Toi Te Ora
Public Health Service
BAY OF PLENTY DISTRICT HEALTH BOARD
Serving Bay of Plenty and Lakes Districts

Medical Officer of Health Report
June 2016

Childhood obesity prevention: Creating change to 'shift the curve'

The increased prevalence of overweight and obesity in children is one of the most significant challenges for the health of our population and likely to be one of the most important preventable pressures on the cost of future health service provision.

This year, 2016, is the year that obesity is anticipated to take over from tobacco use as the leading cause of preventable health loss in New Zealand. Apart from health loss for individuals who experience the adverse effects and long-term health conditions related to obesity, at a population level the burden of disease related to the associated increase in long-term conditions will be considerable. Concerningly, the ability to fund and provide health services to the same standard as now is likely to come under increasing pressure. Just how much pressure is unknown as the national analysis of future demand on health care services and of the projected future economic costs of obesity have not been done.

There is no doubt that reducing the prevalence of obesity is a complex problem and solutions will require a comprehensive range of bold strategies supported by strong leadership. One key role for public health is to help ensure that strategies and interventions are evidence-based and informed by good data. In particular, the ability to analyse and describe the issue with good quality data is fundamental to making progress and essential to the public health approach. Good data can not only help us understand the problem but also give insight into the nature of possible solutions.

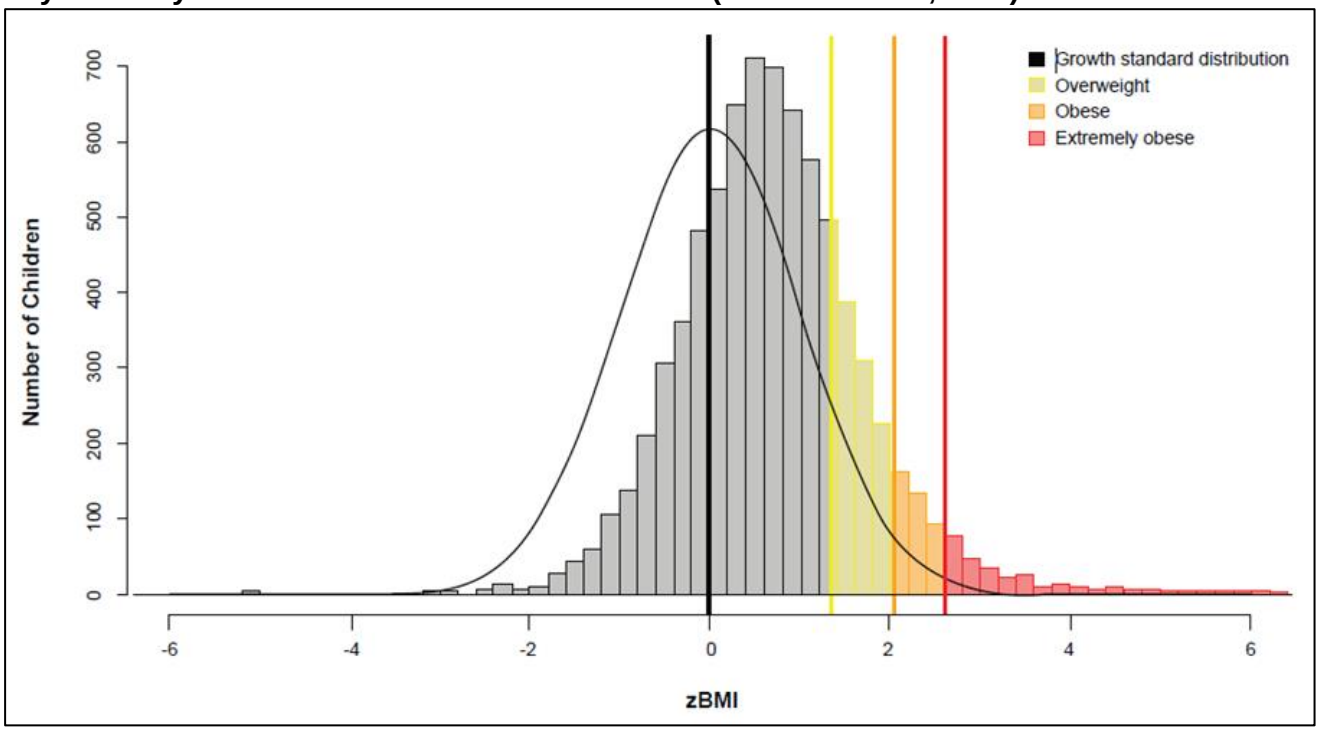
Until recently, there has been very limited data on childhood overweight and obesity at the District Health Board (DHB) level. National health surveys provided reasonable estimates of national prevalence but survey sample sizes for any one DHB were too small to provide reliable, accurate local estimates of prevalence of overweight and obesity in children.

However, Toi Te Ora – Public Health Service (Toi Te Ora) has now analysed the data from the B4 School Check (B4SC) programme in the Lakes DHB and Bay of Plenty DHB areas (Scarfe, 2016). This report, which can be downloaded from Toi Te Ora's website (www.ttophs.govt.nz), provides detailed analysis of bodyweight of four-year-old children in the Bay of Plenty DHB and Lakes DHB areas including by ethnicity, socio-economic deprivation and local authority area. This means that, now for the first time, there is detailed prevalence data that describes the current situation and so can be used to inform initiatives to help reduce the prevalence of childhood obesity, and, in the longer term, track progress with such initiatives.
One of the summary graphs of this report shows BMI (Body Mass Index) distribution in four-year-old children (See Figure 1 below) and provides informative insights into the problem and what type of interventions and initiatives will be necessary to reduce the risk for children.

The shaded columns in Figure 1 show the distribution of bodyweight of four-year-olds in the Bay of Plenty and Lakes districts. This uses zBMI score which is a useful method to standardise measurements of height and weight in growing children. The zBMI score expresses BMI in terms of standard deviation from the mean of the World Health Organisation (WHO) Child Growth Standard, and so any score above zero indicates that the child has a BMI greater than this WHO Child Growth Standard mean, while a score below zero is a BMI less than this mean. Of note, the curved black line on this graph is the expected distribution (using the WHO Child Growth Standard) for a healthy population of

children. The yellow, orange and red shaded columns are the number of children in the Bay of Plenty and Lakes districts that are overweight, obese or extremely obese, respectively.

Figure 1. Distribution of zBMI scores for children seen in the B4SC programme in the Bay of Plenty and Lakes districts in 2013 and 2014 (Source: Scarfe, 2016).



Notable observations from this graph are:

- The observed increased prevalence of obesity reflects a population-wide phenomenon
- The entire curve (or distribution of zBMI) as shown by the shaded columns is shifted to the right (higher BMI) compared to what is expected for a healthy population (shown by the black line curve)
- This shift occurs with little change in the shape of the curve
- With this shift to the right there are high numbers of children who are identified as overweight, obese or extremely obese.
- Apart from those that are overweight, obese or extremely obese, there is a large proportion of children that have a BMI that is above the average expected in a healthy population.

See Table 1 which gives more detail in terms of the proportion of children in each of these groups.

Table 1. Estimated percentage of four-year-old children in each BMI category and compared to a healthy population.

BMI category	WHO Child Growth Standard (that is, a healthy population)	Lakes DHB	Bay of Plenty DHB
Below mean BMI	50%	23.7 %	23.1 %
Above mean BMI (but not overweight, obese or extremely obese)	41%	50.9%	55.5 %
Overweight	7.0%	15.2%	13.8%
Obese	1.6%	5.9%	4.0%
Extremely obese	0.4%	4.4%	3.5%

From these findings the following deductions and conclusions can be made:

- Already by the age of four, there is an increase in BMI which is a population-wide phenomenon.
- Consequently, there is a large proportion of children that are overweight, obese and extremely obese and so at variable degrees of risk of continuing to have a high BMI.
- These children are at risk of experiencing long-term health conditions in childhood and through into their adult lives.
- It is also likely that many children who are not yet overweight are on a trajectory to becoming overweight or obese in later childhood or adulthood.
- The fact that the entire curve is shifted to the right without any real change in shape is good evidence that the problem is not about a small group of children that has become overweight or obese through poor lifestyle choices or poor parenting.
- Rather, the observation that the whole curve is shifted to the right supports the view that the causes of overweight and obesity affect the whole population and are affecting children before they are four years old, and likely to continue to affect them through their childhood.
- This strongly suggests that the cause, or rather causes, are environmental – in the broad sense of the word. That is, the causes relate to the physical, social and economic environment children experience. There is a convincing body of evidence that indicates that one of the most important contributors to the risk of obesity is the food environment that children experience. This includes, for example, the types of food and drink products that are being produced and how they are marketed.
- These data provide insight into what is needed in terms of interventions. Even if there were effective interventions to treat individual children who are obese, identifying and referring those identified as obese would do little to change the risk for the whole population and nothing to prevent the risk of overweight and obesity across the population. That is, very few children will benefit from individual interventions. The problem will persist and there would be a continuous need to treat individuals in the most at-risk group as long as the environmental causes remain the same. Therefore with an approach that focusses on identifying and treating individuals, little will be achieved to reduce the prevalence of childhood obesity.

In summary, the most important conclusion from these data is that, with respect to overweight and obesity in children, the problem is not children who are overweight and obese, the problem is that as a society we have created an environment where all children, even by the young age of four, have been put at increased risk of being overweight or obese.

In other words, as a society we are failing to give children the best potential for a healthy life. The approach to addressing this situation cannot therefore simply focus on treatment of individuals or even target an at-risk group such as children under four-years-old through the provision of a health service. To turn the obesity epidemic around in all age groups, the strategies for intervention must broaden the focus from individuals and groups at risk to changing the environment that puts them at risk. Effective change is needed to shift the curve to the left so that it more closely matches a healthy population. Creating this change so that children can enjoy healthy lives free from the risk of obesity must include approaches such as:

- Sugary drink-free policies and healthy food initiatives led by schools, early childhood education centres, councils and workplaces
- Food product reformulation that progressively reduces hidden sugar content
- Policies that increase local availability and affordability of fresh and whole foods
- Council planning approaches that reduce children's exposure to unhealthy food environments (such as the high density of fast food outlets and dairies that often seem to surround schools)
- Regulation of the marketing of unhealthy food and drink products so that children can experience childhood free from the commercial interests of the food and beverage industry
- A focus on investment in healthy pregnancies, the first nutritional environment that children experience.

There is no proven recipe for turning around this epidemic but there is no doubt that it will require leadership from the health sector and the need for leaders in health to call for, enable and support actions well beyond the health sector that allow children to live healthier lives free from the risk of obesity. Not only will this help improve the health of our communities, but such interventions will be essential to manage and contain the future costs of providing high quality health services.

References

Scarfe, J. (2016). *Technical Report: B4 School Check Data – Body Size.* Toi Te Ora – Public Health Service (http://www.ttophs.govt.nz/vdb/document/1632).

Report co-written by Dr Neil de Wet and James Scarfe.

Dr Neil de Wet
Medical Officer of Health