ready availability, relative affordability, and the aggressive marketing of highly palatable, energy-dense foods that result in the poorly regulated consumption of calories in excess of physiological needs. Theoretically, this could be offset by increasing energy expenditure through increased physical activity. However, it must be noted that due to the arrival of *Big Food* the energy density, availability, and consumption of food is unprecedented in human history and to achieve a new energy balance by increasing physical activity would therefore require a level of physical activity that is unprecedented in human history. A focus on increasing physical activity to balance the population's modern-day energy equation is therefore unrealistic, treating the symptom not the cause, and would require extraordinary changes in individuals' behaviours. That is, to provide a caricature of the issue, the extreme levels of exercise required to offset energy intake and prevent childhood obesity would require children to become highly motivated fitness fanatics from a pre-school age. Or maybe another way of saying it is that for the obesity pandemic to be reversed one primary focus should be on the need for *Big Food* to shape up and shed some kilojoules.

Doing exercise and not being sedentary provides many health benefits and increases longevity and so should continue to be actively encouraged and enabled by public health initiatives. However, physical activity is not the main driver or solution to the obesity pandemic. Although obesity is a complex issue with multiple contributors and exacerbating factors, it seems most likely that the *sine qua non* to reduce the prevalence of obesity is a focus on the food and beverage environment – that is, the manufactured food and

beverages that find their way onto our televisions and billboards and into our supermarkets, dairies, food outlets, cafeterias, pantries and children's school lunch boxes. If this is the case, reversing the trends in obesity will require more than a public health project or programme but a scale and breadth of action that looks more like a social movement.

Sugar Sweetened Beverages – a good starting point

Amid all the important factors that contribute to childhood obesity a very good starting point is promoting water and plain milk as the best drinks for children – and reducing the consumption of sugary drinks, especially sugar sweetened beverages – also known as SSBs.

SSBs include those drinks with added sugar such as soft drinks, fizzy drinks, sports drinks, energy drinks, fruit drinks, powdered drinks, cordials, flavoured milks, flavoured waters and iced teas/coffees. Some sugary drinks such as fruit juices may have high levels of sugar even if no sugar has been added and so have the same effects as SSBs. Because SSBs don't make you feel full but contain a lot of sugar it is one way calories can be easily and unwittingly consumed in excess of what the body needs. This makes SSBs one of the prime candidates contributing to the "*flipping point*" phenomenon and *the "push effect of food supply on obesity."* SSBs certainly fit the description of being highly palatable, energy dense and heavily marketed.

There are some compelling reasons why reducing consumption of sugary drinks and SSBs is a good starting point for public health action:

- SSBs are the leading source of added sugar in children's diets (Ministry of Health, 2003)
- Regular consumption of SSBs has escalated and SSBs are one of the most commonly purchased supermarket items
- Having one sugary drink each day may increase a child's risk of obesity by 60% (Ludwig *et al*., 2001)
- There is good evidence that reducing SSB consumption is very likely to reduce the prevalence of obesity (Hu, 2013)
- SSBs are high in sugar and energy but most provide few or no beneficial nutrients.
- SSBs cause dental decay and tooth erosion.

While some sugars occur as an intrinsic part of foods such as in carrots or milk, the World Health Organisation (WHO, 2015b) recommends that consumption of free sugars (such as in SSBs or added by consumers and manufacturers) should ideally amount to no more than about three teaspoons per day for children – and no more than about six teaspoons per day for adults. In comparison, a single standard-sized serving of a SSB (eg, 350mL can) may contain about 10 teaspoons of free sugar – that is more than is recommended for a child, or even an adult. Larger sized sugary drinks, such as a 600mL bottle, are often seen as single servings and may contain as many as 16 teaspoons of sugar.

So what can we do?

If a social movement is required to reverse the trends in SSB consumption, then it requires the effort of all of society from consumers and parents to schools and supermarkets. I think it begins with recognising that children have a right to not be exposed to advertising and promotion of high sugar products and to not be immersed in an environment where frequent and regular SSB consumption is normalised. What surrounds us shapes us – we need to change the food environments in our homes, schools, supermarkets and shops. We all have a part to play in this: parents, schools, pre-schools, the food industry, food producers, food retailers, supermarkets, sports organisations, media and advertising agencies. However, the health sector has a key role to play in leading, enabling and advocating for this change.

Because SSBs are the leading source of sugar in children's diets, reducing SSB consumption is a good starting point. Inevitably though, this movement for sugar free environments and to reverse the sugar pandemic will need to be wider and extend to all the other heavily marketed products with hidden or added sugars, which includes, for example, many brands of muesli bars and breakfast cereals.

In summary, reversing this sugar-obesity pandemic will need concerted, collective and coordinated action, nothing short of a social movement but one that is absolutely necessary for health and for New Zealand to be able to afford the future costs of providing healthcare.

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