Other health behaviours

A wide range of other behaviours influence the health of Australians. These include use of sun protection measures; use of seat belts and helmets; avoidance of mosquito bites, tattooing and body piercing; and hygiene measures such as hand washing. Information that is both recent and national is not available for many of these behaviours. However, some information is available for some of them.

The 2001 NHS (ABS 2002b) showed that sun protection measures had not been used for 6.4% of children aged 0–6 years in the month before interview and, across all ages under 18, the figure was 8.6%. In 2002, the most common sun protection measures reported by female secondary school students in New South Wales were wearing sunscreen (46.3%), wearing a hat (29.5%), and staying mainly in the shade (29.4%). For male students, the most commonly reported measures were wearing a hat (51.8%), wearing sunscreen (35.0%) and staying mainly in the shade (26.8%). Rates of wearing hats and use of maximum protection sunscreen had fallen compared with 1993, but rates of mainly staying in the shade had risen (Population Health Division 2004).

The 2003 New South Wales adult health survey asked respondents about food handling practices in the home. Overall, 60.8% of people aged 16 years or over (64.4% for females, 56.3% for males) reported that they washed their hands with soap after preparing raw meat. Others wiped or rinsed their hands without using soap, or continued cooking without cleaning their hands (Centre for Epidemiology and Research 2004).

3.6 Biomedical factors

As noted in the introduction to this chapter, biomedical risk factors are determinants expressed as a body measurement. Three important risk factors are overweight, high blood pressure and high blood cholesterol. These factors are often highly interrelated. Excess body weight, high blood pressure and high blood cholesterol can all contribute to the risk of heart disease and amplify each other's effects if they occur together. In addition, obesity can in itself lead to high blood pressure and high blood cholesterol.

Blood pressure

High blood pressure (often referred to as hypertension; see Box 3.4) is a major risk factor for coronary heart disease, stroke, heart failure and kidney failure. The risk of disease increases as the level of blood pressure increases. When high blood pressure is controlled, the risk of cardiovascular disease and overall mortality is reduced, but not necessarily to the levels of unaffected people (WHO–ISH 1999).

Major causes of high blood pressure include diet (particularly a high salt intake), obesity, excessive alcohol consumption and insufficient physical activity. Whether sustained psychological stress has an effect on a person's average blood pressure level is subject to further research, but stress is likely to have indirect effects by influencing harmful health behaviours associated with high blood pressure (WHO 2002). Attention to health determinants such as body weight, physical activity and nutrition play an important role in maintaining healthy blood pressure.

Despite the definition of high blood pressure in Box 3.4, there is in fact no threshold level of risk. Starting from quite low levels, as blood pressure increases so does the risk of stroke, heart attack and heart failure. Both systolic blood pressure and diastolic blood pressure are predictors of cardiovascular disease.

Box 3.4: High blood pressure

Blood pressure represents the forces exerted by blood on the wall of the arteries and is written as systolic/diastolic (for example 120/80 mmHg, stated as '120 over 80'). Systolic blood pressure reflects the maximum pressure in the arteries when the heart muscle contracts to pump blood. Diastolic blood pressure reflects the minimum pressure in the arteries when the heart muscle relaxes.

There is a continuous relationship between blood pressure levels and cardiovascular disease risk. This makes the definition of high blood pressure somewhat arbitrary. The WHO defines high blood pressure as:

- *systolic blood pressure of 140 mmHg or more; or*
- *diastolic blood pressure of 90 mmHg or more; or*
- *receiving medication for high blood pressure.*

In this report high blood pressure is defined using these guidelines.

Source: WHO–ISH 1999.

The burden of disease in Australia that can be attributed to high blood pressure was estimated (provisionally, at the time of writing) to be more than 7.3% of the total in 2003 (see Table 3.1).

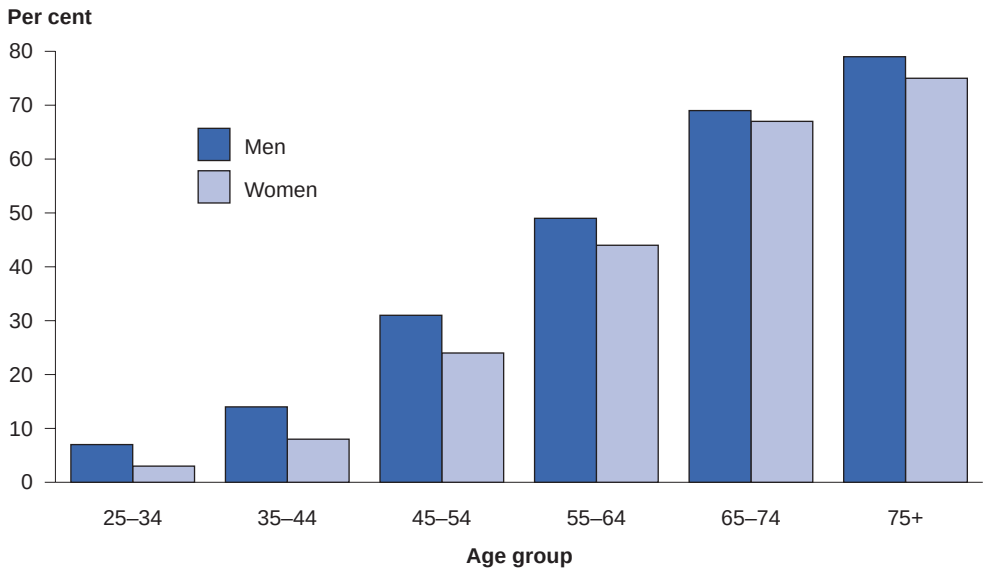
Prevalence

The 1999–2000 Australian Diabetes, Obesity and Lifestyle Study (AusDiab) measured blood pressure and the results indicated that 30% or 3.7 million Australians aged 25 years or over had high systolic or diastolic blood pressure or were on medication for high blood pressure—32% of males and 27% of females. The proportion of males and females with high blood pressure increased with age (Figure 3.6).

Trends

Between 1995 and 1999–2000 the prevalence of high blood pressure among people aged 25 years or over remained about the same—31% in 1995 and 30% in 1999–2000.

Longer-term trends are available only for the urban population. They indicate that since 1980 the prevalence of high blood pressure has decreased markedly for both males and females (Figure 3.7). The proportion of males aged 25–64 years with high blood pressure more than halved, from 47% in 1980 to 21% in 1999–2000. It halved for females, from 32% in 1980 to 16% in 1999–2000. Average blood pressure also decreased over this period. Average systolic blood pressure fell from 134 to 128 mmHg for males, and from 127 to 121 mmHg for females. Average diastolic blood pressure fell from 85 to 74 mmHg for males, and from 79 to 68 mmHg for females (AIHW 2004b).



Note: Based on WHO definition of high blood pressure (Box 3.4).

Source: AIHW analysis of 1999–2000 AusDiab.

Figure 3.6: Proportion of adults with high blood pressure, 1999–2000

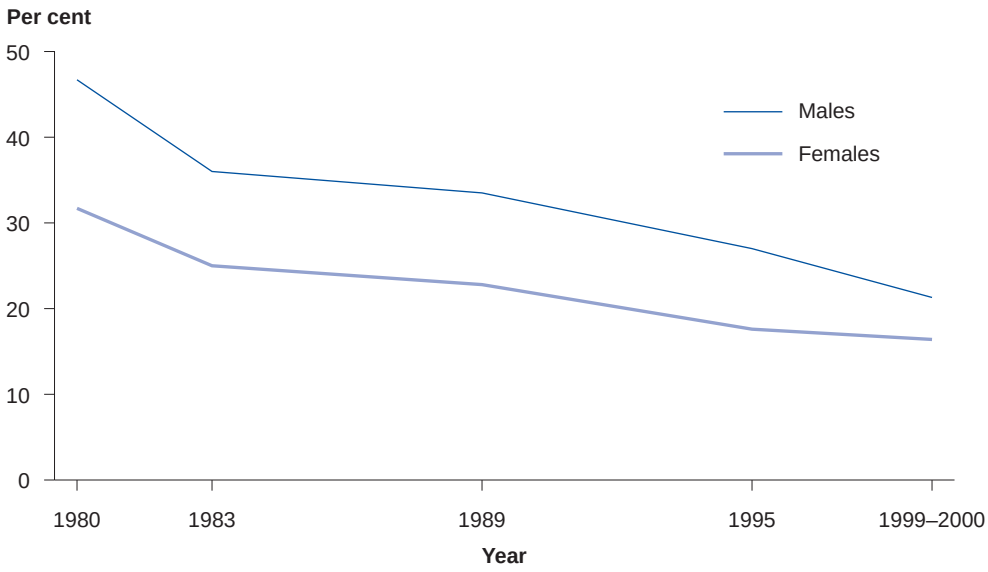
Aboriginal and Torres Strait Islander peoples

There are no national data on measured blood pressure to assess the prevalence of high blood pressure among Aboriginal and Torres Strait Islander peoples. However, self-reported data collected in the 2004–05 National Aboriginal and Torres Strait Islander Health Survey showed that Indigenous people reported high blood pressure from a younger age than non-Indigenous Australians. Among Australians of all ages, 15% of Aboriginal and Torres Strait Islander peoples reported high blood pressure, compared with 10% of non-Indigenous Australians (ABS 2006e).

Blood cholesterol

High blood cholesterol (see Box 3.5) is a major risk factor for coronary heart disease and ischaemic stroke. It is one of the main causes of atherosclerosis, the process by which the blood vessels that supply the heart and certain other parts of the body become clogged. High blood cholesterol was estimated (provisionally, at the time of writing) to have caused about 6.1% of the total burden of disease among Australians in 2003 (see Table 3.1).

For most people, saturated fat in the diet is the main factor that raises blood cholesterol levels (NHFA 1999). Genetic factors can also affect blood cholesterol levels, severely in some cases. Attention to health risk factors such as physical activity and nutrition plays an important role in maintaining a healthy blood cholesterol level (NHFA & CSANZ 2001). Some societies have much lower average cholesterol levels than Australia, with a correspondingly lower rate of cardiovascular disease. Diet is an important factor in maintaining low average blood cholesterol levels in the community (Forge 1999).



Notes

1. Age-standardised to the Australian population as at 30 June 2001.
2. People aged 25–64 years, in urban areas only.
3. Based on WHO definition of high blood pressure (Box 3.4).

Source: AIHW analysis of 1980, 1983, 1989 Risk Factor Prevalence Surveys, 1995 National Nutrition Survey and 1999–2000 AusDiab.

Figure 3.7: Proportion of adults with high blood pressure, 1980 to 1999–2000

Box 3.5: High blood fats: cholesterol and triglyceride

Cholesterol is a fatty substance produced by the liver and carried by the blood to the rest of the body. Its natural function is to provide material for cell walls and for steroid hormones. If levels in the blood are too high, this can lead to the artery-clogging process known as atherosclerosis that can lead to heart attacks, angina or stroke. The risk of heart disease increases steadily from a low base with increasing blood cholesterol levels. A total cholesterol level of 5.5 mmol/L or more is considered 'high' but this is an arbitrary definition.

Two important parts of blood cholesterol are:

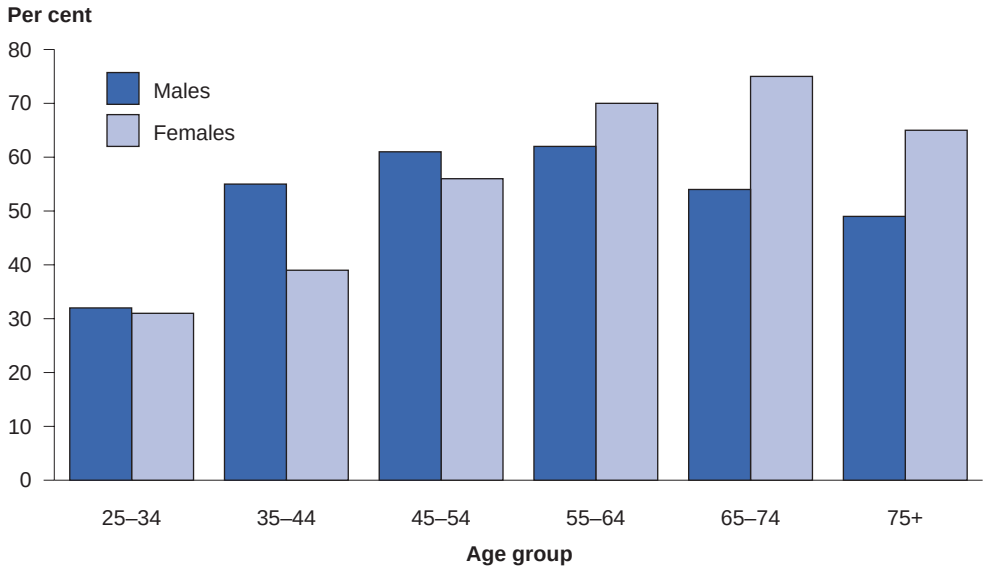
- *Low-density lipoprotein (LDL) cholesterol, often known as 'bad' cholesterol. Excess levels of LDL cholesterol are the main way that cholesterol contributes to atherosclerosis.*
- *High-density lipoprotein (HDL) cholesterol, often known as 'good' cholesterol. High levels have a protective effect against heart disease by helping to reduce atherosclerosis.*

Triglyceride is another form of fat that is made by the body. Its levels can fluctuate according to dietary fat intake and under some conditions excess levels may contribute to atherosclerosis.

In this report, high blood cholesterol is defined as a total cholesterol of 5.5 mmol/L or more.

Average blood cholesterol and prevalence of high blood cholesterol

The 1999–2000 AusDiab estimated that average blood cholesterol levels for those aged 25 years or over in 1999–2000 were 5.5 mmol/L for males and 5.4 mmol/L for females. Around 50% of those in the study had levels of 5.5 mmol/L or more, corresponding to nearly 6.5 million Australian adults aged 25 years or over. The prevalence of high blood cholesterol increased with age to 65–74 years in females and to 55–64 years in males (Figure 3.8).



Note: High blood cholesterol is total cholesterol of 5.5 mmol/L or more.

Source: AIHW analysis of 1999–2000 AusDiab.

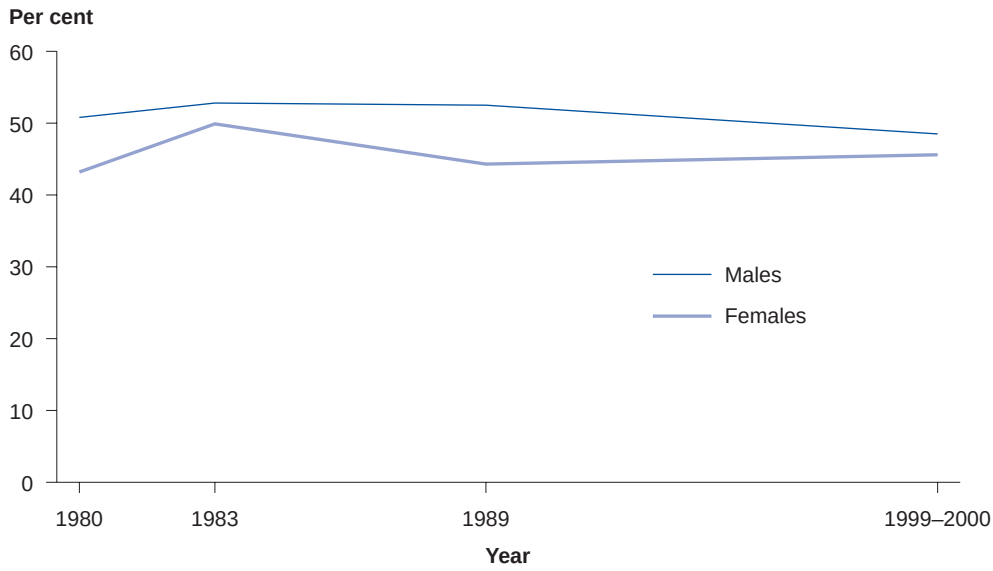
Figure 3.8: Proportion of adults with high blood cholesterol, 1999–2000

Trends

Data on trends in average blood cholesterol and high blood cholesterol prevalence are only available to the year 2000 and for people aged 25–64 years living in capital cities. Average blood cholesterol levels of adults in 1999–2000 were very similar to those 20 years earlier. Consistent with the trends in average levels, there has been no apparent reduction in the prevalence of high blood cholesterol since 1980 (Figure 3.9).

Aboriginal and Torres Strait Islander peoples

There are no national data on measured blood cholesterol levels for Aboriginal and Torres Strait Islander peoples. Self-reports in the 2004–05 National Aboriginal and Torres Strait Islander Health Survey led to an estimate that, across all ages, 6% of Indigenous and 7% of non-Indigenous Australians would have had high blood cholesterol that year (ABS 2006e). However, this is a much lower prevalence than found in studies that measure cholesterol levels, suggesting that self-reports are not an accurate measure.



Notes

1. Age-standardised to the 2001 Australian population.
2. People aged 25–64 years in capital cities only.
3. High blood cholesterol is total cholesterol of 5.5 mmol/L or more.

Source: AIHW analysis of 1980, 1983, 1989 Risk Factor Prevalence Surveys and 1999–2000 AusDiab.

Figure 3.9: Proportion of adults with high blood cholesterol, 1980 to 1999–2000

Body weight

With Australia's increasing prevalence of obesity in recent years, body weight has attracted growing public attention as a health concern. The prevalence of obesity has risen dramatically worldwide and the WHO has called the increase a global epidemic. Excess body fat increases the risk of developing a range of health problems, including Type 2 diabetes, cardiovascular disease, high blood pressure, certain cancers, sleep apnoea, osteoarthritis, psychological disorders and social problems (WHO 2000). At the other end of the weight spectrum, underweight is associated with malnutrition and poor health, although this is mainly a problem in developing countries.

While the evidence remains strong that obesity is a risk factor for ill health, including overall mortality, there is some debate about the contribution of lesser degrees of overweight to mortality rates. A recent study showed that obesity and underweight, but not overweight, resulted in higher mortality rates in the United States, and that the impact of obesity on mortality may have decreased over time, perhaps due to improvements in public health and medical care (Flegal et al. 2006).

Overweight and obesity arises through an energy imbalance over a sustained period. While many factors may influence a person's weight, weight gain is essentially due to the energy intake from the diet being greater than the energy expended through physical activity. The energy sustained imbalance need only be minor for weight gain to

occur, and some people—because of genetic and biological factors—may be more likely to gain weight than others (WHO 2000). For related information, see the sections on dietary behaviour and physical activity in this chapter.

Overweight was the leading determinant of burden of disease in Australia in 2003, estimated (provisionally, at the time of writing) to account for 8.6% of the total (see Table 3.1).

Prevalence and trends

In Australia, the prevalence of overweight and obesity has been increasing markedly over the last two decades. Box 3.6 outlines methods for measuring and reporting statistics on body weight. National data are available from a number of surveys, using either a body mass index (BMI) derived from either self-reported or measured height and weight, or waist circumference.

Prevalence based on self-reported height and weight

The most recent national data based on self-reported height and weight come from the 2004–05 NHS. From this survey (and excluding those for whom BMI could not be derived), 2.5 million Australian adults were estimated to be obese (19% of males and 17% of females aged 18 years or over; BMI of 30 or more). The highest levels of obesity were seen among males aged 45–54 years (23.2%) and females aged 55–64 years (21.7%) (ABS 2006d). A further 4.9 million Australian adults were estimated to be overweight but not obese (41% of males and 25% of females aged 18 years or over; BMI of more than 25 but less than 30). Among adults, 1% of males and 4% of females were estimated to be underweight (BMI less than 18.5).

The NHS showed a similar prevalence of overweight and obesity for each state and territory (Table 3.17). Obesity rates ranged from 17.0% in Victoria to 19.6% in South Australia, and overweight rates from 34.2% in Queensland to 36.3% in Victoria.

The prevalence of overweight increased markedly between 1995 and 2004–05. At the more severe end of the spectrum, the prevalence of obesity among Australian adults in 1995, 2001 and 2004–05 was 11%, 15% and 16% respectively.

Self-reported height and weight are also collected as part of state and territory CATI surveys, with quite similar results in 2004 to those of the 2004–05 NHS. They showed obesity rates of 16.5% for males and 16.3% for females, and overweight rates of 42.1% for males and 26.3% for females (Table 3.17). Obesity rates were similar for each state and territory, ranging from 15.3% of persons in the Australian Capital Territory and Queensland to 18.9% in South Australia.

Prevalence based on measured height and weight

Measured height and weight were last collected nationally in the 1999–2000 AusDiab study. Analysis of this survey found that 19% of males and 22% of females aged 25 years or over were obese and an additional 48% of males and 30% of females were overweight but not obese. The prevalence of underweight was less than 1% for males and nearly 2% for females. Overall, males were more likely than females to be overweight or obese (67% versus 52%).

Among adults, the prevalence of obesity was highest among those aged 55–64 (29%), with the lowest rates being among those aged 25–34 (15%) or 75 years and over (14%). Prevalence patterns for all overweight people were similar, with the prevalence increasing with age to 65–74 years, and declining thereafter.

Box 3.6: Classifying body weight

There are two main methods used for monitoring body weight in settings such as population health surveys: body mass index (BMI) and waist circumference. Both provide an acceptable alternative to more accurate measurement of total body fat, which is only feasible for specialised clinical or other settings.

Body mass index

The most common measure of body weight is the BMI, calculated by dividing weight in kilograms by the square of height in metres (kg/m^2). Classification of body weight is based primarily on the association between BMI and illness and mortality. The standard recommended by the WHO (WHO 2000) and included in the National health data dictionary *for adults aged 18 years or over is:*

- *underweight (BMI <18.5)*
- *healthy weight (BMI ≥18.5 and BMI <25)*
- *overweight (BMI ≥25; includes obese)*
- *overweight but not obese (BMI ≥25 and BMI <30)*
- *obese (BMI ≥30).*

This classification may not be suitable for all ethnic groups, who may have equivalent levels of risk at lower BMI (for example Asians) or higher BMI (for example Polynesians) compared with the standard. For children and adolescents aged 2–17 years, Cole and others (2000) have developed a separate classification of overweight and obesity based on age and sex.

Waist circumference

For monitoring overweight, waist circumference is a useful addition to BMI because abdominal fat mass can vary greatly within a narrow range of total body fat or BMI. The National health data dictionary *defines waist circumference cut-offs for increased and substantially increased risk of ill health. Waist circumferences of 94 cm or more in males and 80 cm or more in females indicate increased risk (referred to here as abdominal overweight). For those aged 18 years or over, waist circumferences of 102 cm or more in males and 88 cm or more in females indicate substantially increased risk (referred to here as abdominal obesity) (NHDC 2003). This classification is not suitable for use in people aged less than 18 years and the cut-off points may not be suitable for all ethnic groups.*

BMI is more commonly used than waist circumference as a measure of overweight and obesity in the population (particularly in self-report surveys), as people are more likely to know their height and weight than their waist circumference.

Self-reported versus measured data

Height and weight data may be collected in surveys as measured or self-reported data. People tend to overestimate their height and underestimate their weight, leading to an underestimate of BMI. Thus, rates of overweight and obesity based on self-reported data are likely to be underestimates of the true rates, and should not be directly compared with rates based on measured data (Flood et al. 2000; Niedhammer et al. 2000).

Table 3.17: Prevalence of self-reported overweight and obesity, persons aged 18 years or over (per cent)

Measure	NSW	Vic[a]	Qld	WA	SA	Tas	ACT	NT	Aust[b]
From 2004 CATI surveys									
					Males				
Overweight but not obese[c]	41.0	42.9	40.5	46.0	44.1	43.0	39.5	42.6	42.1
Obese[d]	16.3	14.7	20.0	14.1	18.5	15.1	14.8	18.3	16.5
Overweight or obese	*57.3*	*57.6*	*60.5*	*60.1*	*62.6*	*58.1*	*54.2*	*60.9*	*58.6*
					Females				
Overweight but not obese	26.0	25.3	26.5	27.2	28.9	25.8	26.2	24.0	26.3
Obese	15.4	16.0	16.5	17.0	19.4	17.5	15.9	15.9	16.3
Overweight or obese	*41.4*	*41.3*	*43.1*	*44.2*	*48.3*	*43.3*	*42.1*	*39.9*	*42.5*
					Persons				
Overweight but not obese	33.7	34.1	33.6	36.3	36.4	34.2	32.9	34.3	34.2
Obese	15.8	15.3	18.3	15.5	18.9	16.3	15.3	17.2	16.4
Overweight or obese	**49.5**	**49.4**	**51.8**	**51.8**	**55.3**	**50.6**	**48.2**	**51.5**	**50.6**
From 2004–05 NHS[a]									
					Persons				
Overweight but not obese	35.8	36.3	34.2	35.4	35.8	36.2	34.6	n.a.	35.5
Obese	18.0	17.0	18.7	17.3	19.6	19.5	18.2	n.a.	18.0
Overweight or obese	**53.8**	**53.3**	**52.9**	**52.8**	**55.4**	**55.7**	**52.8**	**n.a.**	**53.6**

(a) Reported CATI survey results for Victoria and reported NHS results have been adjusted for missing values.

(b) Derived from a weighted average of the state and territory estimates for state CATI data.

(c) Body mass index greater than or equal to 25 and less than 30.

(d) Body mass index greater than or equal to 30.

n.a. Not available, but included in the total.

Sources: AIHW analysis of 2004–05 National Health Survey (ABS 2006d); AIHW analysis of 'Filling the gaps in data pooling' survey (December 2004); AIHW analysis of Vic Population Health Survey (DHS 2004); NSW Population Health Survey, unpublished data; SA Monitoring and Surveillance System, unpublished data; WA Health and Wellbeing Surveillance System, unpublished data.

Prevalence based on waist circumference

Waist circumference is a useful indicator of abdominal obesity, which is an independent risk factor for Type 2 diabetes, coronary heart disease and other health disorders (WHO 2000). In 1999–2000, data from the AusDiab study showed that more than a quarter of males (27%) and over a third of females (34%) aged 25 years or over were classified as abdominally obese.

Older Australians

Excess weight in older age has been seen to impair mobility, participation in social activities and quality of life (Villareal et al. 2005). It has been estimated that males aged 30–34 years in 1980 gained over 8 kg as they aged to 50–54 years in 2000, and similarly females gained 12 kg over the same period (AIHW: Bennett et al. 2004).

Underweight in older people also appears to be associated with impaired physical, social and mental wellbeing (Yan et al. 2004).

Children and adolescents

There is a lack of recent national data on overweight and obesity among children and adolescents, with the most recent being that from the 1995 NHS. Using the standard international definitions of body weight, the prevalence of overweight (including obesity) among children and adolescents aged 2–18 years was 19.5% for boys and 21.1% for girls in 1995 (Magarey et al. 2001).

There is a range of evidence that the prevalence of both overweight and obesity in Australian children has risen markedly in recent decades.

A study of data for those aged 7–15 years from five population surveys conducted between 1969 and 1997 illustrated that, between 1985 and 1997, the prevalence of overweight increased by 60–70%, obesity increased two- to fourfold, and the combined prevalence in the overweight and obesity categories doubled. The findings were consistent across data sets and between the sexes. For the period 1969 to 1985, there was no change in the prevalence of overweight or obesity among girls, but among boys the prevalence of both overweight and obesity increased markedly (Booth et al. 2003).

The New South Wales Schools Physical Activity and Nutrition Survey found that the measured prevalence of overweight and obesity combined among young people in New South Wales (from Kindergarten to Year 10) had risen from 20% in 1997 to 25% in 2004. Overall, the prevalence of obesity among boys was 7.7% and among girls it was 6.1% (Booth et al. 2006).

Similarly, the Western Australian Child and Adolescent Physical Activity and Nutrition Survey found that the prevalence of overweight and obesity among students aged 7–15 years increased from 9.3% of boys and 10.6% of girls in 1985 to 21.7% of boys and 27.8% of girls in 2003 (Hands et al. 2004).

Socioeconomic status

Estimates from the 2004–05 NHS for adults aged 18 years or over showed that people in the most socioeconomically disadvantaged group had higher rates of overweight and obesity. Among adults in the first quintile (most disadvantaged), 50% were overweight or obese, compared with 45% of adults in the fifth quintile (least disadvantaged) (ABS 2006d).

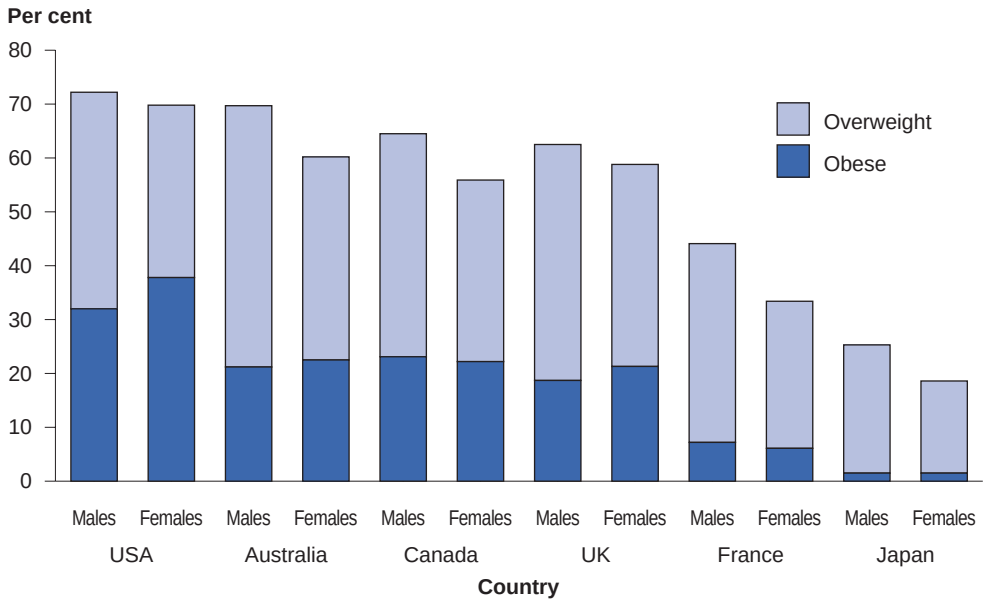
The gradient is more marked when considering obesity alone. Estimates from the 2001 NHS for adults aged 20 years or over showed that females in the most disadvantaged socioeconomic group had nearly double the rate of obesity (23%) of those in the most advantaged group (12%). Males in the most disadvantaged group were also more likely to be obese than those in the most advantaged group (19% compared with 13%) (AIHW: O'Brien & Webbie 2003).

Aboriginal and Torres Strait Islander peoples

Data from the 2004–05 National Aboriginal and Torres Strait Islander Health Survey illustrate that the proportion of Indigenous Australians who were overweight but not obese was lower than the proportion for non-Indigenous people (25% and 30% respectively). However, Aboriginal and Torres Strait Islander people were almost twice as likely to be obese—27% of Indigenous Australians compared with 15% of non-Indigenous Australians (ABS 2006e).

International comparisons

Comparable estimates of the prevalence of overweight and obesity in a selected number of countries are presented in Figure 3.10 (WHO 2005). The prevalence of overweight and obesity among persons 15 years or over in Australia is similar to that in the United States of America, Canada and the United Kingdom, although it is considerably higher than that in France and Japan.



Note: Persons aged 15 years or over.

Source: WHO 2005.

Figure 3.10: Prevalence of overweight (BMI 25 to <30) and obesity (BMI 30 or over), 2002

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