



## HEALTHY WEIGHT FACT SHEET 2

# Causes and consequences of overweight and obesity

Over half of South Australian adults and a quarter of South Australian children are overweight<sup>a</sup> or obese<sup>b</sup>, with indications that these rates are continuing to rise. The causes of the obesity epidemic are very complex and create major public health challenges. This Fact Sheet outlines the myriad of forces that are driving this epidemic within the Australian population, and summarises the health, social and economic burden of rising overweight and obesity rates.

### What is driving Australia's obesity epidemic?

Overweight and obesity is a result of positive energy balance over an extended period of time, where energy intake exceeds energy expenditure.<sup>1</sup> While there are specific genetic disorders that give rise to overweight and obesity, recent epidemiological trends indicate that the rise in overweight and obesity is a result of environmental and behavioural changes.<sup>1</sup> Overweight and obesity in the Australian population is not a simple matter of overindulgence or lack of physical activity. There are numerous environmental and societal factors that combine to generate an 'obesogenic'<sup>c</sup> environment.

### The modern world – how has it changed what we eat?

In modern society, energy dense food is abundant while the energy demands of individuals are considerably reduced. The expansion of the food production industry has brought about the consumption of a diet that is high in energy, protein and fat and low in complex carbohydrate.<sup>1</sup> The change in family structure and

longer working hours have resulted in an increased demand for convenience foods that are generally of poorer nutritional quality than foods prepared in the home.<sup>1</sup> People are losing control over the composition of the foods they eat, with this often left in the hands of the food manufacturer. Over time there has been substantial dietary changes including the passive over consumption of energy, despite our neurobiological processes controlling food intake.<sup>2</sup> Of particular concern is Australian children's high consumption of energy dense foods and drinks, particularly in the school environment.<sup>3</sup>

The media has a persuasive influence on food choice. There is more money being spent on promoting high fat, energy dense foods than on healthy nutritious foods. Of particular concern is the higher prevalence of overweight and obesity in children who

### References

- <sup>1</sup> World Health Organisation 2000, *Obesity: preventing and managing the global epidemic; Report of a WHO consultation on obesity*, World Health Organisation, Geneva.
- <sup>2</sup> Haslam D, Phillip W and James T 2005, 'Obesity', *The Lancet*, vol 366 pp1197-1209.
- <sup>3</sup> Bell A & Swinburn B 2004, 'What are the key food groups to target for preventing obesity and improving nutrition in schools?' *European Journal of Clinical Nutrition*, vol 58, pp258-263.

<sup>a</sup> Overweight is defined as a Body Mass Index (BMI) greater than 25. BMI is weight in kilograms divided by height in metres squared.

<sup>b</sup> Obesity is defined as a BMI greater than 30. BMI is weight in kilograms divided by height in metres squared.

<sup>c</sup> An obesogenic environment is an environment that promotes positive energy balance, by promoting increased energy intake (in food and beverages) and/or reduced energy expenditure (physical activity).

watch more television.<sup>4</sup> This may be in part a result of greater requests for advertised items by these children, considering that the majority of food items advertised during children's viewing times are for 'extra' or 'junk' foods.<sup>5</sup> A larger portion size has also emerged as a popular marketing strategy of commercial food manufacturers by giving the consumer the impression of 'better value' for money.<sup>1</sup>

### The modern world – how has it changed our activity patterns?

Today's modern world has brought about a reduction in energy expenditure through a more sedentary lifestyle. Motorised transport, mechanised equipment and labour-saving devices both at home and at work have diminished the need for individuals to undergo physically demanding tasks. Physically inactive pastimes dominated by electronic media have increased.<sup>1</sup> The urban environment is becoming gradually less conducive to supporting active leisure, particularly where children are concerned, with fears for their personal safety and a lack of suitable play space.<sup>1</sup>

## The Consequences of Overweight and Obesity – The Economic and Health Burden

Overweight and obesity pose a health burden at all ages and is therefore a significant public health concern. Although

overweight and obesity should be considered a disease in its own right, it is also a major risk factor for other diseases. It increases the risk of premature death and contributes to a number of non-fatal yet debilitating conditions that reduce quality of life. In Australia overweight and obesity accounts for 4.3% of all Disability Adjusted Life Years (DALYs).<sup>6d</sup> The adverse health outcomes caused by carrying excess weight are both physical and psychological in nature. Furthermore the economic cost to the community of overweight and obesity is significant and likely to worsen with time.

### Overweight and obesity and chronic diseases

Overweight and obesity is a major risk factor for type 2 diabetes, particularly when excess fat is located in the abdominal region.<sup>1</sup> Diabetes incidence rates in the Aboriginal population are amongst the highest in the world.<sup>7</sup> This is partly due to Aboriginal people having a genetic tendency to store adipose tissue (fat) in the abdominal area, giving them a greater risk of diabetes for any given level of body fat.<sup>7</sup> In obese people with type 2 diabetes, weight loss of 10-20% has shown significant improvement in markers of diabetes, such as blood sugar control and insulin sensitivity.<sup>1</sup>

Overweight and obesity is a risk factor for developing high blood pressure, high blood cholesterol and atherosclerosis, all of which are risk factors for cardiovascular disease (CVD).<sup>8</sup> However, overweight and obesity is also an independent risk factor for

<sup>4</sup> Salmon J, Campbell K & Crawford D 2006, 'Television viewing habits associated with obesity risk factors: a survey of Melbourne schoolchildren', *MJA*, vol 184(2), pp64-67.

<sup>5</sup> Story M 2003, 'Television and food advertising: an international health threat to children?', *Nutrition & Dietetics: The Journal of the Dieticians Association of Australia*, vol 60(2), pp72-74.

<sup>6</sup> Australian Institute of Health & Welfare, 1999, *Burden of Disease and Injury in Australia*, viewed 7 March 2006, <http://www.aihw.gov.au/publications/health/bdia/bdia-c07.pdf>

<sup>7</sup> Daniel M, Rowley K, McDermott R, Mylvaganam A & O'Dea K 1999, 'Diabetes Incidence in an Australian Aboriginal Population', *Diabetes Care*, vol 22(12), pp1993-1998.

<sup>d</sup> A DALY is a year of healthy life lost from mortality or disability.



developing CVD, including heart failure and coronary heart disease.<sup>8</sup> Small reductions in weight produce a corresponding reduction in blood pressure.<sup>1</sup> In addition, high cholesterol levels associated with obesity have been shown to return to normal after modest weight loss.<sup>1</sup> Obesity is also a risk factor for gallstones across all ages and in both sexes, with abdominal fat further increasing an individual's risk.<sup>1</sup>

Overweight and obese women have a greater risk of hormone dependent cancers, including endometrial, ovarian, cervical and postmenopausal breast cancer.<sup>1</sup> There is some evidence for an increased risk of prostate cancer amongst obese men.<sup>1</sup> Evidence exists for an association between overweight and obesity and the incidence of gastrointestinal cancers such as colorectal and gallbladder cancer.<sup>1</sup> Renal cell cancer has also been shown to be associated with overweight and obesity, particularly in women.<sup>1</sup> Altered hormonal patterns associated with overweight and obesity can result in impaired insulin signalling, leading to insulin resistance, which is thought to be the underlying cause of metabolic syndrome.<sup>1e</sup> Moderate obesity is associated with polycystic ovarian syndrome as a result of disruption to hormones of the reproductive system.<sup>1</sup> Research indicates overweight is a risk factor for dementia, particularly Alzheimer's disease, in women.<sup>9</sup>

### Overweight and obesity and debilitating health problems

As well as being a risk factor for chronic diseases, overweight and obesity is a risk factor for a number of conditions that affect quality of life. The work associated with breathing is increased in obese individuals due to alterations in respiratory structure and function.<sup>1</sup> Sleep apnoea caused by upper airway obstruction during sleep, is seen in more than 10% of obese men and women.<sup>1</sup> Osteoarthritis and chronic back problems are associated with overweight and obesity, most likely due to the mechanical damage caused by the increased load carried by these individuals.<sup>1</sup> There is also an increased risk of gout associated with obesity.<sup>1</sup>

### The psychological consequences of overweight and obesity in adults

Obesity is highly stigmatised in Western cultures.<sup>1</sup> Overweight and obese people often face discrimination, negative stereotyping and negative attitudes, even from health professionals.<sup>1</sup> The specific psychological effects of overweight and obesity are yet to be conclusively demonstrated.<sup>1</sup> However, it would seem likely that there would be some psychological consequence of the reported stigmatisation and discrimination this group face. Psychological problems in overweight and obese people occur more often in men than women, with women in particular suffering from an altered body image.<sup>1</sup>

### The economic burden of overweight and obesity

Overweight and obesity places an economic burden on the health care system as well as contributing to costs associated with decreased productivity and with mortality. Overweight and obesity may be influencing absenteeism and preventing workers from staying in the workforce through its association with chronic disease and injury.<sup>10</sup> Latest estimates suggest that the true cost of obesity in Australia may now be as high as \$1.3 billion per year and rising fast.<sup>11</sup>

It has been estimated that interventions that result in a sustained weight loss of 5kg in all Australians who are overweight or obese could in turn reduce the health care costs associated with type 2 diabetes by \$18.6 million per year or up to \$45.1 million per year if the cost of complications is also considered.<sup>12</sup>

### Childhood overweight and obesity and its physical health consequences

The steady rise in childhood overweight and obesity has brought about the emergence of lifestyle related diseases in children that were previously exclusive to the adult population or rarely seen in children and adolescents. While not all of the conditions associated with childhood overweight and obesity produce clinical symptoms in children, the resulting metabolic and physiological changes track into adulthood increasing the long term risk of disease, disability and death.

<sup>8</sup> Australian Institute of Health & Welfare (AIHW) and National Heart Foundation, 2004, *The relationship between overweight and obesity and cardiovascular disease*, Cardiovascular Disease Series No. 23, AIHW, Canberra.

<sup>9</sup> Gustafson D, Rothenberg E, Blenow K, Steen B and Skoog I. 2003, 'An 18-year Follow-up of Overweight and Risk of Alzheimer Disease', *Arch of Intern Med*, vol 163, pp1524-1528.

<sup>10</sup> Australian Institute of Health and Welfare, 2005, *Obesity and workplace absenteeism among older Australians*, Bulletin issue 31, AIHW Cat. No. AUS 67, Canberra.

<sup>11</sup> The National Obesity Taskforce, 2003, *Healthy Weight 2008*, Department of Health and Ageing, Canberra.

<sup>12</sup> Marks G, Coyne T & Pang G 2001, *Type 2 Diabetes costs in Australia; the potential impact of changes in diet, physical activity and levels of obesity*, Department of Health and Ageing, Canberra.

<sup>e</sup> Metabolic syndrome includes impaired glucose tolerance, elevated blood pressure, raised blood cholesterol, insulin resistance and central obesity.

Severe obesity is associated with respiratory disorders during sleep including sleep apnoea, a reduction in air flow or cessation of breathing.<sup>13</sup> Obese children with obstructive sleep apnoea are at risk of significant learning and memory dysfunction. An association between overweight and asthma has also been established.<sup>13</sup>

Excess body weight in girls produces hormonal disturbances, abnormalities in menstruation and early menarche.<sup>13</sup> The hormonal patterns typical of polycystic ovarian syndrome are increasingly seen in obese girls.<sup>13</sup> The increase in childhood overweight and obesity may cause a further reduction in the population average age of menarche.<sup>13</sup> Early menarche is associated with an increased risk of breast cancer and other cancers of the female reproductive system and is also a risk factor for common psychiatric problems seen in adolescent girls such as depression, disordered eating and substance abuse.<sup>13</sup>

Possibly the most alarming consequence of overweight and obesity in children is the emergence of type 2 diabetes in youth, which increases the risk of advanced complications associated with diabetes in adulthood such as CVD, kidney failure, visual impairment and limb amputation.<sup>13</sup> Overweight and obesity during adolescence has also been associated with a number of CVD risk factors that persist into adulthood, including high blood pressure and high blood cholesterol.<sup>13</sup>

### Childhood obesity and its psychological and social consequences

The psychological and social consequences of childhood obesity are often the most immediate. Just as with adults, overweight

and obese children and adolescents suffer stigmatisation and are labelled with negative stereotypes.<sup>13</sup> Girls may be more affected than boys, however both sexes have reported negative experiences.<sup>13</sup> Despite childhood overweight and obesity being increasingly common, the negative social reactions to these children are by no means diminishing<sup>13</sup> and are expected to have adverse emotional consequences including low self esteem, negative body image and depressive symptoms.<sup>14</sup> This destructive treatment does not come exclusively from peers but also adults, including teachers, parents and health care providers.<sup>14</sup> Overweight and obese young people are more likely to have fewer friends, and suffer ongoing peer rejection which has been shown to be associated with reduced psychological functioning in adulthood.<sup>13</sup> Obesity in adolescents is correlated with long term social and economic consequences including lower educational achievement, lower income and higher rates of poverty in adulthood.<sup>13</sup>

## Conclusion

With overweight and obesity affecting more than half the population, the health, social and economic consequences of overweight and obesity are a concern for all Australians. Changes to our social, cultural, physical and economic conditions are driving this epidemic. With overweight and obesity rates predicted to continue to rise, the consequences are likely to become more severe and have an even more devastating effect on the health and wellbeing of the Australian population.

<sup>13</sup> Lobstein T, Baur L & Uauy R, 2003, *Obesity in Young People; the coming crisis in public health: report to the World Health Organisation, International Obesity Taskforce, London.*

<sup>14</sup> Institute of Medicine of the National Academies, 2005, *Preventing Childhood Obesity, health in the balance*, eds. Koplan J, Liverman C & Kraak V, the National Academic Press, Washington D.C.

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