

Overweight and obesity - a major problem for Indigenous Australians¹

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Introduction

The increasing prevalence of obesity in Australia has attracted attention as a health concern and the worldwide increase has been called a global epidemic by the World Health Organization [1, 2].

Most countries around the world are affected by increasing industrialisation, urbanisation and mechanisation with the associated changes in diet and behaviour, increased consumption of energy-dense diets (high in fat, and low in unrefined carbohydrates), and more sedentary lifestyles [2]. There are rising levels of obesity in many developing countries undergoing economic transition, often coexisting in the same population with chronic undernutrition. Food is produced and traded in an expanding market that has shifted from an essentially local base to an increasingly global one. For both developed and developing countries, lack of physical activity is also a prevalent and rapidly increasing problem, particularly among poor people in large cities. This decline in energy expenditure is associated with motorised transport, labour-saving devices in the home, the phasing out of physically demanding manual tasks in the workplace and the increase in physically undemanding leisure pastimes.

The highest levels of obesity are often found among population groups with the greatest poverty and the least education. Food insecurity is associated with lower food expenditures, low fruit and vegetable consumption and lower quality diets [3]. Energy dense foods may represent the lowest cost option, and the palatability of sweets and fats are associated with higher energy intakes. A high intake of free sugars provides significant energy without specific nutrients; consumption in beverages, for example, promotes weight gain [2]. (A US study of the intake of sugary drinks among children

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found that there was a relationship between consumption and increase in body mass index and frequency of obesity [4].)

There are indications in the US that the prevalence and severity of obesity and its complications will worsen and that rates of obesity related deaths will rise [5]. On the other hand, a recent study has shown that obesity and underweight, but not overweight, have contributed to higher mortality in the USA and the impact of obesity on mortality may have decreased over time; it was suggested that this could be due to improvements in public health and medical care [6].

Overweight and obesity are associated with a range of serious health conditions, such as cardiovascular disease, type 2 diabetes, high blood pressure, certain cancers, sleep apnoea, osteoarthritis, psychological disorders and social problems [7].

In Australia bodyweight is usually measured by body mass index (see Box) or waist circumference [1].

Box

Body mass index (BMI) is calculated by dividing weight in kilograms by the square of the height in metres (kg/m^2).

Weight categories for adults 18 years and over based on BMI are:

- underweight (BMI <18.5)
- healthy weight (BMI \geq 18.5 and BMI <25)
- overweight (BMI \geq 25)
- overweight but not obese (BMI \geq 25) and BMI > 30)
- obese (BMI \geq 30)

[1]

Measuring waist circumference is also a useful measure when assessing obesity in relation to health conditions. The risk of developing chronic diseases (such as diabetes and cardiovascular disease) is higher for people with central distribution of obesity than overall obesity [8].

All population groups in Australia are affected by overweight and obesity, but those most susceptible come from low socio-economic backgrounds and Aboriginal and Torres Strait Islander populations [1].

Overweight and obesity in the Indigenous population

Recent evidence of the extent of overweight and obesity in the Indigenous population comes mainly from population surveys. In the 2004-2005 National Aboriginal and Torres Strait Islander Health Survey (NATSIHS) it was found that obesity is a growing problem in the Indigenous population [9]. Self-reported height and weight measurements were collected for people aged 15 years and over (an option to have height and weight measured was provided in some remote areas). Height and weight information could not be obtained for 17% of Indigenous people (and for 8% of non-Indigenous people in a similar survey).

For Indigenous people aged 15 years or older, 28% were overweight and 29% were obese, and almost two-fifths in the normal or healthy weight range (Table 1) [9]. The overall proportion of Indigenous people who were overweight or obese (57%) was slightly higher than the proportion of non-Indigenous people (52%), but the proportion of obese Indigenous people (29%) was considerably higher than that of obese non-Indigenous people (17%). The difference in levels of obesity between Indigenous and non-Indigenous people was greater for females than for males. The prevalence of obesity increases in successive age groups for Indigenous and non-Indigenous people [8].

Table 1 Body weight: proportions for BMI categories, by Indigenous status and age group, Australia, 2004-2005

Age group	Indigenous				Non-Indigenous			
	Underweight	Normal	Overweight	Obese	Underweight	Normal	Overweight	Obese
15-24	11	53	22	15	9	64	21	6
25-34	4	38	29	29	3	48	34	16
35-44	4	31	28	37	2	42	37	19
45-54	3	28	32	37	1	38	38	22
55 and older	2	24	34	39	2	39	39	20
All ages	6	38	28	29	3	45	35	17

Source: Derived from Australian Bureau of Statistics, 2006 [9]

- Notes: 1 Derivation of proportions excludes people for whom BMI was not known
2 Any discrepancy in the sums of proportions results from rounding for presentation

Across Australia, levels of overweight and obesity among non-Indigenous peoples were fairly uniform, but levels among Indigenous people varied considerably, ranging from Victoria (48%) to South Australia (64%) (Table 2) [9].

Overweight and obesity were more common among Torres Strait Islanders aged 15 years or older (61%) than among Aboriginal people in that age range (56%) [9]. The level of overweight and obesity was particularly high among Torres Strait Islanders living in the Torres Strait area, with 86% having a BMI of 25.0 or greater.

Table 2 Body weight: proportions overweight and obese, by Indigenous status and jurisdiction, Australia, 2004-2005

Jurisdiction	Indigenous population	Total population
Australia	56.6	49.3
NSW	58.6	49.5
Victoria	48.0	48.9
Queensland	57.6	49.7
WA	58.6	48.4
SA	63.6	49.7
Tas	54.5	48.9
ACT	58.1	48.7
NT	49.8	n/a

Source: Derived from Australian Bureau of Statistics, 2006 [9]

- Notes:
- 1 Derivation of proportions excludes people for whom BMI was not known
 - 2 Proportions are for people aged 15 years or older for the Indigenous population and are for people aged 18 years or older for the total population
 - 3 Separate data were not available for the total population of the NT

The proportions of Indigenous people who were overweight or obese in the 2004-2005 NATSIHS were similar for those living in remote and non-remote areas, and had not changed significantly since the previous survey in 2001 [9]. The level of overweight and obesity among Indigenous people living in non-remote areas has increased from 48% in 1995 to 58% in 2004-2005 (similar information about body weight is not available for Indigenous people living in remote areas for earlier years).

Monitoring the extent of overweight and obesity in the Indigenous population is included in the jurisdictional reports against the Aboriginal and Torres Strait Islander health performance indicators. In the *National summary of the 2003 and 2004 jurisdictional reports against the Aboriginal and Torres Strait Islander health performance indicators*, data from the 2001 National Health Survey were utilised for an indicator on obesity [10]. States and Territories had been asked to provide data for this indicator but no consistent data were available.

Factors contributing to development of overweight and obesity

Overweight and obesity is generally caused by energy imbalance over a sustained period of time [1]. Lifestyle factors, such as unhealthy nutrition and lack of physical activity, contribute to the risk of developing obesity. It is believed that a genetic predisposition can also contribute to the development of obesity [11]. According to the Neel's 'thrifty' genotype hypothesis, populations with a traditional hunter-gatherer lifestyle may have developed a degree of insulin resistance (a precursor of type 2

diabetes) in response to 'feast or famine' conditions [11, 12]. The thrifty genotype can result in rapid weight gain, obesity and diabetes for people in environments with abundant food and less physical activity [13]. Hunter-gatherer populations around the world share a tendency towards raised waist-to-hip ratio and intolerance of carbohydrates (especially refined carbohydrates) [14]. Obesity and glucose intolerance in pregnancy are increasing problems and a low glycaemic index diet is recommended for those with a high waist-to-hip ratio.

Indigenous populations exposed to rapid change to a 'westernised' lifestyle are seen as particularly vulnerable to syndrome X [11]. Insulin resistance is a major factor in syndrome X (also known as the metabolic syndrome) [15], a constellation of metabolic disorders (including type 2 diabetes) with obesity being a common factor [11, 16]. It is also likely that foetal under-nutrition contributes to the development of syndrome X (as postulated by Barker and Hales in the thrifty phenotype hypothesis) [17]. Further studies have described and tested this hypothesis in relation to early environmental effects on disease that is expressed much later in life [18]. The offspring of mothers who had diabetes in pregnancy have also been found more likely to be susceptible to obesity and type 2 diabetes [18, 19].

The *Dietary guidelines for children and adolescents in Australia incorporating the infant feeding guidelines for healthworkers* provides details of the benefits of breastfeeding which include the possible reduced risk of overweight and obesity in childhood [20].

Factors contributing to development of overweight and obesity among Indigenous Australians

The lifestyle changes of Indigenous people since the European occupation of Australia involve both dietary and physical activity components. As hunter-gatherers, Indigenous people derived their diet from a wide range of uncultivated plant foods and wild animals [11]. The diet was high in protein and complex carbohydrates (of low glycaemic index) and low in sugars, and so was a diet generally low in energy density and high in nutrient density. In contrast to this healthy diet, Indigenous people now often have diets high in refined carbohydrates and saturated fats. The collection and preparation of food in a hunter-gatherer lifestyle expended considerable energy; transition to a western lifestyle meant a loss of these lifestyle roles, especially with the introduction of settlements [21]. Further declines in the level of physical activity have occurred more recently with reduced employment requiring physical activity, particularly in rural areas, and the increased availability of social welfare benefits [22].

Indigenous people living in rural and remote areas face significant barriers in accessing nutritious and affordable food [11]. The level and composition of food intake is influenced by poverty, high prices, poor quality fruit and vegetables in community stores, and unavailability of many nutritious foods [23]. Cost is a major issue, with the price of basic healthy foods being 50% or more higher in these areas than in the major cities [11]. Foods of better nutritional choice, including fresh fruits and vegetables, are often expensive due to overhead costs, or only minimally available [24]. In comparison, takeaway and convenience food items, often energy-dense and high in fat or sugar, are less affected by issues of cost and availability [25].

A study of apparent intake in six remote Aboriginal communities, based on store turnover, found that intake of energy, fat and sugar was excessive, with fatty meats making the largest contribution to fat intake [26]. Compared with national consumption data, intake of sweetened carbonated beverages and sugar was much higher in these communities. The proportion of energy derived from refined sugars was approximately four times the recommended intake.

The NATSIHS reported that only 42% of Indigenous people living in non-remote areas were eating the recommended daily intake of fruit and only 10% the recommended daily intake of vegetables [9]². In remote areas, 15% of Indigenous people reported no usual daily intake of vegetables (compared with 2% in non-remote areas) and 20% of Indigenous people reported no usual daily fruit intake (compared with 12% in non-remote areas).

Nutrition-related diseases (such as heart disease, type 2 diabetes and renal diseases) are common among Indigenous people [1]. The risk of developing these diseases is increased with a diet high in saturated fats and refined carbohydrates, whereas an intake of fibre-rich foods (such as fruit and vegetables) can have a protective effect, especially when combined with regular exercise.

In addition to the health risks of overweight and obesity, the Indigenous population is vulnerable to a range of other risk factors. The combination of risk factors increases susceptibility to chronic disease. For example, for smokers who are physically inactive the health consequences are greater than they would be expected from one of these factors alone [27]. The 2004-2005 NATSIHS reported that half of the adult participants were current daily smokers [9]. Smoking during pregnancy is particularly risky and has been found to be associated with low birth weight and obesity in childhood [28, 29].

Cardiovascular fitness and physical activity have been shown to significantly reduce the effects of overweight and obesity on health [2]. More Indigenous people living in non-remote areas were sedentary or engaged in low level exercise in the two weeks prior to their participation in the 2004-2005 NATSIHS (75%) than found in 2001 (68%) [9].

Strategies for overweight and obesity in the Indigenous population

Improving nutrition and the control of obesity are crucial to controlling the major causes of ill health and death in the Indigenous population [11]. Reduction of dietary energy can achieve weight loss in the short term but to maintain weight loss the requirements include attention also to behaviour change and regular physical activity. Even small weight losses can have substantial health benefits and it is important for people to set realistic achievable goals.

² The National Health and Medical Research Council recommends a minimum of five serves of vegetables and two serves of fruit per day [25].

The WHO emphasises that obesity is a population problem as well as an individual problem and that effective prevention and management of obesity will require an integrated approach involving all sectors of society [7]. Several Indigenous-specific strategies have been implemented to provide a framework for national action in improving the nutritional status of Aboriginal and Torres Strait Islander people. The *National Aboriginal and Torres Strait Islander Nutrition Strategy and Action Plan 2000-2010* (NATSINSAP) was published in conjunction with Eat Well Australia, and several of the action areas target the underlying factors contributing to overweight and obesity in the Indigenous population [30]. Specific mention is made of Indigenous issues in *Dietary Guidelines for Adult Australians* [25] and Indigenous-specific guides to healthy eating have been developed. A number of strategies have been initiated for community stores; food subsidies and 'healthy store' policies in Aboriginal communities have been shown to lead to increased consumption of healthy food [31].

The National Obesity Taskforce held a national workshop in 2003 to develop priority actions required in addressing overweight and obesity in the Aboriginal and Torres Strait Islander population. It was envisaged that the outcomes of this workshop would stimulate the development of national strategies to manage and reduce Indigenous overweight and obesity [32]. The national plan for the general population was outlined in *Healthy weight 2008*, which includes actions for community-wide education, whole of community demonstration areas, evidence and performance monitoring and coordination and capacity building [33]. For the Indigenous population focus areas are environments, education and food supply [34].

Conclusion

The world wide increase in obesity and overweight includes Australia, where all population groups are affected, with Aboriginal and Torres Strait Islander peoples being particularly susceptible. Complex factors contribute to the high levels of overweight and obesity among Aboriginal and Torres Strait Islander peoples but unhealthy diet and a lack of physical activity are main contributors.

There is little doubt that many chronic health conditions that occur among Indigenous peoples are linked to overweight and obesity. The 2004-2005 NATSIHS demonstrates that substantial proportions of Indigenous people are overweight or obese in all age groups over the age of 15 years. Initiatives addressing overweight and obesity include relevant education and encouragement of physical activity and healthy nutrition. Healthy environments and steps to address the social inequities in health are necessary for prevention strategies. Improving access to nutritious food is a vital step, particularly for Indigenous people in rural and remote areas. Comprehensive strategies, including those for young people, are essential to prevent overweight and obesity leading to further ill-health among Indigenous peoples. Initiatives need to be positioned within broad strategies addressing the continuing social and economic disadvantages that many Indigenous people experience.

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