1. Introduction

Indicators for chronic diseases and their determinants, 2008 is the third report produced by the AIHW with a specific focus on chronic disease. The first report, *Chronic diseases and associated risk factors in Australia, 2001,* provided information on selected chronic diseases and their associated risk factors. The second report, *Chronic diseases and associated risk factors in Australia 2006*, described patterns of chronic disease in Australia using a more thematic approach.

The main aim of this report is to present data against selected indicators that are relevant to a range of chronic diseases and their associated determinants. Where possible, the report presents the most recent data for these indicators. This information will provide baselines for monitoring and evaluation purposes. For some chronic diseases or determinants, nationally endorsed indicators have not yet been developed. But the AIHW considered it important to highlight areas where information gaps exist in indicator sets, so discussion and data about these indicators are included if available.

Another aim of this report is to assist in continued development of indicators related to chronic disease, as well as to demonstrate the utility of the current version of the comprehensive list of indicators (see Page 3). It is also envisaged that this report will directly feed into the development of a prioritised set of national 'key indicators of progress' (as proposed in the *Blueprint for nation-wide surveillance of chronic diseases and associated determinants*).

This report is structured in a way that presents key indicators for each chronic disease and determinant separately. Additional data may be presented to reflect the indicator in terms of population groups, which may be of specific interest to researchers and policy makers. Information about contextual indicators is included on page 5 of this chapter, and also in Chapter 4. These indicators are not specifically related to a single chronic disease or determinant, but they provide insight into the health of Australians at the broadest levels. As contextual indicators are usually the results of a variety of health and wellbeing factors, changes in these indicators signal movement in trends at lower levels and may warrant investigation to determine the drivers of change.

Background

Many illnesses and health conditions can be classified under the broad category of chronic disease. In general, chronic diseases are mostly characterised by complex causality, multiple risk factors, long latency periods, a prolonged course of illness, and functional impairment or disability (AIHW 2002a). Their determinants can have positive or negative effects in terms of causation and/or prevention of the conditions. They can also affect the progression of illness and the maintenance of quality of life. Those that have positive effects are often referred to as protective factors, while those that have negative effects are commonly called risk factors.

Chronic disease as a whole is a major current health concern in Australia (AIHW 2006d). Its burden to those affected by it directly (individuals and their families), and to the Australian community in general, is large and increasing. Australian governments recognise that if interventions are not developed and applied soon, the burden of chronic disease will continue to escalate.

Many chronic diseases are preventable—or react more favourably in terms of management and medical treatment—if they are detected and treated in their early stages. With these issues in mind, the first National Chronic Disease Strategy (NCDS) was developed. This strategy was endorsed in November 2005 and is the principal framework that directs the way policies for improved chronic disease prevention and care are developed (NHPAC 2006).

Complementary to the NCDS is the *Blueprint for nation-wide surveillance of chronic disease and associated determinants* (the Blueprint), which was also endorsed in November 2005 (NPHP 2006). The Blueprint documents the framework for surveillance of preventable chronic diseases and their determinants in Australia.

The Department of Health and Ageing (DoHA) has contracted the AIHW to undertake a program of work in the field of 'surveillance and monitoring of chronic disease and associated risk factors'. This report and other related work on chronic diseases done at the AIHW are part of this program and are based on the principles and action items in the NCDS and the Blueprint.

Why indicators?

Indicators are a statistic that can describe a situation concisely, help assess progress and performance, and act as a guide to decision-making. They are important health surveillance tools that are used to establish points of reference, monitor the health of populations, and evaluate outcomes of treatments, health service use, interventions and health programs. National Health Performance Committee guidelines (NHPC 2004) state that national indicators should:

- be worth measuring
- be measurable for diverse populations
- be understood by people who need to act
- galvanise action
- be relevant to policy and practice
- be measurable over time to reflect results of actions
- be feasible to collect and report
- comply with national processes of data definitions.

Using a defined set of indicators allows for systematic reporting about chronic disease and determinants that is consistent across time, enabling monitoring of trends in the population.

For those in the information collection business, a defined set of indicators also provides a known construct for what data must be collected. This assists in the planning and development of surveys and other data collection instruments.

It is important to note that indicators are not an exhaustive explanation of a situation, such as a particular disease, and changes in indicator results should initiate further investigation into other indicators and underlying data.

The Catalogue and Information Hub

The Catalogue

The indicators presented in this report are a condensed list of indicators (for the purposes of this report referred to as the comprehensive list—see below) drawn from the Catalogue of Indicators of Chronic Disease and their Associated Determinants (the Catalogue). The Catalogue, which the AIHW developed for DoHA, is a listing of all currently endorsed national indicators for selected chronic diseases and determinants. It is housed at the AIHW and is available at www.aihw.gov.au/cdi/index.cfm. It was designed to be updated when new indicators are developed and endorsed, or when indicators are no longer endorsed or relevant.

Although the Catalogue was an individual project, it is also the first stage of work in finalising the comprehensive list and developing a set of key indicators of progress (see below) for chronic disease.

The comprehensive list of indicators

The comprehensive list reflects the most useful set of indicators chronic disease and determinants in terms of monitoring and surveillance at a national level. The indicators selected for the comprehensive list met most or all of the specifications for indicators (see Page 2) as well as those discussed below. The comprehensive list consists of indicators relevant to 12 chronic conditions (and selected determinants) that were identified by the National Public Health Partnership (NPHP) as those conditions representing the largest burden of disease in Australia, and the evidence supporting that preventive interventions are effective.

At the time of writing, the comprehensive list was a draft, as were the criteria used to assess and refine the indicators chosen for the list. The release of this report should help discussion and consultation about the draft comprehensive list of indicators so that a 2007 edition of the criteria and list can be finalised and endorsed.

Box 1.1: Draft criteria for indicator inclusion in the comprehensive list

Gives a 'big-picture' view of a chronic disease or associated determinants.

At least one indicator for every specified disease or determinant (if available).

Data are available for reporting, or planned for collection.

Relevant to chronic disease-related policy, in particular, supporting the four action areas of the National Chronic Disease Strategy (NHPAC 2006):

- prevention across the continuum
- early detection and early treatment
- integration and continuity of prevention and care
- self-management.

A particular indicator would be chosen over another similar indicator based on the recommendation of expert groups in that field.

Key indicators of progress

This set of indicators will be a smaller set that will most likely be drawn from the comprehensive list. They will represent a condensed core set of policy-relevant national indicators for chronic disease and associated determinants in Australia. The development of the set of key indicators of progress (originally called headline indicators) is one of the action items specified in the Blueprint and will be done by the Population Health Information Development Group (PHIDG).

It should be noted that work on indicators is based on current information requirements for data and policy. This means that the sets of comprehensive and key indicators for progress (including all indicators represented in the Catalogue), may change as information needs change, emerging issues in relation to chronic disease and determinants are identified, and government policies change. However, the value of a stable set of indicators consistently reported over time should not be understated.

The development of the key indicators will include a consultation process with relevant stakeholders. Once finalised, the set of key indicators will be submitted to the Australian Population Health Development Principal Committee for endorsement.

Contextual indicators

Contextual indicators (for example, life expectancy) are indicators that broadly describe an element of population health. They may be selected for inclusion in the comprehensive list or key indicators for progress, or may be used as additional sets of indicators that complement the information provided by data for other indicators (see below and Chapter 4).

Chronic Disease Information Hub

The AIHW, under the auspices of PHIDG and the work program with DoHA, will begin to develop the Chronic Disease Information Hub. A working prototype is expected to be complete in 2008. This product will be a one stop shop web-based information tool that will provide detailed information about the chronic disease environment in Australia. Included in the Information Hub will be details about current policy issues and frameworks surrounding chronic disease, links to relevant sources of data, and links to information about indicators, such as the Chronic Diseases Indicators Database. It may also provide an online forum for surveillance practitioners and others interested in data development, indicator development and related activities. The Information Hub will be a useful resource for policy makers, researchers, health professionals and the general public. The Information Hub will often be updated and will reflect the most current information available.

Contextual information and indicators

Contextual indicators do not relate to one condition or determinant as such, but provide a much broader view of health. A selection of data for contextual indicators is presented in Chapter 4 and relate in some way to the chronic conditions identified by the NPHP. Changes identified in these indicators may be the result of changes in the underlying aspects of health. For example, a change in life expectancy could indicate changes in health system delivery, the socioeconomic status of the population, or a change in particular risk behaviours in the population.

The contextual indicators presented in this report do not form an exhaustive list. They are a summary of useful measures that may indicate movement at more detailed levels, signalling that further investigation may be required.

Other information about the Australian population is also shown in Chapter 4. This provides the reader with another perspective about the health environment where chronic disease surveillance and monitoring activities relate, setting the context in which chronic disease and their determinants reside.

How this report presents indicators and data

Indicators for chronic conditions are reported under three headings:

- incidence/prevalence
- mortality
- other indicators.

The data for indicators are presented in figures (diagrams), usually as age-standardised rates that allow for comparison across time and show any trends for that indicator. Where available, these data are shown for both males and females. Appendix B presents tables of data indicating the source of the figures. Both figures and tables show where data have been age-standardised.

The most recent data for each indicator and/or condition are also included after the trend information. For example, for the indicator *death rates for colorectal cancer,* trends in deaths are shown as age-standardised rates over a series of years for both males and females (Figure 2.16). The text that follows the figure describes the actual number of deaths due to that condition for the most recent year of mortality data (2005).

For those chronic diseases where indicators have not yet been developed or endorsed, such as for chronic kidney disease, this report may include other appropriate data if available. Similarly, for existing endorsed indicators for which national data are not available, other information may be presented.

Indicators for determinants are presented under the common heading of prevalence. As with chronic conditions, if indicators have not yet been developed or endorsed for a particular determinant, or where data are not available to report against an existing endorsed indicator, other data may be presented if available.

Unless specific age groups are noted, indicators for chronic disease or determinants are relevant to all age groups.

2. Indicators of chronic disease

Ischaemic heart disease
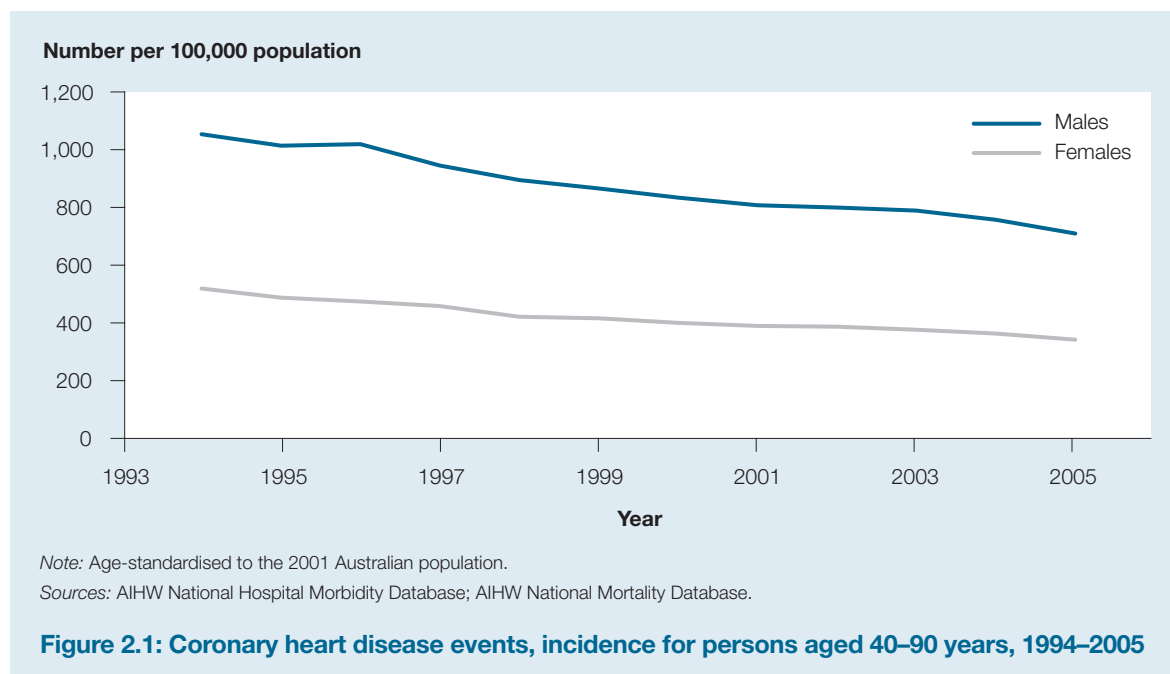
Ischaemic heart disease is also known as coronary heart disease (CHD) and includes heart attack and angina. It is the most common form of heart disease. Heart attacks are life-threatening emergencies that occur when a vessel supplying blood to the heart muscle is suddenly blocked. Angina is defined as temporary chest pain or discomfort when the heart's own blood supply is inadequate to meet extra needs, for example when exercising.

Risk factors for CHD include tobacco smoking, high blood pressure, high cholesterol, physical inactivity, excess body weight, and poor diet. Having diabetes is also a risk factor for heart disease.

Incidence and/or prevalence

Indicator: Incidence of acute coronary heart disease (CHD) events (heart attacks)

The incidence of CHD events has decreased for both males and females over time (Figure 2.1; Table B2.1). For males there was a decrease of 32% from 1994 to 2005, while for females, the decrease for the same time period was 34%.

Number per 100,000 population

Note: Age-standardised to the 2001 Australian population.

Sources: AIHW National Hospital Morbidity Database; AIHW National Mortality Database.

Figure 2.1: Coronary heart disease events, incidence for persons aged 40–90 years, 1994–2005

It is estimated that in 2005 there were more than 47,700 CHD events for those aged 40–90 years. This equates to 511 CHD events per 100,000 population.

More CHD events were experienced by males than females, with 706 CHD events per 100,000 population for males compared with 339 per 100,000 for females.
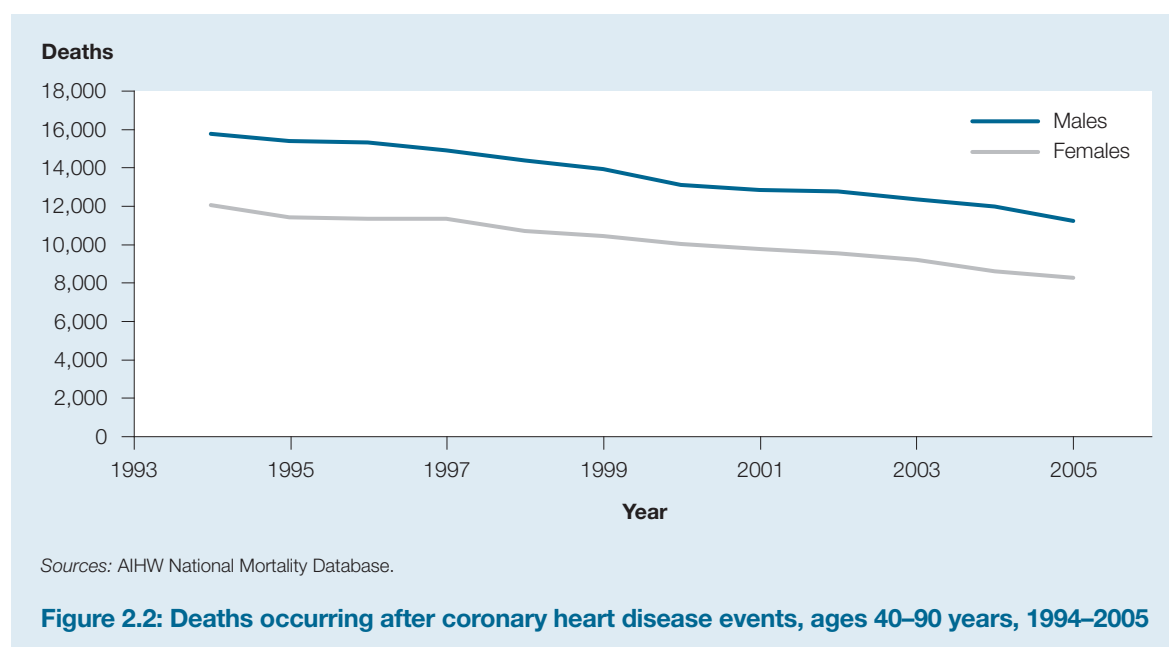
There are no currently endorsed indicators for the prevalence of ischaemic heart disease in Australia.

From the 2004–05 National Health Survey, it is estimated that 638,000 persons have ischaemic heart disease, which equates to 3% of the adult population (AIHW 2006a).

Mortality

Indicator: Deaths (case fatality) occurring after acute CHD events (heart attacks)

As with the incidence of CHD, deaths occurring after a CHD event have decreased for both males and females (Figure 2.2; Table B2.2). Since 1994, male deaths have decreased by 22% and female deaths by 23%. Fatality rates have also improved (expressed as proportions of deaths from CHD events), perhaps indicating advances in medical treatments for CHD. In 1994, 54% of CHD events resulted in a death, reduced to 41% in 2005.

Sources: AIHW National Mortality Database.

Figure 2.2: Deaths occurring after coronary heart disease events, ages 40–90 years, 1994–2005

In 2005, 11,200 males and 8,200 females died after experiencing a coronary heart disease event.

Other indicators

Indicator: Proportion of people with mild/moderate/severe disability at six months following the diagnosis of initial cardiac event

Currently there are no national data to measure the proportion of people who had a mild, moderate or severe disability following the diagnosis of an initial cardiac event. The Survey of Disability, Ageing and Carers shows that more than 154,000 people who reported a disability said that heart disease was the main health condition associated with that disability (ABS 2004). It should be noted that the heart disease may not explain or account for that particular disability, but is an important factor in the disability.

Stroke

Stroke is a major form of cerebrovascular disease. It occurs when an artery supplying blood to the brain suddenly becomes blocked or bleeds. This results in part of the brain dying from lack of oxygen and nutrients. This causes loss of function to the affected part of the brain and can lead to death or a loss of function to the part of the body normally controlled by that part of the brain, such as speech.

People who have suffered a stroke are often predisposed to other vascular diseases such as CHD and peripheral vascular disease. There are many risk factors for stroke, including a family history of stroke, atrial fibrillation, transient ischaemic attack, high blood pressure, and tobacco smoking.

Incidence and/or prevalence
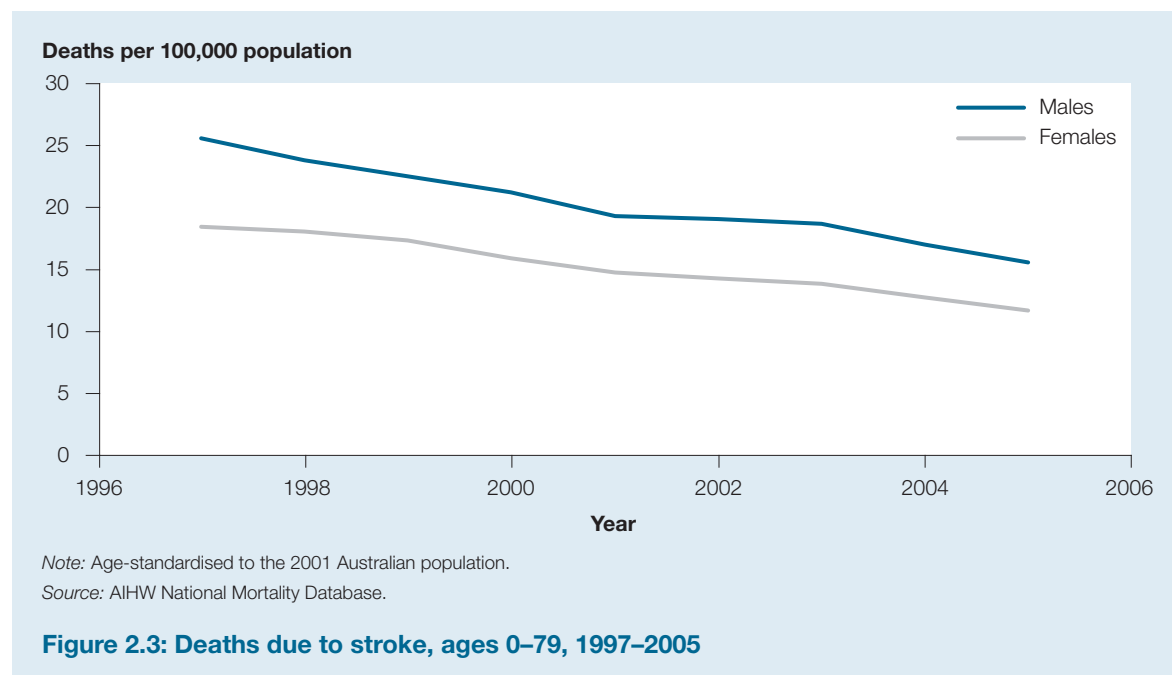
Indicator: Incidence rates for stroke

There are no national data to measure the incidence of stroke. But based on some regional registers, it is estimated that there are about 40,000 to 48,000 stroke events among Australians every year (AIHW: Senes 2006). Based on the 2003 Survey of Disability, Ageing and Carers (SDAC), an estimated 347,000 Australians had had a stroke at some time in their lives. Of those, four out of five were aged 60 years and over. As the Australian population ages, it is expected that the number of strokes per year will also increase.

Mortality

Indicator: Death rates for stroke (aged 0–79 years)

In 2005, there were 2,700 deaths due to stroke for people aged 0–79 years, representing an age-standardised rate of 14 deaths per 100,000 in this population. More males than females die from stroke, but the age-standardised death rates have been decreasing over time for both sexes (Figure 2.3, Table B2.3). Male rates (for those aged 0–79 years) decreased from 25 deaths per 100,000 population in 1997 to 16 deaths per 100,000 in 2004. Female rates decreased from 18 to 12 deaths per 100,000 population in the same period. It should be noted that most deaths due to stroke occur at older age groups, so age-standardised death rates for the whole population differ to those aged 0–79 years. The mean ages at death due to stroke in 2005 were 78 years for males and 82 years for females.

Deaths per 100,000 population

Note: Age-standardised to the 2001 Australian population.
Source: AIHW National Mortality Database.

Figure 2.3: Deaths due to stroke, ages 0–79, 1997–2005

Other indicators

Indicator: Proportion of people with mild/moderate/severe disability at six months following the diagnosis of initial stroke event

There are no current national data to measure the proportion of people who have a disability at 6 months after having a stroke. But data collected by the 2003 SDAC shows that about 283,000 Australians who had suffered a stroke also had a disability and, in about 146,000 of those, the disability was a result of the stroke (AIHW: Senes 2006). It should be noted that these data are not limited to those who have only had an initial stroke, and that it is not possible to specify the time elapsed from the stroke.
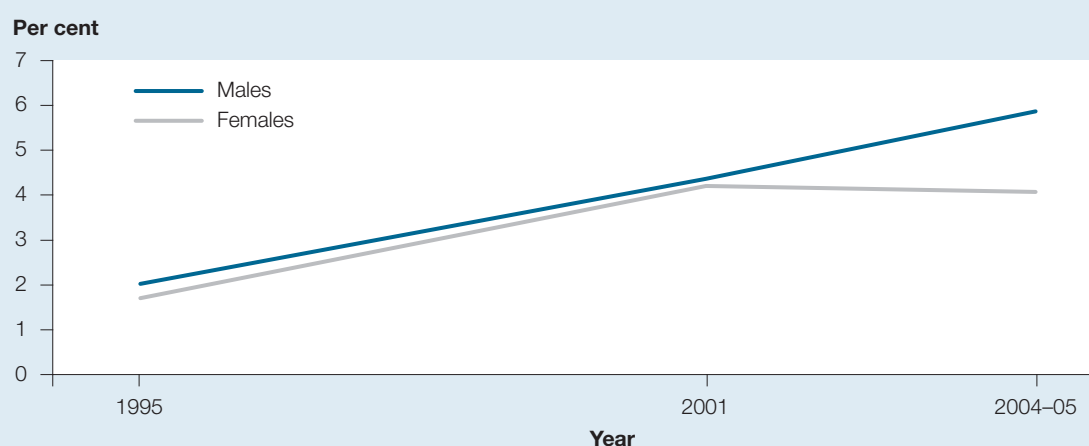
Type 2 diabetes

Type 2 diabetes is the most common condition in the larger range of illnesses known as diabetes mellitus. Type 2 diabetes occurs more commonly in people aged 40 years and over, and is marked by reduced levels of insulin or the inability of the body to use insulin properly (insulin resistance) (AIHW 2002b). There are many modifiable risk factors that can contribute to the onset and development of Type 2 diabetes, including obesity, physical inactivity, and poor nutrition. There are also many complications from diabetes, including kidney disease, certain eye diseases, coronary heart disease, stroke and peripheral vascular disease.

Incidence and/or prevalence

Indicators: Prevalence rates for Type 2 diabetes
Incidence rates for Type 2 diabetes

The prevalence of diabetes in Australia can mainly be sourced from two data collections: the Australian Diabetes, Obesity and Lifestyle Study (AusDiab) that was conducted by the International Diabetes Institute (IDI), and the National Health Surveys (NHS) that are conducted by the Australian Bureau of Statistics (ABS). The most recent data available are from the 2004–05 NHS and show that the prevalence of self-reported Type 2 diabetes has increased between 1995 and 2004–05 (Figure 2.4; Table B2.4). A slight decrease in the age-standardised rate for females is apparent for 2004–05, but more data are needed before a change in trend can be established. It should be noted that estimates based on self-report are likely to underestimate the true prevalence of Type 2 diabetes in the population.

Notes
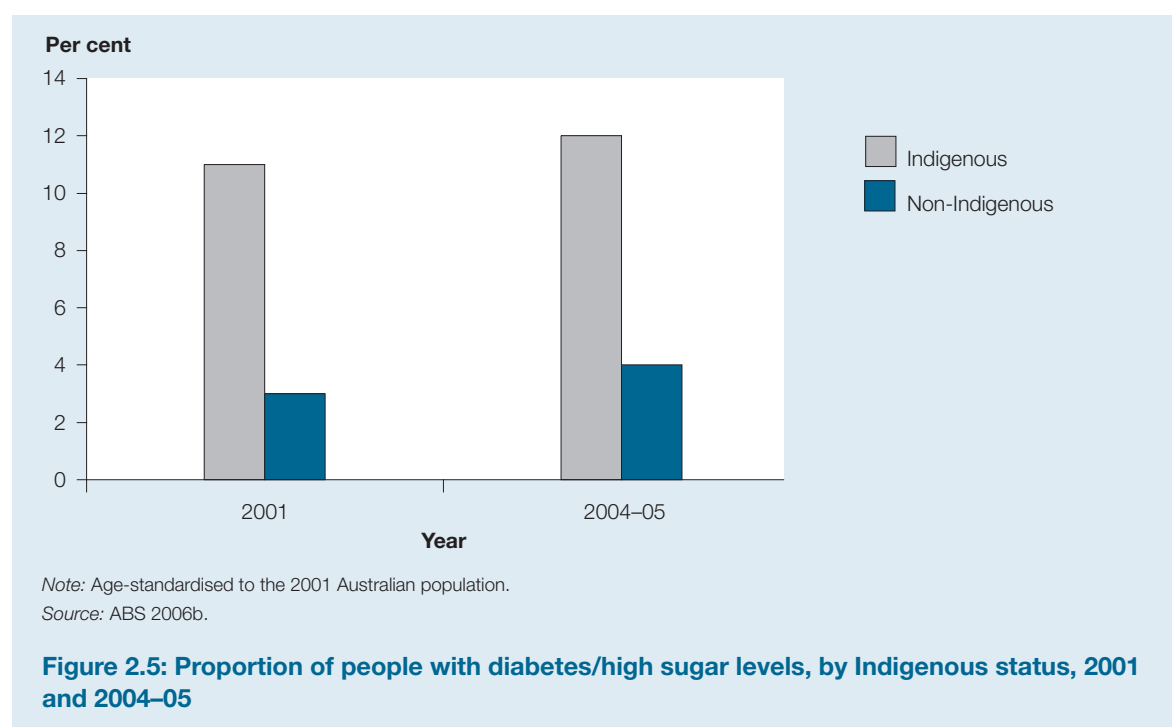
1. Based on self-reported data.

2. Age-standardised to the 2001 Australian population.

3. Estimates for Type 2 diabetes were not considered reliable for those aged under 30 years, so the trends shown relate to older age groups only.

Sources: ABS National Health Surveys, 1995, 2001 and 2004–05.

Figure 2.4: Proportion of adults aged 30 years and over with Type 2 diabetes, 1995, 2001 and 2004–05

Based on self-reported data, in 2004–05 an estimated 580,000 people had Type 2 diabetes. The proportion of people who reported Type 2 diabetes increased with age, from less than 1% of those aged under 40 years to 14% of those aged 70–74 years, before decreasing to 12% in those aged 75 years and over.

Aboriginal and Torres Strait Islander peoples are more like to have diabetes than the non-Indigenous population. Currently, there are no national data that can demonstrate this by diabetes type, but using the 2004–05 National Aboriginal and Torres Strait Islander Health Survey (NATSIHS), a comparison of all diabetes (including high sugar levels) between the Indigenous and non-Indigenous population can be shown (Figure 2.5; Table B2.5).

Note: Age-standardised to the 2001 Australian population.
Source: ABS 2006b.

Figure 2.5: Proportion of people with diabetes/high sugar levels, by Indigenous status, 2001 and 2004–05

Currently the AusDiab follow-up study (2005) is the only source of data that provides an indication of the incidence of Type 2 diabetes. This study estimates the annual incidence of diabetes to be about 1% (IDI 2006).

Mortality

There are no currently endorsed indicators for deaths due to Type 2 diabetes. However, an indicator for deaths due to total diabetes (all types) and deaths due to coronary heart disease where diabetes (all types) is an associated cause are endorsed by the National Diabetes Data Working Group (AIHW 2007c). Information about these indicators can be found at http://www.aihw.gov.au/cdi/index.cfm.

In 2005, 11,800 deaths in Australia were related to diabetes (AIHW 2006a). Of those, 30% had diabetes registered as the underlying cause of death, while diabetes was noted as an associated or contributing cause of death for the remaining 70%. Diabetes as the underlying cause of death features in the top 20 leading causes of death in Australia for both males and females (AIHW 2006a).
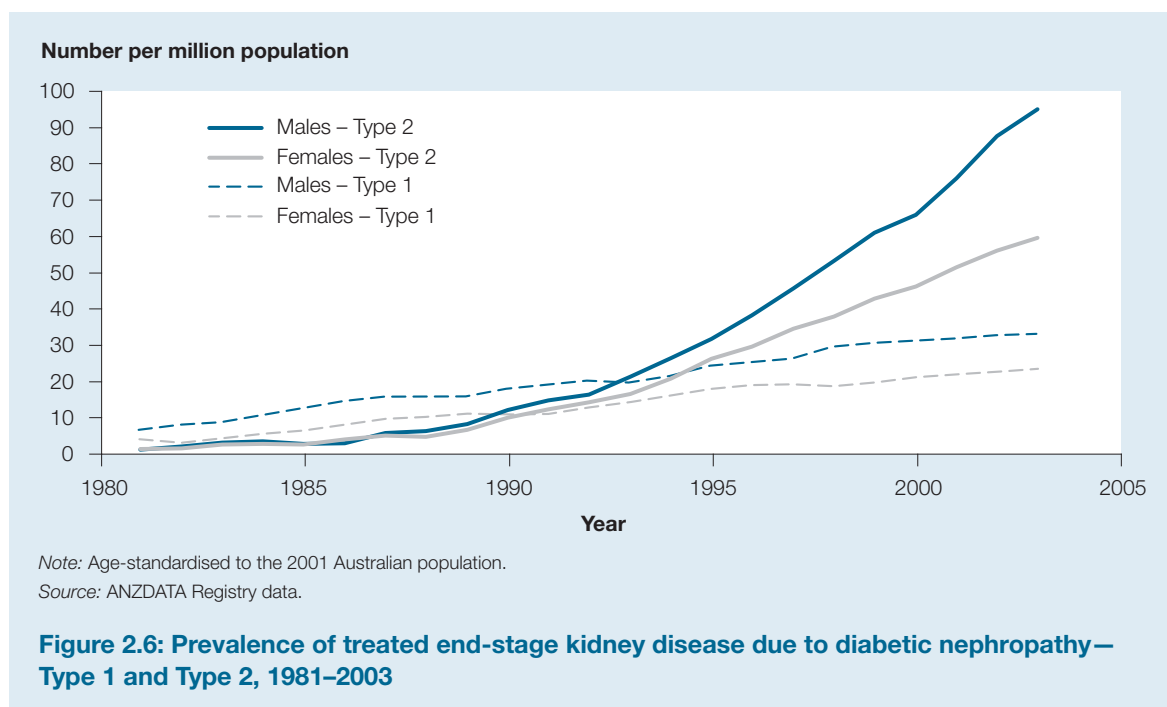
Other indicators

Indicator: Proportion of persons with end-stage kidney (renal) disease with diabetic nephropathy as a causal factor

Diabetic nephropathy is a severe complication of diabetes that results from high blood sugar levels damaging the blood-filtering capillaries in the kidneys. It can occur in both Type 1 and Type 2 diabetes. Currently, data to measure the prevalence of end-stage kidney disease (ESKD) are only available for people being treated for ESKD, that is, those who are receiving dialysis or living with a kidney transplant. Therefore, the data presented here are likely to be an underestimate of true prevalence. These data are collected by the Australian and New Zealand Dialysis and Transplant Registry (ANZDATA) that collect the causes of treated ESKD.

The prevalence of treated ESKD due to diabetic nephropathy in people with Type 2 diabetes has been increasing over time (Figure 2.6; Table B2.6). Rates for males and females were similar from 1983 (the first year of data collection) until the 1990s when the rates for males increased more rapidly than the rates for females. Prevalence rates for ESKD due to diabetic nephropathy with people with Type 1 diabetes also increased over the same time period but were much lower than rates for diabetic nephropathy with people with Type 2 diabetes.

Note: Age-standardised to the 2001 Australian population.
Source: ANZDATA Registry data.

Figure 2.6: Prevalence of treated end-stage kidney disease due to diabetic nephropathy— Type 1 and Type 2, 1981–2003

At the end of 2003, 13,600 people were being treated for ESKD in Australia (AIHW 2005a). From 1983 the prevalence rate of treated end-stage kidney disease has increased by 6% each year on average, but this rate of increase has been slowing in recent years. Factors that have contributed to the increase in prevalence include a higher incidence of treated ESKD, the ageing population, and the acceptance of older patients into kidney replacement programs. Improved management and new technologies also contribute to the rising prevalence because people with ESKD are living longer.

Kidney disease

Chronic kidney disease (CKD) is marked by the long-term and usually irreversible loss of kidney function (AIHW 2005a). The disease can often lack symptoms in its early stages so the diagnosis of kidney disease is often delayed or missed. In many cases CKD is preventable and treatable, but may also lead to serious illness and death. End-stage kidney disease (ESKD) is one of the most severe outcomes of kidney disease where the kidneys' function is no longer sufficient to sustain life.

CKD shares many risk factors with cardiovascular disease and diabetes (AIHW: Tong & Stevenson 2007). There are complex causal relationships between these diseases, and each may be caused by, or be a complication of, one or both of the other diseases.

In Australia, there is a lack of information about CKD. The regular data collected and reported are only for people receiving kidney replacement therapy.

There are also no currently endorsed indicators for chronic kidney disease. The AIHW report *Chronic kidney disease in Australia, 2005* highlighted the need for a national monitoring system and the development of a set of indicators for CKD.

Incidence and/or prevalence

In 2004, more than 1,900 people began treatment for ESKD in Australia (AIHW 2006a). The number of new patients has been rising annually over time, and the increase has been more rapid in older ages than in younger ages. The increasing prevalence in diabetes and the reduced mortality from cardiovascular disease, as well as the increased acceptance of older people into treatment programs, have contributed to this increase.

Aboriginal and Torres Strait Islander peoples have much higher rates of kidney disease than the non-Indigenous population. In the 2004–05 NATSIHS, 3% of Indigenous Australians in remote areas and 1% of Indigenous Australians in non-remote areas reported kidney disease as a long-term condition (ABS 2006b). It should be noted that although some kidney diseases are long-term conditions, they may not cause permanent damage to kidney function or kidney structure, so are often not regarded as CKD. The kidney disease reported in the NATSIHS is likely to be an underestimate of prevalence because information was collected from private dwellings only, and excludes those in health care facilities at the time of the survey.

Mortality

In 2005, CKD was the underlying cause of death for more than 2,400 people, which equates to 2% of all deaths in that year. A further 9,500 deaths were recorded as having CKD as an associated cause of death. Where CKD was listed as an associated cause of death, the most common underlying causes of death were cardiovascular disease, cancers, diabetes and respiratory diseases.

Arthritis

Arthritis is a group of disorders involving inflammation of the joints, which can become stiff, painful, swollen or deformed. The two most common types of arthritis are osteoarthritis and rheumatoid arthritis. Osteoarthritis affects mostly the spine, hips, knees and hands. It first appears from the age of about 30 and is more common and severe with increasing age. Rheumatoid arthritis is a chronic systemic disease. Its most prominent feature is the inflammation of joints, most often those of the hands. Rheumatoid arthritis can occur at any age but more commonly appears between the ages 20 to 40 years.
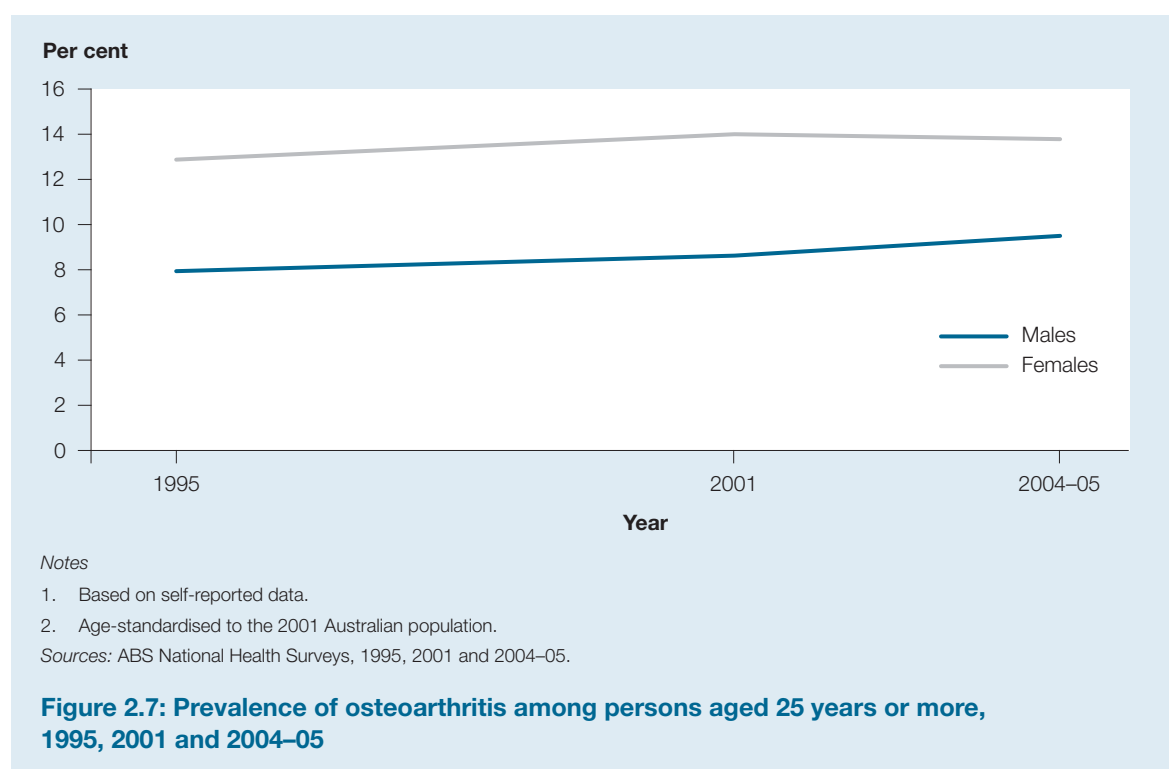
Arthritis is not preventable on the basis of current knowledge, though several risk factors have been identified. These include obesity, repetitive joint-loading tasks, and joint injury for osteoarthritis, and smoking for rheumatoid arthritis.

Incidence and/or prevalence
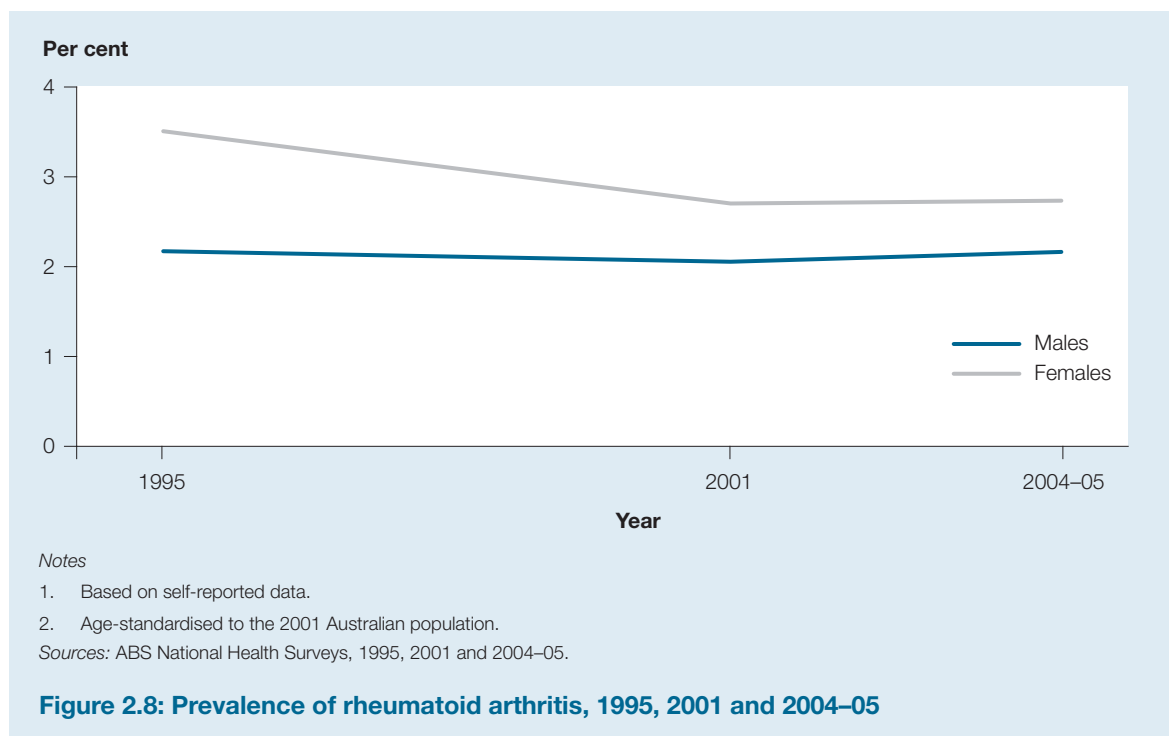
Indicators: Prevalence of osteoarthritis among persons aged 25 years or over

Prevalence of rheumatoid arthritis

Osteoarthritis is more prevalent in females than males (Figure 2.7; Table B2.7). For both males and females self-reported rates have remained similar over 10 years. But as many people who have osteoarthritis may not report it, these rates may be underestimates of true prevalence (AIHW 2006c).

Notes

1.   Based on self-reported data.

2.   Age-standardised to the 2001 Australian population.

Sources: ABS National Health Surveys, 1995, 2001 and 2004–05.

Figure 2.7: Prevalence of osteoarthritis among persons aged 25 years or more, 1995, 2001 and 2004–05

In 2004–05, the NHS estimated that over 1.5 million people were affected by osteoarthritis (almost 8% of the population). Osteoarthritis prevalence increases with age. In 2004–05, less than 2% of people aged 25–34 years reported osteoarthritis, whereas almost 30% of those aged 65 years or older reported the condition.

The prevalence of self-reported rheumatoid arthritis has remained similar over 10 years (Figure 2.8; Table B2.8). These estimates should be treated with caution as self-reported information on rheumatoid arthritis is believed to overestimate the prevalence of the condition (AIHW 2006c). This is because the term rheumatoid arthritis is misunderstood with other terminology used to describe rheumatic diseases and other musculoskeletal problems.

Per cent

Notes
1. Based on self-reported data.
2. Age-standardised to the 2001 Australian population.
Sources: ABS National Health Surveys, 1995, 2001 and 2004–05.

**Figure 2.8: Prevalence of rheumatoid arthritis, 1995, 2001 and 2004–05**

In 2004–05, an estimated 491,000 persons had rheumatoid arthritis as a long-term condition (ABS 2006a). The prevalence of rheumatoid arthritis increased with age from less than 1% in those aged under 35 years to about 8% in those aged 65 years or older.

Mortality

Indicator: Death rates for rheumatoid arthritis as the underlying cause of death

Death rates for rheumatoid arthritis as an associated cause of death

The death rate for rheumatoid arthritis as an underlying cause has remained stable over 6 years of mortality data for both males and females, at 6 and 11 deaths per million population respectively. As an associated cause of death, rheumatoid arthritis has remained similar for males over the same period (about 22 deaths per million population), but decreased slightly for females from 38 deaths per million population in 2000 to 31 in 2005 (Figure 2.9; Table B2.9). More years of mortality data would be required before a change in trend could be validated. Generally, arthritis (all types) is not a significant contributor to mortality, but rheumatoid arthritis significantly increases the risk of premature death. The systemic nature of the disease can lead to life-threatening complications of the cardiovascular and respiratory system. On average, people with rheumatoid arthritis live 5–10 years shorter than people without the condition (AIHW 2006c).

Deaths per million population

Note: Age-standardised to the 2001 Australian population.
Source: AIHW National Mortality Database.
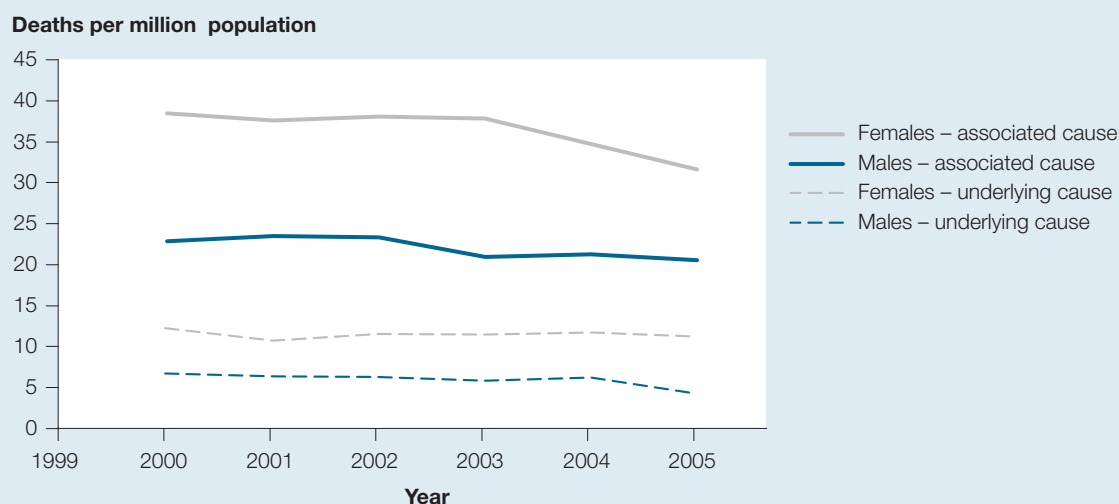
Figure 2.9: Death rates for rheumatoid arthritis as the underlying cause and associated cause of death, 2000–2005
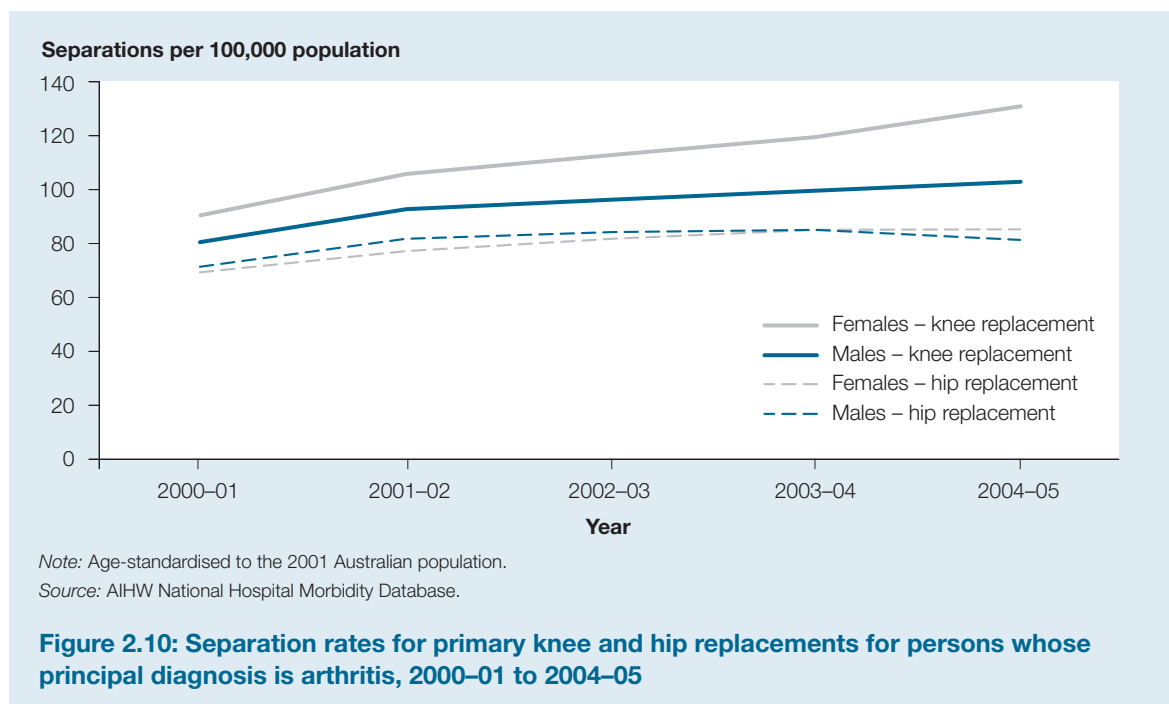
In 2005, there were 175 deaths due to rheumatoid arthritis, which equates to 0.1% of all deaths for that year. The majority of those deaths were female (73%). As an associated cause of death, there were 582 deaths in 2005, the majority also female (68%).

Other indicators

Indicator: Number of primary total hip replacements for arthritis

Number of primary total knee replacements for arthritis

Total hip and knee replacements (also known as arthroplasty) are cost-effective treatments for severe arthritis of the hip and knee. Trends for both these procedures have increased over time (Figure 2.10; Table B2.10). Hospitalisation rates for hip replacements were similar for both males and females, and increased from about 70 separations per 100,000 population in 2000–01 to about 83 separations per 100,000 population in 2004–05.

There was a greater increase in separation rates for knee replacements over the same period, and they were more common for females than males. In 2000–01, the separation rates for males were 81 per 100,000 population, increasing to just over 100 per 100,000 population in 2004–05. For females, the separation rates increased more sharply, from 90 separations per 100,000 in 2000–01 to 131 separations per 100,000 in 2004–05.

Separations per 100,000 population

Note: Age-standardised to the 2001 Australian population.
Source: AIHW National Hospital Morbidity Database.

Figure 2.10: Separation rates for primary knee and hip replacements for persons whose principal diagnosis is arthritis, 2000–01 to 2004–05

In 2004–05, there were 24,700 separations for knee replacements for people whose principal diagnosis was arthritis. Two-thirds of those who received a knee replacement were aged 70 years and over. There were also 17,700 separations for hip replacements for people whose principal diagnosis was arthritis. Almost two-thirds (64%) of those were aged 70 years and over.

Osteoporosis

Osteoporosis is the thinning and weakening of the bone substance, increasing the risk of fracture and deformity. The main risk factors for osteoporosis are related to diet (particularly low calcium intake) and physical inactivity. Being female also carries another risk, particularly in conjunction with declining levels of oestrogen after menopause and in early menopause.
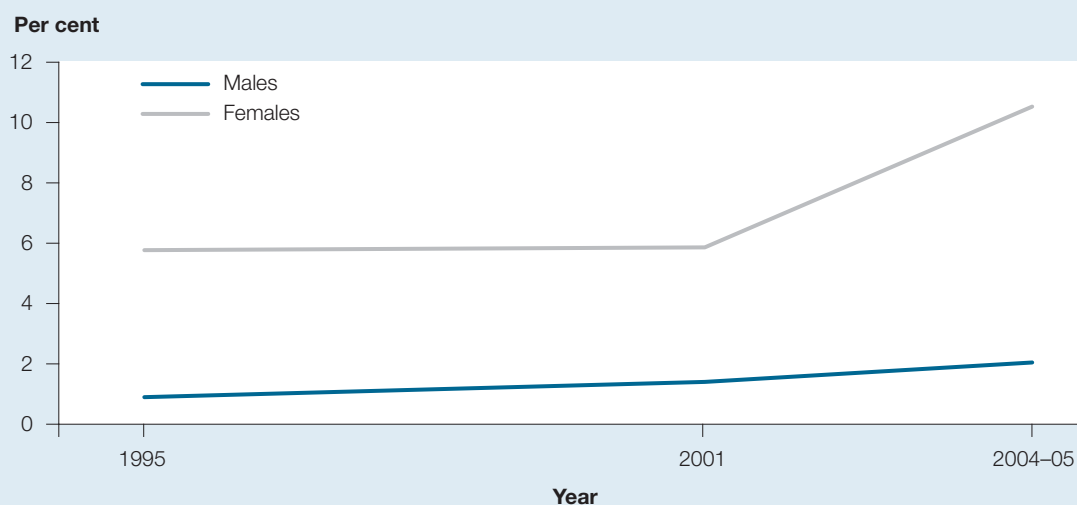
Osteoporosis affects mainly the elderly, so its impact is likely to increase as the Australian population ages. Osteoporosis occurs without symptoms, and so often goes undetected until a fracture occurs.

Incidence and/or prevalence

Indicator: Prevalence of osteoporosis among persons aged 40 years or over

The prevalence of undiagnosed osteoporosis is unknown, but believed to be relatively high. Increases in osteoporosis can be in part attributed to an increased awareness and diagnosis and not necessarily a greater number of actual cases, so trend data need to be interpreted with caution (AIHW 2006c) (Figure 2.11; Table B2.11).

Per cent

Notes

1.   Based on self-reported data.

2.   Age-standardised to the 2001 Australian population.

Source: ABS National Health Surveys, 1995, 2001 and 2004–05.

Figure 2.11: Prevalence of osteoporosis among persons aged 40 years or over, 1995, 2001 and 2004–05

In 2004–05, estimates from the NHS indicated that almost 562,000 people aged 40 years or over had osteoporosis as a long-term condition (ABS 2006a). The majority of these (86%) were female. The reporting of osteoporosis increased with age, with over 70% of those reporting the condition aged 60 years or older.

Mortality
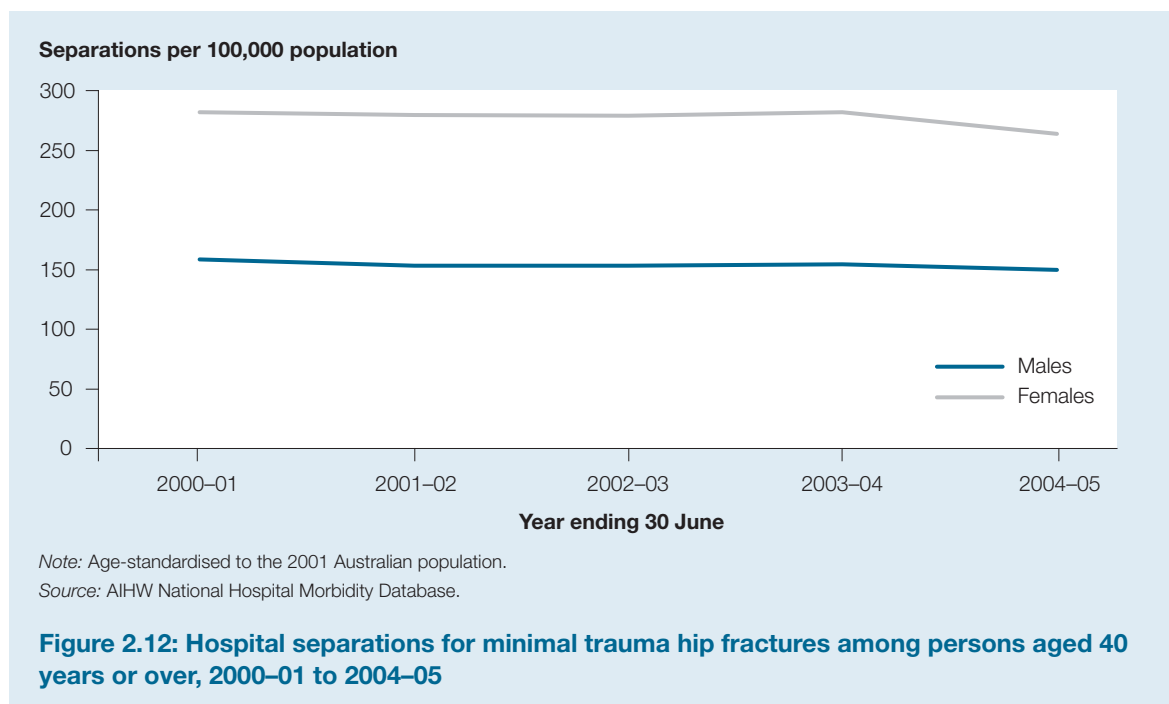
There are no indicators for mortality from osteoporosis.

Other indicators

Indicator: Number of hospital separations for minimal trauma hip fractures among persons aged 40 years and over

Hip fractures in those aged over 40 years are commonly caused by osteoporosis, and in the majority of cases, the patient is admitted to hospital for treatment (AIHW 2006c). The following figure shows data for hip fractures after minimal trauma (Figure 2.12; Table B2.12). It is considered that the majority of these types of hip fractures would be osteoporotic in nature.

Trend data for hip fractures without major trauma have remained steady over 5 years with a slight decline in the last year of data. Hospital separations for this condition are more common for females than for males, with an average of 275 separations per 100,000 population for females over the 5 years compared with an average of 152 separations per 100,000 for males.

Separations per 100,000 population

Note: Age-standardised to the 2001 Australian population.
Source: AIHW National Hospital Morbidity Database.

Figure 2.12: Hospital separations for minimal trauma hip fractures among persons aged 40 years or over, 2000–01 to 2004–05

In 2004–05 there were 20,400 separations for minimal trauma hip fractures among people aged 40 years and over. The majority of separations (73%) were for females. Over 80% of hospitalisations for minimal trauma hip fractures occurred for people aged 75 years or more.

Lung cancer

Lung cancer is an aggressive form of cancer that originates in the respiratory system, but is able to invade and spread to other parts of the body. Lung cancer, for the purposes of this report, is the collective term for cancer of the trachea, bronchus and lung.

Lung cancer has low cure rates and a short survival time. The 5-year relative survival rates for lung cancer are 11% for males and 14% for females (AIHW & AACR 2001). Tobacco smoking is overwhelmingly the largest risk factor for lung cancer.

Incidence and/or prevalence

Indicator: Incidence of cancer of the trachea, bronchus and lung

The incidence of lung cancer has been decreasing for men since the early 1980s (Figure 2.13; Table B2.13). This decrease is attributed to the decline in the numbers of males smoking tobacco in the previous 10 to 20 years (AIHW & AACR 2004). In contrast, the incidence of lung cancer for females has been gradually increasing over the 20 years to 2003, again reflecting smoking patterns in the previous decades. In the last 4 years a plateau in incidence rates can be observed. However, more data are required before a change in trend is verified.

New cases per 100,000 population

Note: Age-standardised to the 2001 Australian population.
Source: AIHW NCSCH.
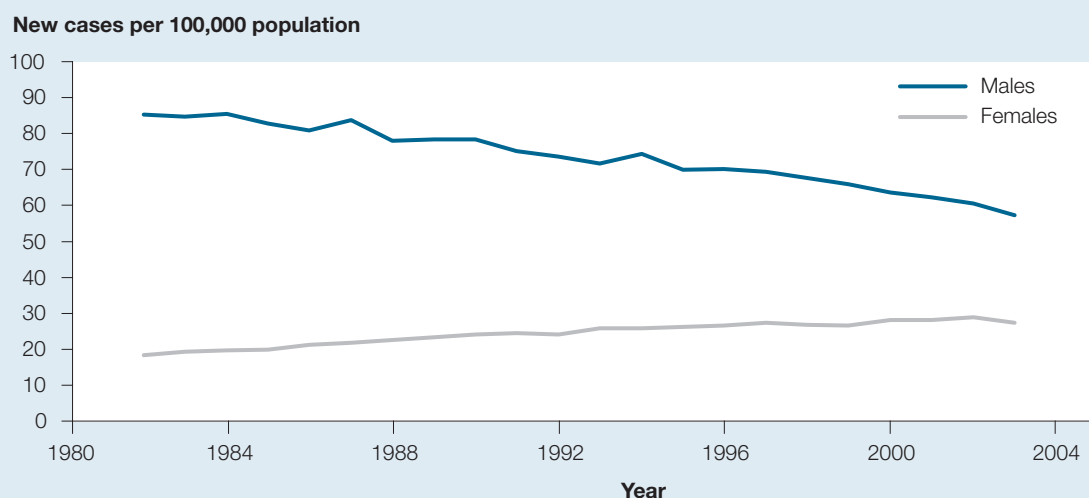
Figure 2.13: Incidence of lung cancer, 1982–2003
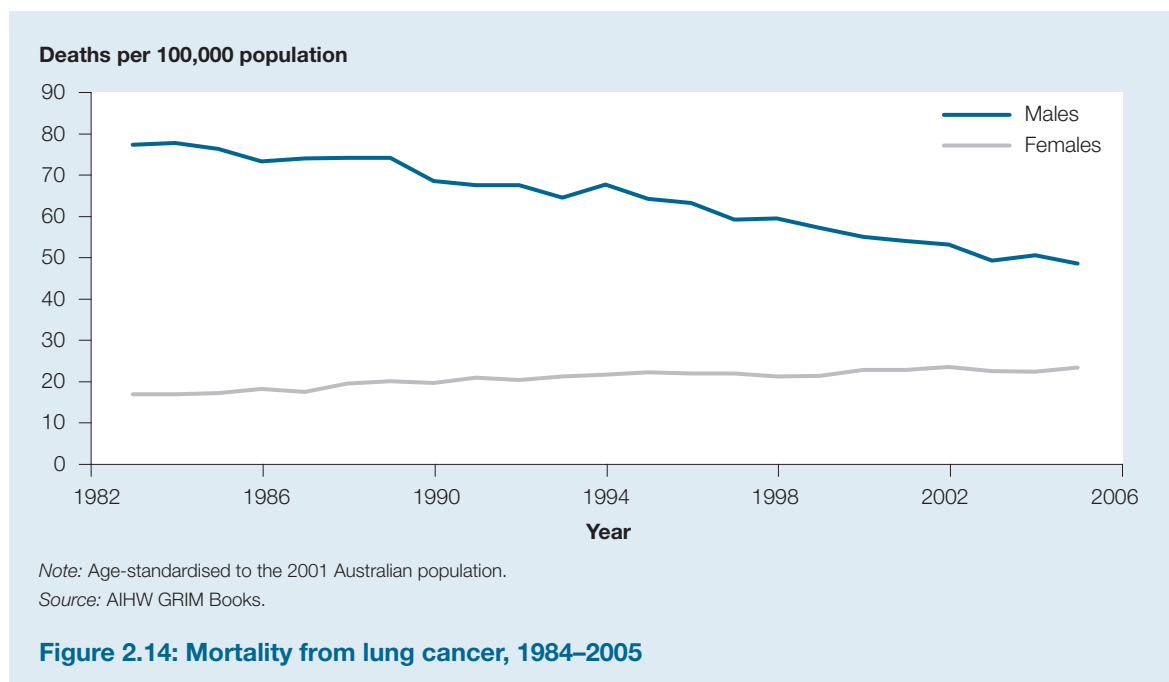
In 2003, lung cancer was the fourth most frequently occurring cancer for males (5,300 cases) and females (3,000 cases) (AIHW & AACR 2007). It should be noted that lung cancer is more prominent in people aged over 45 year, as it usually takes decades for cancer-causing agents in tobacco smoke to have full effect (AIHW 2005b).

There are no indicators for the prevalence of lung cancer.

Mortality

Indicator: Death rates for cancer of the trachea, bronchus and lung

Deaths from lung cancer have followed similar patterns to those of incidence (Figure 2.14; Table B2.14). From 1984, deaths for males decreased by 2% annually on average, but increased for females by an average of 2% each year until 2005 (AIHW GRIM Books). In recent years, annual death rates have remained stable for females, which may indicate a change in trend.

Deaths per 100,000 population

Note: Age-standardised to the 2001 Australian population.
Source: AIHW GRIM Books.

Figure 2.14: Mortality from lung cancer, 1984–2005

In 2005, there were 7,400 deaths from cancer of the lung. Almost two-thirds of these deaths were males. The mean age at death for both males and females was 72 years.

For males, death from lung cancer was the third most common underlying cause of death in 2004, while for females it was the sixth (AIHW 2006a).

Colorectal cancer

Colorectal cancer comprises cancers of the colon and rectum. Colorectal cancer begins to grow in the bowel wall. It is believed that most of these cancers begin as benign growths known as polyps, and that over time a proportion of these polyps become cancer.

Family history is a factor in the increased risk of developing colorectal cancer, as well as poor diet and physical inactivity. More than two-thirds of colorectal cancers and related deaths are considered to be preventable (AIHW & AACR 2003).

Between November 2002 and June 2004 a pilot for the National Bowel Cancer Screening Program was conducted. Program evaluation indicated that a national program would be feasible, acceptable and cost-effective (AIHW 2006a). The National Bowel Cancer Screening Program started in August 2006 and will be phased in over a number of years.
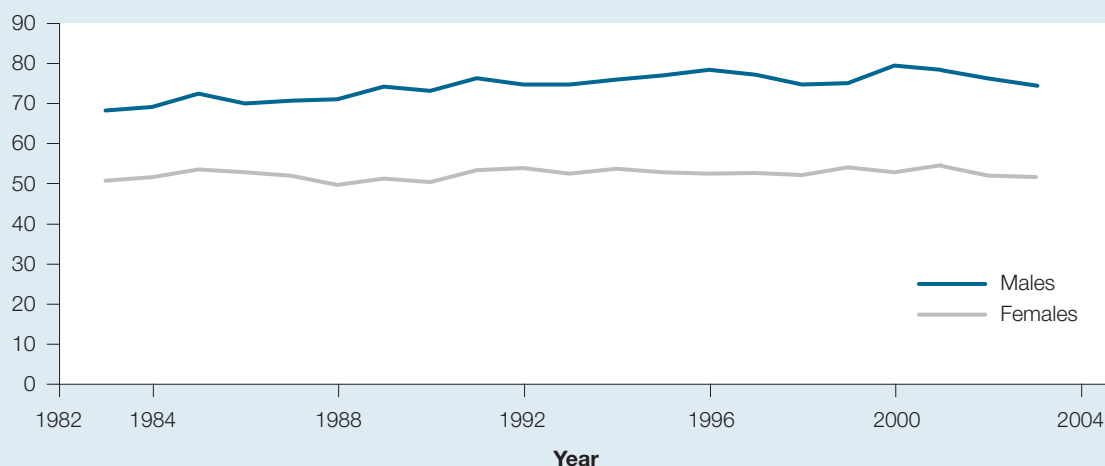
Incidence and/or prevalence

Indicator: Incidence rates for colorectal cancer

The incidence of colorectal cancer has been increasing for both males and females (Figure 2.15; Table B2.15). In 1983 the age-standardised incidence rate for males was 68 cases per 100,000 population. This increased to a peak of 79 cases per 100,000 in 2000 before declining to 73 per 100,000 in 2003. For females, the increase was slightly less than for males, from 50 cases per 100,000 in 1983 to 51 cases in 2003.

New cases per 100,000 population

Note: Age-standardised to the 2001 Australian population.
Source: AIHW NCSCH.

Figure 2.15: Incidence of colorectal cancer, 1983–2003

The majority of people diagnosed with colorectal cancer are aged 45 years and over (96%). In 2003, there were more than 12,500 new cases of colorectal cancer diagnosed. Males accounted for more than one-half (55%) of these cases.
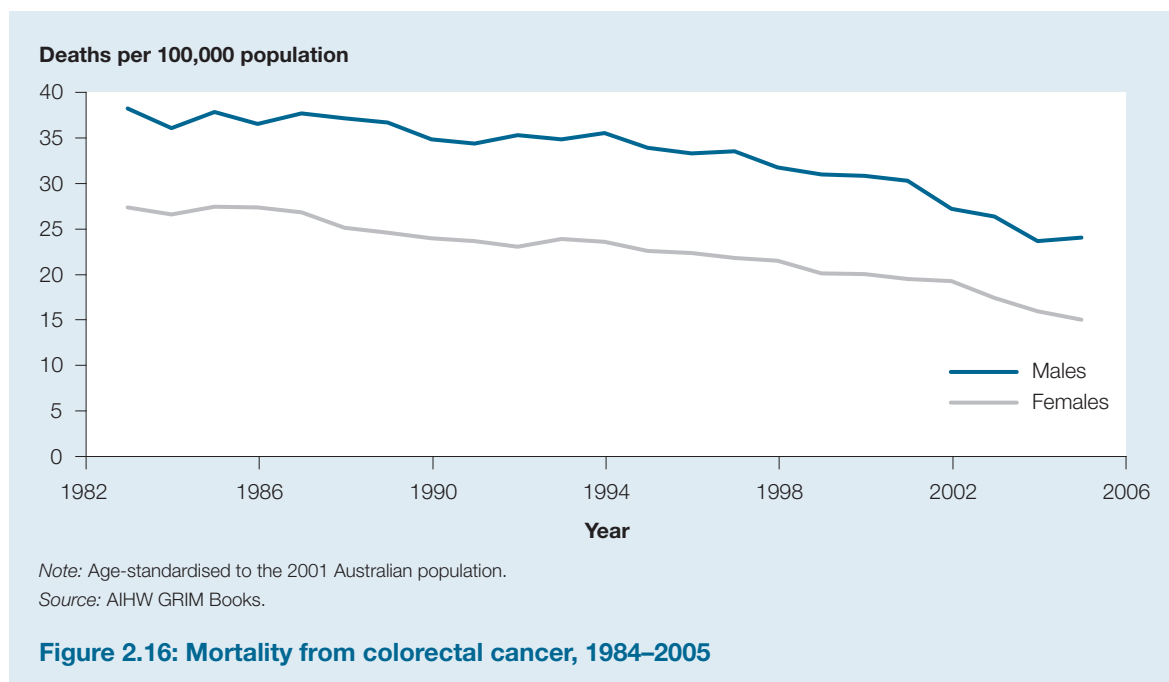
Excluding non-melanoma skin cancers, colorectal cancer is the second most commonly occurring cancer in males and females (AIHW & AACR 2007).

Mortality

Indicators: Death rates for colorectal cancer

Five-year relative survival rates for colorectal cancer

Death rates for colorectal cancer have been decreasing steadily over the last 2 decades (Figure 2.16; Table B2.16). Since 1984, they have decreased at an average rate of 2% per year. For both males and females, rates peaked during this period in 1985 at 38 and 28 deaths per 100,000 population respectively. In 2005, the rates recorded were 24 deaths per 100,000 for males and 15 for females. The female rate in 2005 was the lowest recorded death rate due to colorectal cancer since 1921 when recording of deaths due to this cancer began.

Deaths per 100,000 population

Figure 2.16: Mortality from colorectal cancer, 1984–2005

In 2005, there were more than 4,100 deaths due to colorectal cancer, of which more than one-half (56%) were male deaths. The median age at death was 71 years for males and 74 years for females. Similar to the incidence of colorectal cancer, more deaths occurred with increasing age. The majority of deaths were in those aged 45 years or older (97%).

Survival for those diagnosed with colorectal cancer has been improving since 1982 (Table 2.1). Improvements have occurred for both males and females, but survival rates for females have been consistently higher than those for males. In the 6 year period of 1992–1997, 58% of males diagnosed with colorectal cancer could expect to survive for 5 years, compared with 59% of females. It should be noted that the population used for age-standardising these survival estimates is different to the population used for age-standardising other data presented in this report.

Table 2.1: Five-year relative survival proportions for colorectal cancer, by sex and diagnosis period, 1982–1997

Diagnosis period	Crude proportion	95% confidence interval	Age standardised	95% confidence interval
		Males		
1982–1986	49.9	49.0–50.8	49.9	48.8–50.9
1987–1991	53.6	52.8–54.4	53.4	52.4–54.3
1992–1997	57.8	57.0–58.5	57.6	56.8–58.5
		Females		
1982–1986	51.9	51.0–52.8	52.0	51.0–52.9
1987–1991	55.3	54.5–56.2	55.6	54.7–56.5
1992–1997	59.4	58.6–60.1	59.9	59.1–60.7

Illness and death from bowel cancer can be reduced through population-based screening and effective follow-up treatment.

Survival rates are largely dependent on the extent of the development of the cancer at diagnosis and are much higher if the cancer is in its early stages and still localised within the bowel wall (Table 2.2).

Table 2.2: Prognosis for 5-year survival rates based on stage of cancer, 2006

Stage			
ACPS[a]	pTNM[b]	Definition	5-year survival figures (per cent)
A	I	Localised within the bowel	88
B	II	Penetrates the bowel wall	70
C	III	Regional nodal involvement	43
D	IV	Distant metastases	7

(a)   Australian Clinico-Pathological Staging System.

(b)   Pathological staging of tumour, node and metastasis.

Source: NHMRC 2006.

Chronic obstructive pulmonary disease

Chronic obstructive pulmonary disease (COPD) is a serious, progressive and disabling disease in which destruction of lung tissue and narrowing of the air passages obstruct oxygen intake causing chronic shortness of breath. The person is also prone to episodes during which their shortness of breath is more severe and they have fits of coughing, with mucus. The lung damage is due to the long-term inhalation of irritant gases and particles and by far the main cause of this is cigarette smoking.

The main pattern of COPD is known as *emphysema* but if the person's cough is a fairly constant feature the condition is often labelled as *chronic bronchitis*.

There are currently no nationally endorsed indicators for COPD.

Incidence and/or prevalence

Prevalence of COPD is difficult to estimate largely due to differences in how it is defined. For example, some definitions include asthma or asthmatic bronchitis. In addition, data sources (such as the NHS) do not distinguish between chronic and acute bronchitis, so are likely to overestimate COPD, especially for the younger population. Another factor that hinders the measurement of true prevalence is that COPD is often not diagnosed until a person's lifestyle becomes restricted, and by then the progression of the disease is often moderately advanced. This is often the case in the elderly population, many of whom may be resident in nursing homes or hospitalised at the time of diagnosis, and not within the scope of population surveys such as the NHS. This may contribute to a likely underestimate of COPD in the elderly population. COPD is also sometimes confused with asthma in the elderly.

But estimates from the NHS do provide an indicator of overall prevalence and give an indication of any trends in COPD. From the 2004–05 NHS, it is estimated that 590,000 people (3% of the population) had bronchitis/emphysema. This compares to results from the 1989–90, 1995 and 2001 NHS that showed prevalence rates of 3%, 4% and 4% respectively.

Rates increased with age: of those aged under 35 years, less than 2% reported bronchitis/emphysema, whereas 8% of those aged 65 years and over reported the condition.

Mortality

In 2005, there were almost 4,900 deaths due to COPD in Australia. The age-standardised death rate for males was 31 deaths per 100,000 population and for females, 16 deaths per 100,000. The mean age at death for both males and females was 78 years.

Asthma

Asthma is a chronic disease marked by episodes of wheezing, chest tightness and shortness of breath associated with widespread narrowing of the airways within the lungs and obstruction of airflow (AIHW 2005c). The underlying causes of asthma are still not well understood. Factors such as genetic traits, age, sex, diet and lifestyle may all contribute to the increased risk of developing asthma. Of people who develop asthma in adulthood, about 10% can be attributed to exposure to specific substances in the workplace.
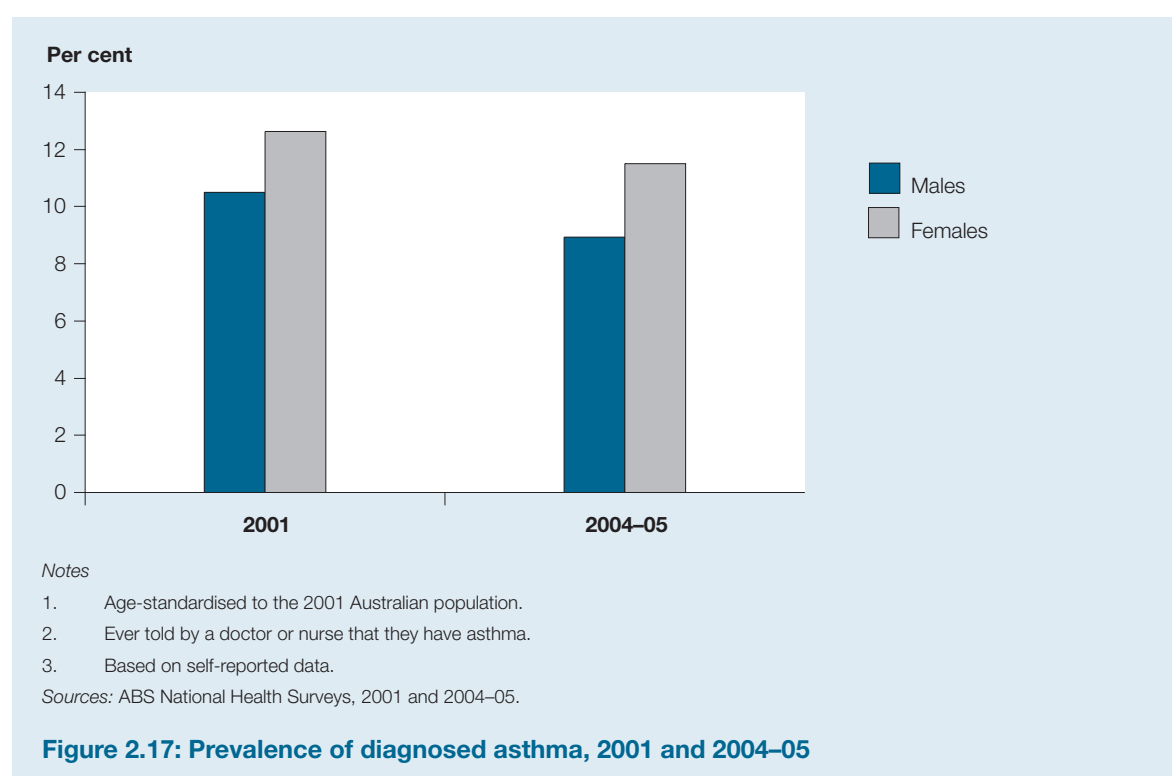
There are many factors that may trigger the narrowing of the airways and other symptoms of asthma. These include exercise, viral infections, tobacco smoke and air pollutants, specific allergens (for example, house dust mites and mould spores), and some food preservatives.

Incidence and/or prevalence

Indicator: Prevalence of ever having doctor-diagnosed asthma

The prevalence of diagnosed asthma in the population is sourced from the ABS National Health Surveys. Respondents were asked whether they had *ever been told by a doctor or nurse that they had asthma*, so this information does not directly provide a measure of the above indicator.

Age-standardised proportions of diagnosed asthma decreased between 2001 and 2004–05 for both males and females (Figure 2.17; Table B2.17).

Notes
1.   Age-standardised to the 2001 Australian population.
2.   Ever told by a doctor or nurse that they have asthma.
3.   Based on self-reported data.
Sources: ABS National Health Surveys, 2001 and 2004–05.

Figure 2.17: Prevalence of diagnosed asthma, 2001 and 2004–05

In 2004–05, the prevalence of diagnosed asthma was much higher in younger age groups (Table 2.3). It should be noted that due to the difficulty in distinguishing between asthma and COPD in the elderly, rates for older Australians may be overestimated (ACAM 2006).

Table 2.3: Age-specific prevalence rates for diagnosed asthma, 2004–05 (per cent)
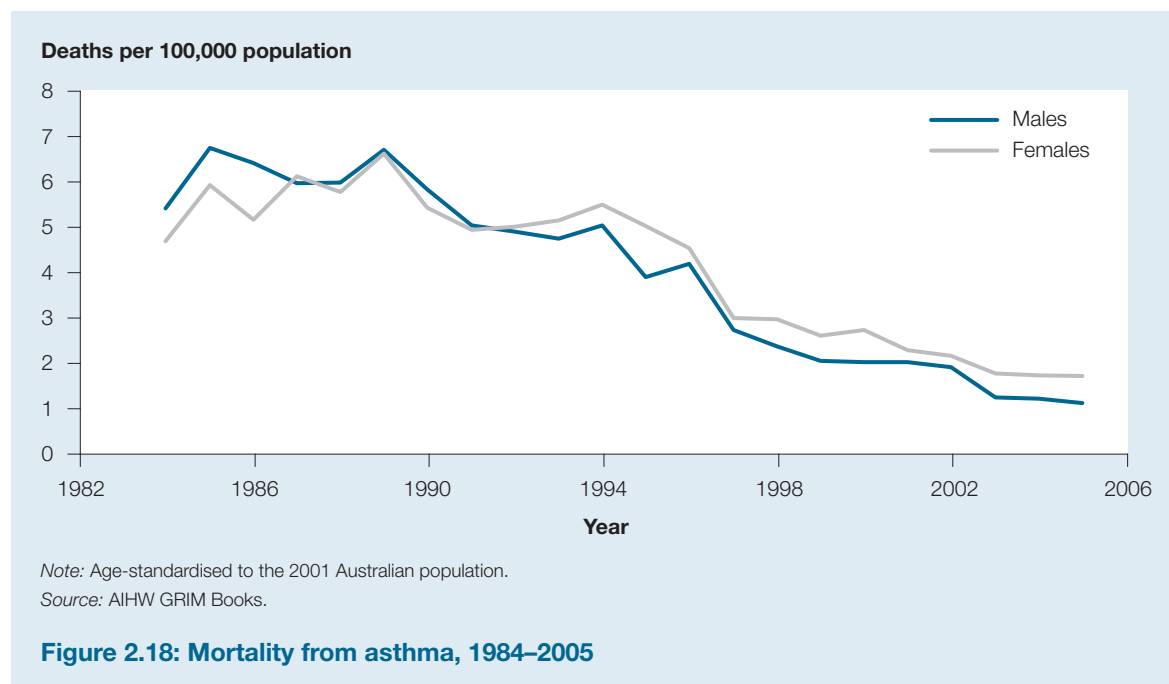
Age group (years)	Males	Females	Persons
0–9	10.5	9.4	10.0
10–19	14.6	12.0	13.3
20–29	8.4	14.2	11.3
30–39	8.0	12.7	10.4
40–49	7.0	10.0	8.5
50–59	6.5	11.4	8.9
60–69	7.8	10.6	9.2
70 and over	7.9	10.6	9.4
All ages	9.0	11.5	10.2

Mortality

Indicator: Death rate for asthma

The age-standardised death rates for asthma peaked in 1989 at almost 7 deaths per 100,000 population before decreasing by an average of 9% per year to less than 2 deaths per 100,000 in 2005 (Figure 2.18; Table B2.18). The pattern was similar for both males and females.

Note: Age-standardised to the 2001 Australian population.
Source: AIHW GRIM Books.

Figure 2.18: Mortality from asthma, 1984–2005
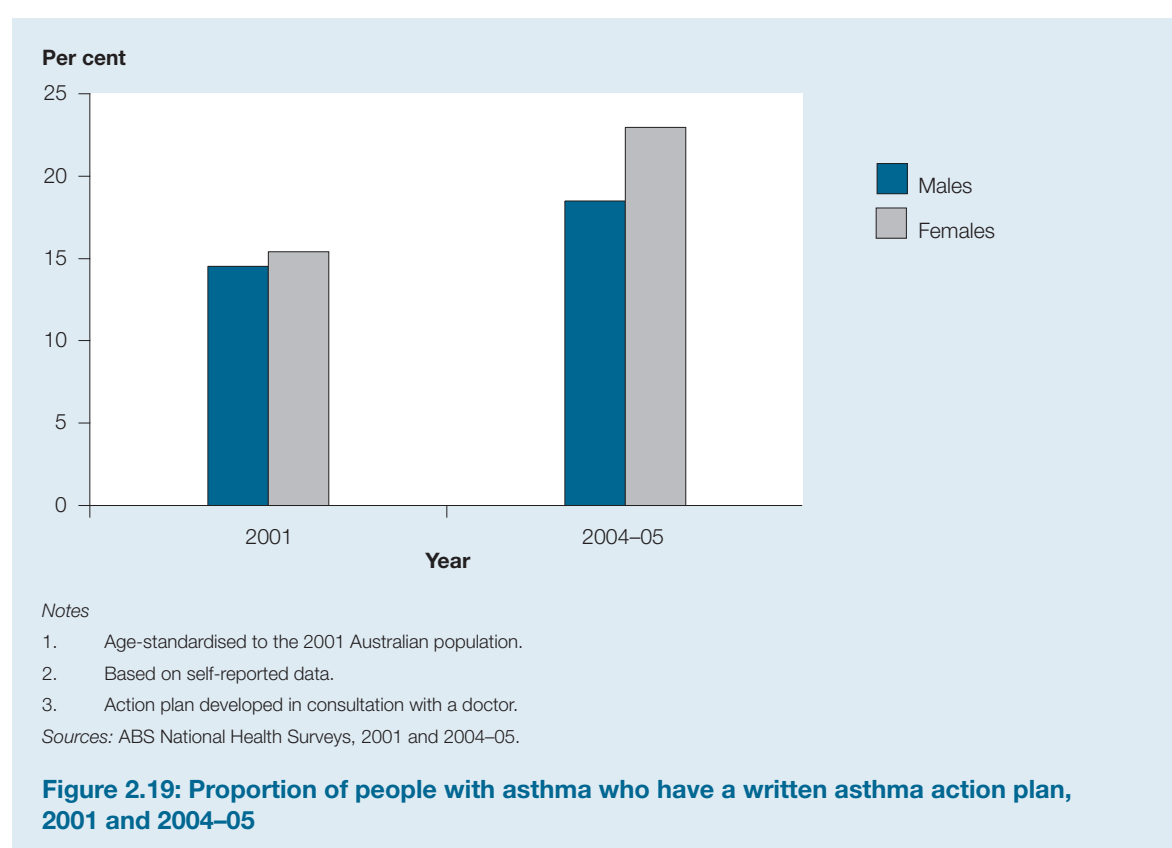
In 2005, asthma was the underlying cause in 318 deaths (108 males and 210 females). There was a 10-year difference between the mean age at death for males (63 years) and females (73 years).

Asthma is not a large contributor to mortality in Australia.

Other indicators

Indicator: Proportion of people with asthma who have a recent, written asthma action plan, developed in consultation with their general practitioner

The proportion of people with asthma with a written asthma action plan obtained from a doctor increased between 2001 and 2004–05 (Figure 2.19; Table B2.19). In 2001, just under 15% of males and just over 15% of females reported having a plan obtained from their doctor. In 2004–05, a fifth of males (19%) and almost a quarter of females (23%) reported having such a plan. It should be noted that the data presented do not provide an indication of when the written asthma action plan was obtained, so do not tackle the 'recent' component of the indicator.

Per cent

Notes

1.   Age-standardised to the 2001 Australian population.

2.   Based on self-reported data.

3.   Action plan developed in consultation with a doctor.

Sources: ABS National Health Surveys, 2001 and 2004–05.

Figure 2.19: Proportion of people with asthma who have a written asthma action plan, 2001 and 2004–05

Depression

Depression (including depressive disorders) is a common mental disorder that can occur regardless of people's sex, age and background. Depression is a significant public health problem, not only in Australia but worldwide. It presents with depressed mood, loss of interest or pleasure, feelings of guilt or low self-worth, disturbed sleep or appetite, low energy, and poor concentration (WHO 2006a). These problems can become chronic or recurrent and lead to substantial impairments in an individual's ability to take care of his or her everyday responsibilities.

There are many causes of depression. Depression is more common in some families than in others, and this may indicate a genetic vulnerability to the condition. Stressful factors in a person's environment such as poverty, unemployment, child abuse and exposure to adverse life events (for example, relationship break-ups, trauma and family illness) can also be contributing factors. Certain risk behaviours such as illicit drug use, alcohol misuse and dependence, and eating disorders and excess weight often occur
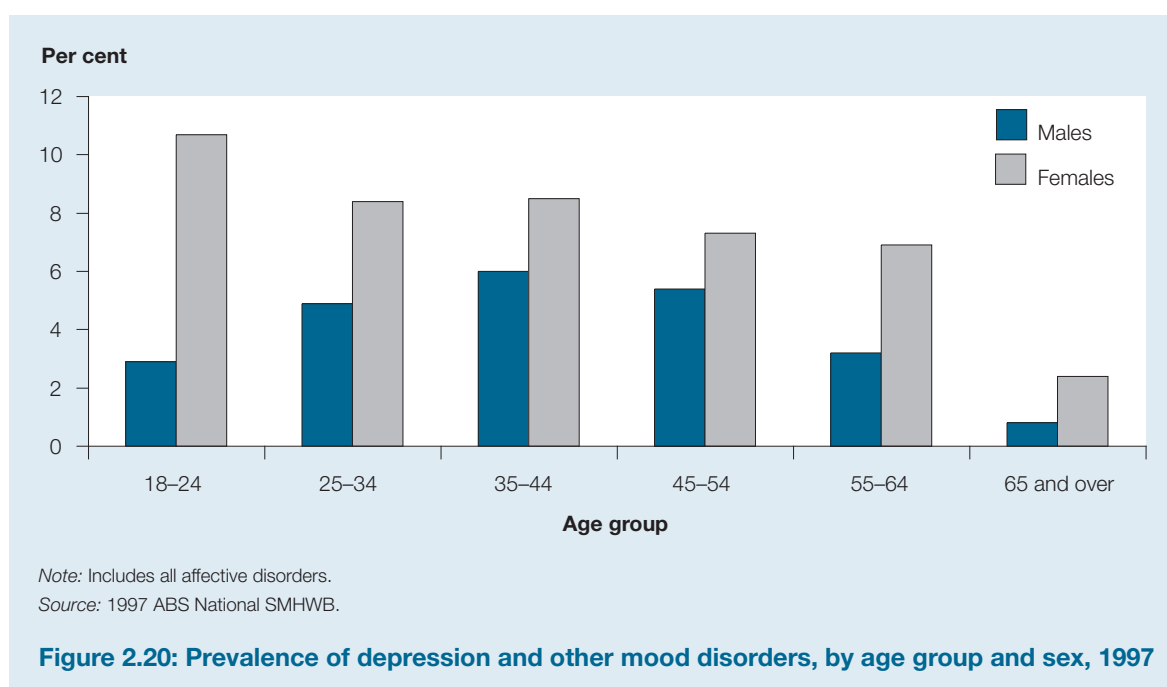
in combination with depression. Depression is often present in people who have been diagnosed with chronic diseases such as cardiovascular disease, diabetes, cancer and rheumatoid arthritis (DHAC & AIHW 1999).

Incidence and/or prevalence

Indicator: Prevalence rates for depressive disorders in general population

Currently there are no recent national estimates about the prevalence of people with diagnosed depressive disorders in the general population. The last survey that collected such information was the 1997 ABS National Survey of Mental Health and Wellbeing (SMHWB). Data from that survey showed that 5% adults had experienced depression during the 12 months before the survey (ABS 1998). Females reported higher rates of depressive disorders than males for all adult age groups (Figure 2.20; Table B2.20). For both sexes, those who were aged 65 years and over reported lower rates than other age groups (DHAC & AIHW 1999).

Another SMHWB will be conducted by the ABS in late 2007. This survey will provide up to date information about the prevalence of depressive disorders, as well as trend information from the previous survey for those aged 16–85 years.

Note: Includes all affective disorders.
Source: 1997 ABS National SMHWB.

Figure 2.20: Prevalence of depression and other mood disorders, by age group and sex, 1997

Estimates from the 2004–05 NHS provide details about the proportion of people in the population with mood (affective) problems which include depression. In 2004–05, 4% of males and 6% of females reported having a mood (affective) disorder as a long-term condition, that is, a condition that had lasted, or was expected to last, for 6 months or more. It should be noted that information about mood (affective) problems was self-reported in the survey and respondents were not asked whether the condition had been diagnosed by a doctor or other health professional.

Mortality

There are no currently endorsed indicators for mortality due to depression. Current research has indicated that there are links between suicide and mental illness, but the extent of these links is not easily quantified.

Other indicators

Indicator: Proportion of general practitioners who know and apply best-practice guidelines for the identification and management of depression

Currently there are no data that enable this indicator to be measured.

Oral health

Although there are a number of disorders that can be included under the heading of oral diseases, the two main forms are dental caries (tooth decay) and periodontal diseases (gum diseases) (AIHW 2002a). The most common clinical consequences of oral disease are infection and tooth loss. Oral diseases are also associated with pain and discomfort, eating difficulties, and problems with speech, communication and socialising. There is also increasing evidence that periodontal disease is linked with heart disease.

Oral health problems are often related to early childhood experiences, diet, smoking, environmental exposures (fluoride), and health behaviours. Poor oral health can in turn affect diet and other problems. Many oral health problems are preventable (NPHP 2001).
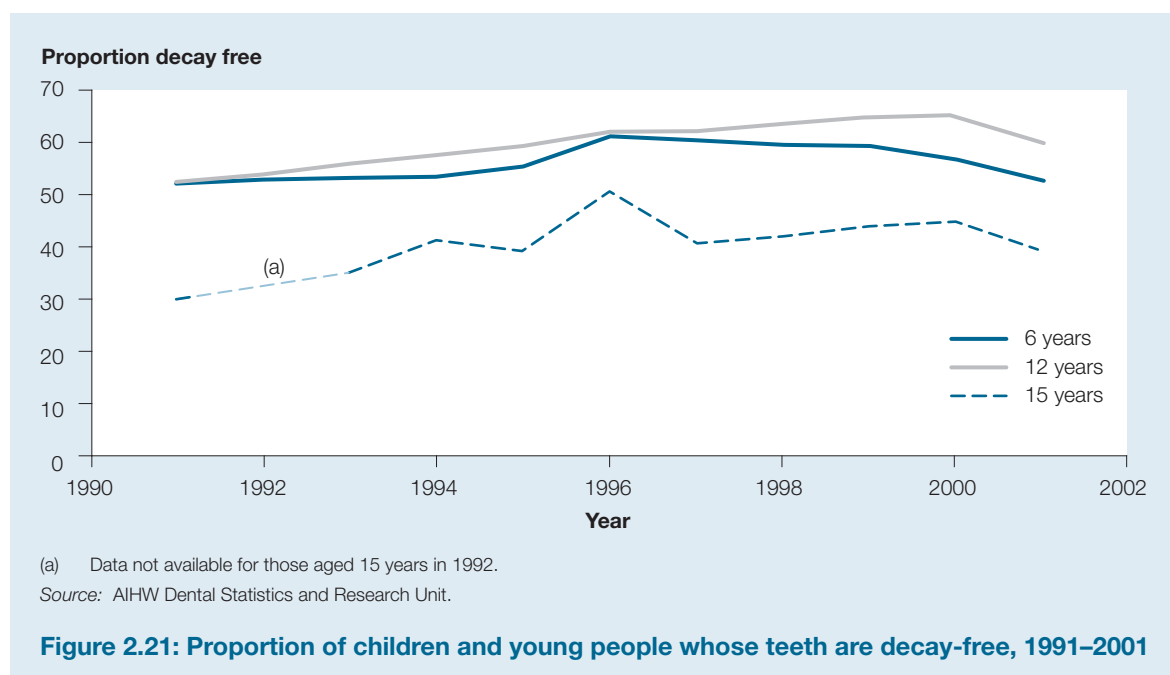
Incidence and/or prevalence

Indicators: Proportion of children decay-free at age 6 years and at age 12 years

Proportion of young people decay-free at age 12 years and age 15 years

The percentage of the dentate population reporting a social impact (for example, toothache, difficulty chewing, concerned about appearance) because of problems with teeth, mouth or gums in the last 12 months, by age group, living circumstance, eligibility for public dental care, Indigenous identity and special needs

The proportion of children and young people whose teeth have no decay increased from 1991 to 2000 (Figure 2.21; Table B2.21). The last year of these data (2001) show a decrease, but more data are required before a change in trend can be confirmed.


(a)   Data not available for those aged 15 years in 1992.

Source: AIHW Dental Statistics and Research Unit.

Figure 2.21: Proportion of children and young people whose teeth are decay-free, 1991–2001

Another measure of oral health in children is the DMFT index (number of decayed, missing due to caries, and filled teeth). For the ages of 6, 12 and 15 years, the DMFT has shown a decrease from 1991–2001 (Table 2.4).

Table 2.4: Mean decay experience of children and young people, 1991–2001

Year	Aged 6 years[a]	Aged 12 years[b]	Aged 15 years[b]
1991	2.00	1.26	3.00
1992	1.95	1.22	(c)
1993	1.90	1.10	2.61
1994	1.79	1.09	2.24
1995	1.73	1.01	2.42
1996	1.45	0.90	1.46
1997	1.50	0.86	2.00
1998	1.51	0.83	1.84
1999	1.51	0.83	1.86
2000	1.65	0.84	1.86
2001	1.89	0.95	2.23

(a)   Data for children aged 6 years is the average number of deciduous teeth affected by decay.

(b)   Data for children and young people aged 12 and 15 years is the average number of permanent teeth affected by decay.

(c)   Data not available for those aged 15 years in 1992.

Source: AIHW Dental Statistics and Research Unit.

Findings from the 2004–2006 National Survey of Adult Oral Health showed that, on average, females aged 15 years and over had more missing teeth than males of the same age (6.4 teeth compared with 5.8 teeth) (Table 2.5). But a slightly higher proportion of males had untreated root decay.

Table 2.5: Persons aged 15 years and over, mean number of missing teeth and untreated decay, 2004–2006

Characteristic	Average number of missing teeth[a]	Untreated decay	
		Average number of decayed tooth surfaces	Percentage of people with untreated root decay
Sex			
Males	5.8	1.0	7.8
Females	6.4	0.7	5.6
Age group			
15–34	3.5	0.9	1.6
35–54	5.3	0.9	7.1
55–74	10.2	0.6	12.6
75 and over	14.1	0.5	17.3
Total 15 years and over	*6.1*	*0.8*	*6.7*
Indigenous identity			
Indigenous	7.4	2.7	7.7
Non-Indigenous	6.1	0.8	6.7
Residential location			
Capital city	5.7	0.7	6.0
Other places	6.8	1.1	8.1
Eligibility for public dental care			
Eligible	8.7	1.2	10.5
Ineligible	5.2	0.7	5.4
Dental insurance			
Insured	5.8	0.5	4.8
Uninsured	6.5	1.1	8.7

(a) Missing teeth for any reason.

Source: Roberts-Thompson & Do 2007.

Periodontitis is inflammation of the tissues surrounding the tooth affecting the gum, the ligaments and the bone. It is a type of gum disease. Results from the 2004–2006 National Survey of Adult Oral Health also showed that the prevalence of moderate or severe periodontitis in those aged 15 years and over was 23%.

Mortality

There are no indicators for mortality due to oral health problems and most oral health problems are not considered life-threatening. The oral conditions that do result in death are mainly oral cancers. In 2004, there were 652 deaths due to oral cancer, almost three-quarters of which were for males (72%).

Other indicators

Indicator: Proportion of the population served by a reticulated water supply that provides satisfactory fluoride levels whether artificially fluoridated or naturally occurring

Fluoridation of tap water is beneficial because it reduces dental caries (AIHW 2006a). Currently over two-thirds of Australians (69%) live in areas where the public water supply is fluoridated either from natural or engineered sources (Table 2.6).

Table 2.6: Population exposed to fluoridated drinking water[a], 2003 (per cent)

State/territory	% of population
New South Wales	89.8
Victoria	75.3
Queensland	4.7
Western Australia	90.1
South Australia	90.2
Tasmania	94.7
Australian Capital Territory	100.0
Northern Territory	84.2

(a)   Percentage of state/territory population living in areas with fluoride in public water supply.

Note: Fluoride from natural or engineering sources at concentrations of 0.7 parts per million or more (except SA and NT where concentration is 0.5 parts per million or more).

Source: AIHW Dental Statistics and Research Unit, unpublished data.

3. Indicators of health determinants

There is a vast array of determinants that can affect chronic conditions in terms of causation, prevention, the speed of progression and the maintenance of a condition and quality of life. Determinants can have a positive or negative effect on chronic conditions. Those that have a negative effect, that is, they increase the risk of ill health, are often referred to as risk factors. Those that have a positive effect, such as good nutrition, are often called protective factors. For many chronic conditions, as the number of risk factors rises, so does the negative impact on the condition.

Many determinants are modifiable and so are crucial factors in the prevention of disease, illness and injury. The chronic conditions presented in this report are those that are considered to be the most influenced by determinants, therefore, the most likely to change through interventions. Measuring the prevalence and patterns of these determinants can explain trends in health and the reasons some groups have better or worse health than others. Analysing past trends in determinants also provides the opportunity for researchers and policy makers to predict future trends, and, in doing so, develop policies and programs around prevention and intervention. It should be noted that some determinants such as age, sex and genetics cannot be modified.

Table 3.1 shows a selection of common determinants that affect the chronic diseases highlighted in this report. The determinants have been categorised into three groups: behavioural, biomedical and other determinants.

Behavioural determinants are those risk factors that are based on an individual's behaviour, although it is widely acknowledged that they can be influenced by other factors such as socioeconomic status, cultural or family influences and knowledge. An example of a behavioural determinant (or risk factor) is excessive alcohol consumption.

Biomedical determinants relate to body measurements, such as excess weight and high blood cholesterol. It should be noted that some biomedical determinants can themselves be considered chronic conditions. For example, hypertension (also known as high blood pressure) is commonly associated with ischaemic heart disease, stroke and diabetes. But it is a condition that can be caused or influenced by other determinants such as diet, obesity and insufficient physical activity.

Psychosocial and early life determinants are the focus of indicators presented under the Other determinants category. Psychosocial factors can have direct and indirect impacts on health (NPHP 2001). For example, a direct impact may be the physiological effect that stress may have on a person. Indirect impacts may explain unhealthy behaviours, such as excessive alcohol intake or tobacco smoking in those with low self-esteem or suffering from loneliness. They may also determine the capacity for self-care and confidence in dealing with the health care system for those with chronic disease. Early life factors are those determinants or factors that can have an impact on health and wellbeing during childhood and into later years. Examples of these include low birthweight and the mother's consumption of alcohol during pregnancy.

Table 3.1: Relationships among selected chronic conditions and determinants

Conditions	Behavioural					Biomedical				Other determinants[a]	
	Tobacco smoking	Physical inactivity	Alcohol misuse	Nutrition	Obesity	Hyper-tension	Dislipidaemia	Impaired glucose tolerance	Proteinuria	Psycho-social	Early life
Ischaemic heart disease	✓	✓	✓	✓	✓	✓	✓				✓
Stroke	✓	✓	✓	✓	✓	✓	✓				✓
Type 2 diabetes		✓	✓	✓	✓			✓			
Kidney disease	✓			✓	✓	✓			✓		
Arthritis	✓[b]	✓[c]			✓[c]						
Osteoporosis	✓	✓	✓	✓							
Lung cancer	✓	✓									
Colorectal cancer		✓	✓	✓	✓						
Chronic obstructive pulmonary disease	✓										
Asthma	✓				✓						✓
Depression		✓	✓	✓	✓					✓	✓
Oral health	✓		✓	✓							✓

(a) Indicators in the Other determinants categories are sometimes difficult to align with any particular chronic conditions as listed in this table. But these factors do influence the current and future health and wellbeing of individuals. Of particular interest in terms of health outcomes are those factors that affect Australia's children and young people (AIHW 2004a).

(b) Relates to rheumatoid arthritis.

(c) Relates to osteoarthritis.

Tobacco smoking

Tobacco smoking contributes to many hospitalisations and deaths every year, and is responsible for 8% of the burden on the health of Australians (AIHW: Begg et al. 2007). Tobacco smoking is one of the major risk factors for health. It is a significant contributor in the development of coronary heart disease, stroke, peripheral vascular disease, numerous cancers (notably lung and throat) and many other conditions. Once a person has a chronic condition, tobacco smoking can have an impact on the successful management and speed of progression of that condition.

The most commonly used measure for tobacco smoking is 'smoking status' and the components of this measure can vary between surveys. The definition used to report against the following indicator—daily smoking—is part of the tobacco smoking status classification as reported by the National Drug Strategy Household Surveys (NDSHS) (see Box 3.1).

Box 3.1: Tobacco smoking status

Daily

Weekly

Less than weekly

Ex-smokers—smoked at least 100 cigarettes (manufactured and/or roll-your-own) or the equivalent amount of tobacco in their life, and no longer smoke

Never smoked—never smoked 100 cigarettes (manufactured and/or roll-your-own) or the equivalent amount of tobacco in their life

---
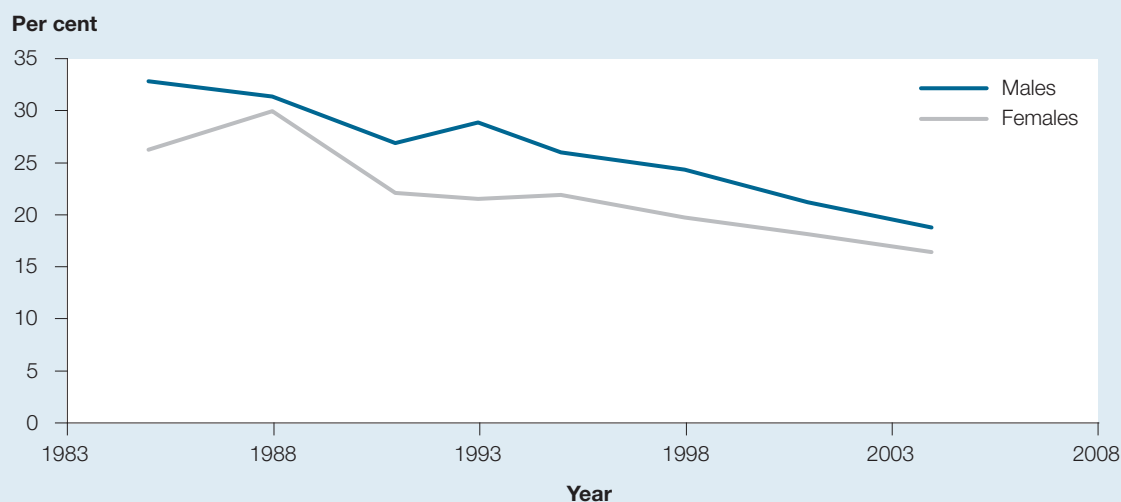
Prevalence

Indicators: Prevalence of daily smoking, persons aged 14 years and over

Prevalence of daily smoking, persons aged 18 years and over

Proportion of Indigenous people aged 15 years and over who are cigarette smokers

In the 20 years to 2004, the proportion of people aged 14 years and over who are daily smokers has decreased (Figure 3.1; Table B3.1) for both males and females. In 1985, one-third (33%) of males and one-quarter (26%) of females reported smoking daily. These proportions reduced to below 20% for both sexes: 19% and 16% respectively.

Per cent

Sources: National Drug Strategy Household Surveys.

Figure 3.1: Proportion of people aged 14 years and over who are daily smokers, 1985–2004
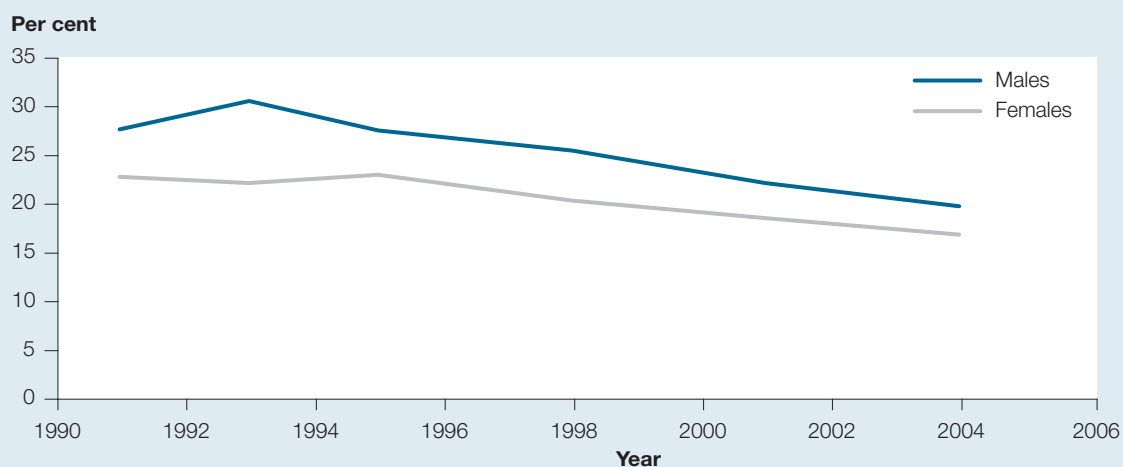
In 2004, daily smoking rates differed by age group (Table 3.2). At most ages, a higher proportion of males were daily smokers than females. The exception to this were teenagers (aged 14–19 years), where a slightly higher proportion of females reported daily smoking.

Table 3.2: Daily smokers, by sex and age group, 2004 (per cent)

	14–19	20–29	30–39	40–49	50–59	60 and over	Total
Males	9.5	24.0	23.8	22.6	18.1	11.0	18.6
Females	11.9	22.9	21.8	20.1	14.4	7.1	16.3
Total	10.7	23.5	22.8	21.3	16.3	8.9	17.4

Source: AIHW 2005e.

Another indicator measures the proportion of adults, that is those aged 18 years and over, who are daily smokers. This has decreased over time for both males and females (Figure 3.2; Table B3.2). In 1991, 28% of adult males smoked daily, and this decreased to fewer than 20% in 2004. Similarly for females, in 1991, 23% smoked daily, and this proportion decreased to below 17% in 2004.

Per cent
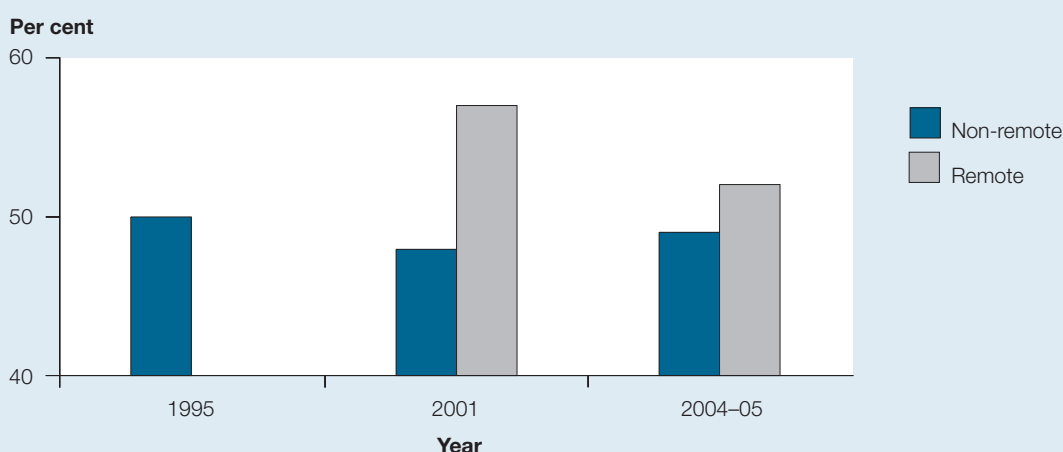
Note: Estimates for adults in 1993 are for those aged 20 years and over.

Sources: National Drug Strategy Household Surveys.

Figure 3.2: Proportion of people aged 18 years and over who are daily smokers, 1991–2004

Trend estimates for smoking in the Aboriginal and Torres Strait Islander population are obtained from the 1995 NHS, the 2001 NHS (Indigenous component) and the 2004–05 NATSIHS. They are available for those aged 18 years and over, so do not reflect the age group specified by the indicator. The methodology used in these surveys differs from that used in the NDSHS, so comparisons between prevalence of smoking in the Indigenous population should not be made to those reported above.

Rates for current daily smoking in the Indigenous population remained stable over the decade to 2005 (Figure 3.3; Table B3.3). For those living in non-remote areas of Australia, the prevalence of current daily smokers is about 50%. For Indigenous Australians living in remote areas of Australia the rates are higher, averaging 55%.

Per cent

Notes

1. Based on self-reported data.

2. Estimates for 1995 are not available for Indigenous Australians living in remote areas.

3. Differences between 2001 and 2004–05 are not considered statistically significant.

Source: ABS 2006b.

Figure 3.3: Proportion of Indigenous people aged 18 years and over who are current daily smokers, 1995, 2001 and 2004–05

Other indicators

Indicator: Proportion of adults who succeed in quitting each year

Information on how many adults manage to quit tobacco smoking each year is not available, but the 2004 NDSHS provided some information about how many people tried to quit. The most commonly reported change (by those who had smoked in the last 12 months) was to reduce the amount of tobacco smoked in 1 day, and was reported by 47% of males and 51% of females (Table 3.3).

Table 3.3: Attempted change in smoking behaviour: proportion of recent[a] smokers, 2004 (per cent)

Moderation behaviour	Males	Females
Successfully gave up smoking (for more than a month)	24.5	20.3
Unsuccessfully tried to give up smoking	38.9	39.5
Changed to a cigarette brand with a lower tar or nicotine content	25.0	28.1
Unsuccessfully tried to change to a brand with a lower tar or nicotine content	4.7	4.7
Reduced the amount of tobacco smoked in a day	47.4	50.6
Unsuccessfully tried to reduce the amount of tobacco smoked in a day	21.4	21.8

(a)   Smoked tobacco in the last 12 months.

Note: Respondents could select more than one behaviour.

Source: AIHW 2005e.

Physical inactivity

Physical inactivity is linked with an increased risk of mortality and morbidity from a range of diseases and conditions. In 2003, physical inactivity accounted for an estimated 7% of the burden of disease and injury in Australia (AIHW: Begg et al. 2007). Conversely, regular physical activity helps maintain good health by helping prevent or manage heart disease and Type 2 diabetes, and maintaining a healthy musculoskeletal system and healthy body weight. Regular physical activity is also beneficial to a person's psychological wellbeing.

The *National Physical Activity Guidelines (NPAG) for Australians* recommend at least 30 minutes of moderate-intensity physical activity on most, preferably all, days of the week to get health benefits (DHAC 1999). This is generally interpreted as 30 minutes on at least 5 days of the week, a total of at least 150 minutes of moderate activity per week.
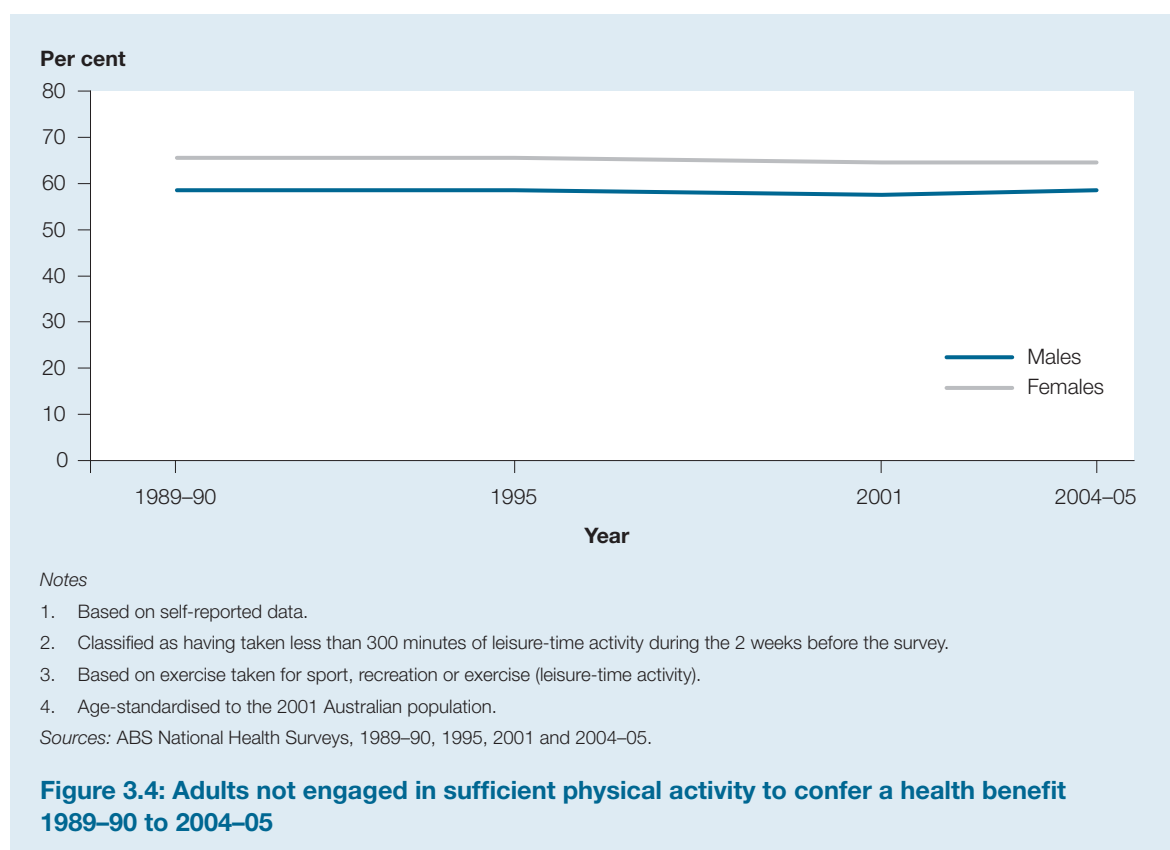
In general, surveys collect and define people's physical activity patterns by level of intensity, such as sedentary (also termed physically inactive), moderate or vigorous. But these definitions can, and do, vary between surveys. In addition, surveys may only collect information about selected types of physical activity. For example, they might collect data about activities taken as part of recreation or sport, and exclude information about other types of physical activity such as work related activity, gardening or transport.

The AIHW recommends using the Active Australia Survey (AAS) instrument to collect information on sufficient physical activity, as the measurements derived from that survey directly align with the NPAG (AIHW 2003). However, due to the irregularity of surveys that use that instrument (the last national AAS was in 2000), data from the NHS have been used to describe trends in physical inactivity. Therefore, insufficient physical activity to confer a health benefit is defined as *having taken less than 300 minutes of leisure-time activity during the 2 weeks before the survey*.

Prevalence
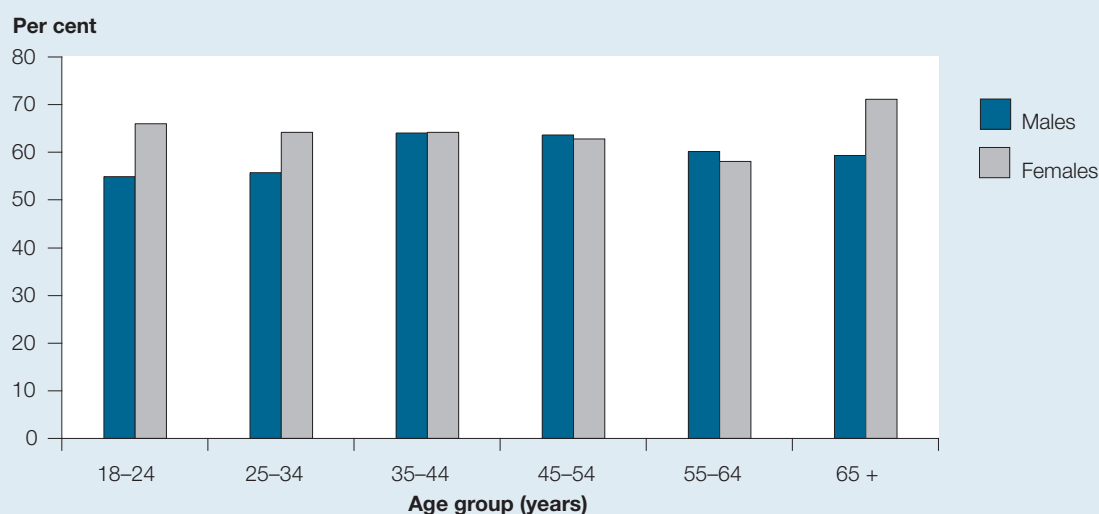
Indicator: Proportion of adults not engaged in sufficient physical activity to confer a health benefit

Since the 1989–90 NHS, the proportion of adults who do not do enough exercise to confer a health benefit has remained stable (Figure 3.4; Table B3.4). Slightly higher proportions of females (64%) did not engage in sufficient physical activity compared with males (58%), and this pattern was consistent across the survey period.

Per cent

Notes

1.   Based on self-reported data.

2.   Classified as having taken less than 300 minutes of leisure-time activity during the 2 weeks before the survey.

3.   Based on exercise taken for sport, recreation or exercise (leisure-time activity).

4.   Age-standardised to the 2001 Australian population.

Sources: ABS National Health Surveys, 1989–90, 1995, 2001 and 2004–05.

Figure 3.4: Adults not engaged in sufficient physical activity to confer a health benefit 1989–90 to 2004–05

When 2004–05 NHS data are looked at by age group, differences in insufficient exercise between males and females are not as apparent in the middle-aged years (35–54 years) as they are in the younger (34 years and under) and older (65 years and over) age groups (Figure 3.5; Table B3.5). Females aged 65 years and over, have the highest rates of insufficient physical activity compared with females in other ages groups and males in all age groups. Just over 70% of older females reported less than 300 minutes of leisure time activity in the 2 weeks before the interview.

Per cent

Notes

1. Based on self-reported data.
2. Classified as having taken less than 300 minutes of leisure-time activity during the 2 weeks before the survey.
3. Based on exercise taken for sport, recreation or fitness (leisure-time activity).

Source: 2004–05 ABS National Health Survey.

Figure 3.5: Adults not engaged in sufficient physical activity to confer a health benefit, by age group, 2004–05

The 2004 state and territory computer assisted telephone interview (CATI) surveys also showed that females reported doing less exercise than males, and this was consistent across all states and territories. The CATI surveys used the AAS instrument that generally shows lower levels of insufficient activity than the NHS. Apart from differing survey methodologies, another reason for the difference in results is that the AAS includes walking for transport in the estimates of activity.

Table 3.4: Persons aged 18 years and over who reported insufficient activity, 2004 (per cent)

Sex	NSW	Vic	Qld	WA	SA	Tas	ACT	NT
Males	43.4	38.3	51.7	48.4	60.5	47.7	41.5	49.8
Females	53.1	41.8	60.1	53.2	64.4	51.7	48.0	53.2
Persons	48.3	40.1	56.0	50.9	62.5	49.7	44.8	51.4

Notes

1. Persons not exercising for 150 minutes per week and not exercising for 5 sessions per week.
2. Reported results have been adjusted for missing values.

Sources: NSW Population Health Survey, unpublished data; AIHW analysis of Vic Population Health Survey (DHS 2004); WA Health and Wellbeing Surveillance System, unpublished data; SA monitoring and Surveillance System, unpublished data; AIHW analysis of Filling the Gaps in Data Pooling Survey (December 2004).

Alcohol misuse

Misuse of alcohol, that is, excessive consumption in either the long- or short-term, is a major risk factor for morbidity and mortality in Australia. In terms of chronic conditions, regular excessive consumption of alcohol contributes to some cancers, liver disease and diabetes. Further, single episodes of heavy drinking can increase the risk of injury or death. There are also negative social effects from excessive consumption of alcohol, including alcohol-related crime, road accidents, and loss of productivity in the home or workplace (NDS 2006).

However, it should be noted that consumption of alcohol not always poses a risk to health. In contrast, there are some benefits that can arise from low to moderate alcohol consumption, particularly in relation to ischaemic heart disease.

There are no standard definitions of what alcohol misuse is, and the term may encompass over-drinking, alcohol dependence or alcoholism. In addition, the effects of alcohol intake at different quantities can vary between individuals. One source of classification is the *Australian Alcohol Guidelines* (AAG), which were designed to give an indication of the limits of alcohol consumption associated with an increased risk to health and wellbeing (NHMRC 2001). The AAG refer to both excessive drinking in the short- and long–term, which both have the same three levels of risk:

- low-risk drinking levels are those at which there is a minimal risk of harm
- risky levels are those at which risk of harm is greatly increased
- high-risk drinking levels are those at which there is high risk of serious harm, and above this the risk increases rapidly.

Risky and high-risk levels in the short-term refer to 7 or more drinks on any 1 day for males, and 5 or more drinks on any 1 day for females. Long-term risk is associated with regular and repeated patterns of drinking defined by the total number of standard drinks per week. Overall weekly levels of risky or high–risk drinking are 29 or more drinks for males and 15 or more drinks for females. Again, these can vary for individuals.
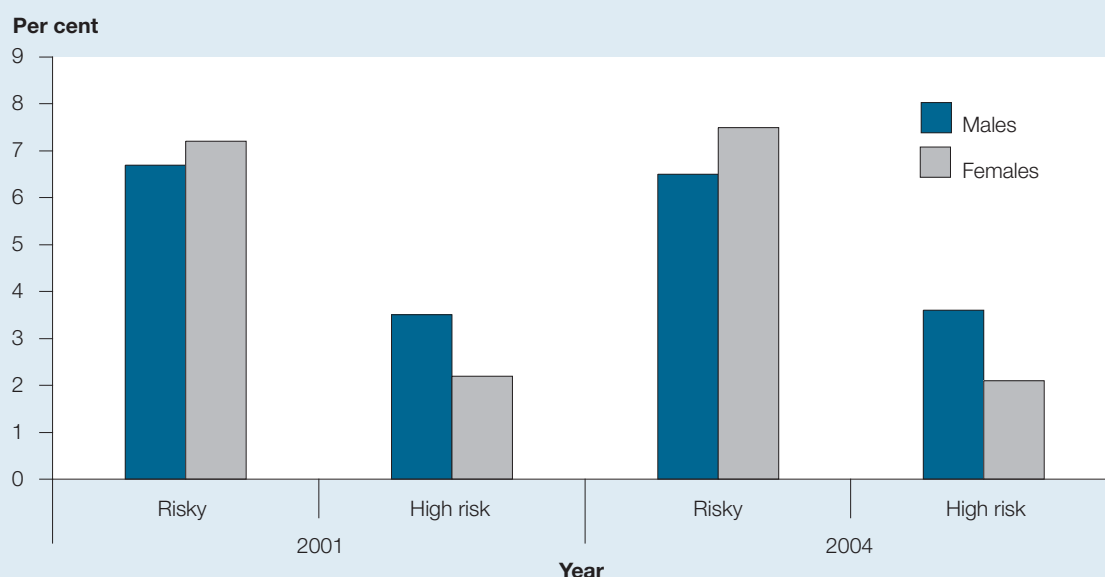
It should be noted that, at the time of writing, the current AAG were under review by the NHMRC. Proposed new recommendations include a single, universal low-risk level of alcohol consumption of two standard drinks for both men and women.

Prevalence

Indicators: Proportion of the population that consume risky or high-risk levels for long-term alcohol-related harm, persons aged 14 years and over

Proportion of Indigenous people aged 15 years and over reporting risky alcohol consumption

Data about the consumption of alcohol are collected by the NDSHSs, and this report presents results from the 2001 and 2004 surveys. In terms of alcohol-related harm in the long-term (see above), levels of risky and high-risk alcohol consumption remained similar for both males and females in 2001 and 2004 (Figure 3.6; Table B3.6). Slightly higher proportions of females consumed alcohol at risky levels than males (on average just over 7% compared with just fewer than 7%). This pattern was reversed for alcohol intake at high-risk levels, with an average of 4% of males drinking at these levels compared with 2% of females.

Per cent

Note: For males, the consumption of 29–42 standard drinks per week is considered risky, and 43 or more high-risk. For females, the consumption of 15–28 standard drinks per week is considered risky, and 29 or more per week high-risk.

Source: National Drug Strategy Household Surveys.

Figure 3.6: People who consume alcohol at risky or high-risk levels for long-term alcohol-related harm, aged 14 years and over, 2001 and 2004

In 2004, 1 in 10 Australians consumed alcohol at levels that are considered risky or high-risk for alcohol-related harm in the long-term, but these patterns varied by age for both males and females. The peak of risky or high-risk consumption was for those aged 20–29 years (Table 3.5). A slightly higher proportion of males than females consumed alcohol at low risk levels, and this was reversed for those who had not consumed alcohol in the last 12 months (abstainers) where more females reported abstaining from alcohol than males.

Table 3.5: Risk[a] of harm in the long–term, by age group and sex, 2004 (per cent)

Sex and level of risk	14–19	20–29	30–39	40–49	50–59	60+	All ages
Males							
Abstainers[b]	30.4	7.8	8.9	8.6	10.5	17.3	12.9
Low-risk	62.0	77.7	80.8	82.1	78.8	74.8	77.0
Risky	4.9	8.7	7.5	5.7	6.9	5.2	6.5
High-risk	2.8	5.7	2.8	3.6	3.8	2.7	3.6
Females							
Abstainers[b]	27.6	13.4	13.0	13.8	19.5	31.6	19.8
Low-risk	60.1	71.6	77.1	75.9	73.1	63.3	70.6
Risky	8.3	12.2	7.7	8.0	6.0	4.3	7.5
High-risk	4.0	2.9	2.1	2.3	1.4	0.9	2.1
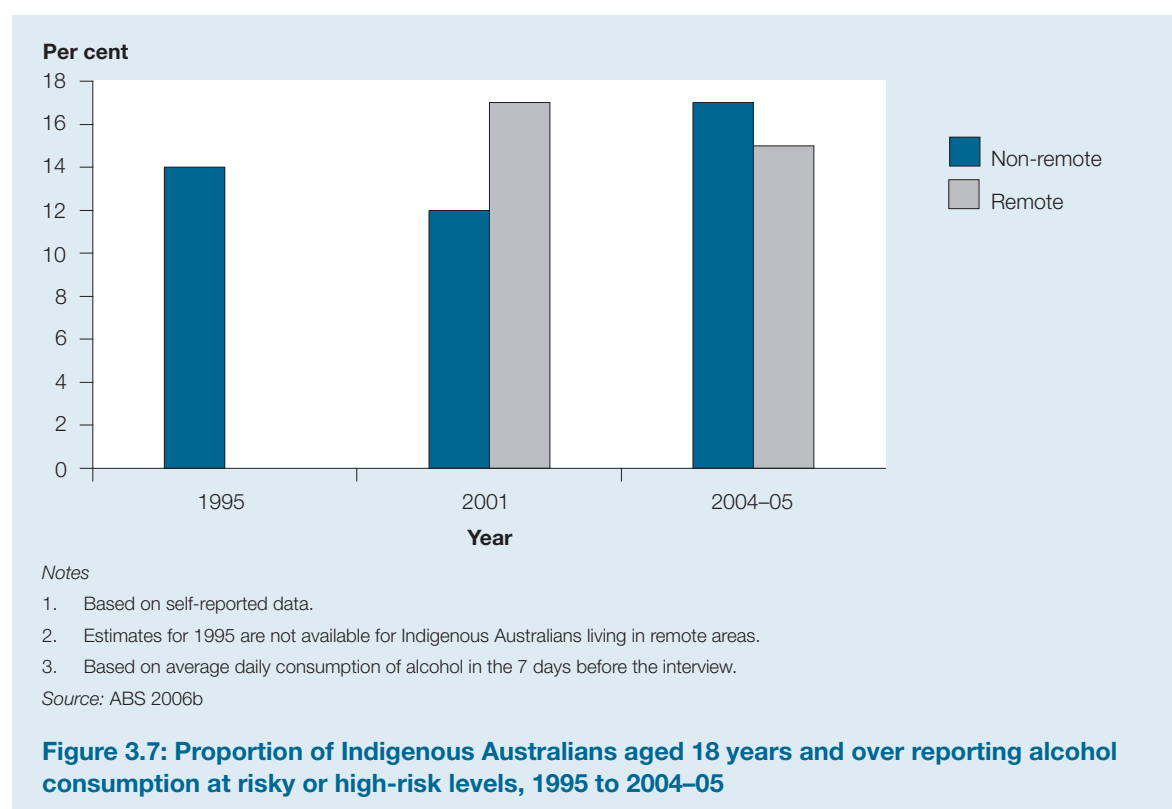
(a) For males, the consumption of up to 28 standard drinks per week is considered low-risk, 29–42 per week risky, and 43 or more per week high-risk. For females, the consumption of up to 14 standard drinks per week is considered low-risk, 15–28 per week risky, and 29 or more per week high-risk.

(b) Did not consume alcohol in the last 12 months.

Source: AIHW 2005e.

Estimates for alcohol consumption in the Aboriginal and Torres Strait Islander population are obtained from the 1995 NHS, the 2001 NHS (Indigenous component) and the 2004–05 NATSIHS, and are for those aged 18 years and over. The methodology used in these surveys differs from that used in the NDSHS, so comparisons between prevalence of alcohol consumption in the Indigenous population should not be made to those reported above.

Rates of alcohol consumption at risky or high-risk levels in the Indigenous population remained stable over the decade (Figure 3.7; Table B3.7). On average, 15% of Indigenous Australians reported drinking at risky levels in the week before the interview.

Notes

1. Based on self-reported data.

2. Estimates for 1995 are not available for Indigenous Australians living in remote areas.

3. Based on average daily consumption of alcohol in the 7 days before the interview.

Source: ABS 2006b

Figure 3.7: Proportion of Indigenous Australians aged 18 years and over reporting alcohol consumption at risky or high-risk levels, 1995 to 2004–05

Overweight and obesity

The rise in the prevalence of obesity in adults, adolescents and young children in recent years is a major concern. An excess in body fat increases the risk of developing many diseases, for example Type 2 diabetes, cardiovascular disease, high blood pressure, and some cancers. Being obese also influences the ability to successfully manage many chronic conditions like arthritis and Type 2 diabetes. Those who are obese (or overweight) can suffer from low self-esteem and social problems. Children in particular can be subjected to teasing by their peers and this can further impair their self-esteem and social wellbeing. Research has shown that young people who are obese as children are more likely than their non-obese counterparts to be overweight as adults (Whitaker et al. 1997; Venn et al. 2007).

Body weight is commonly measured using the body mass index (BMI) that is calculated by dividing weight in kilograms by the square of the height in metres (kg/m^2). People with a BMI greater than or equal to 30 are considered to be obese, and those whose BMI is greater than or equal to 25 but less than 30 are considered to be overweight (but not obese). For children aged 2 to 17 years, the International Obesity Task Force has developed specific BMI cut-off points that are appropriate for younger ages (Cole et al. 2000).

Height and weight information may be collected in surveys as measured or self-reported data. It should be noted that estimates of BMI based on self-reported data are likely to be underestimates of true BMI, as research has shown that people tend to overestimate their height and underestimate their weight (Flood et al. 2000; Niedhammer et al. 2000). BMI data from self-reports should not be compared with BMI data from measurements.
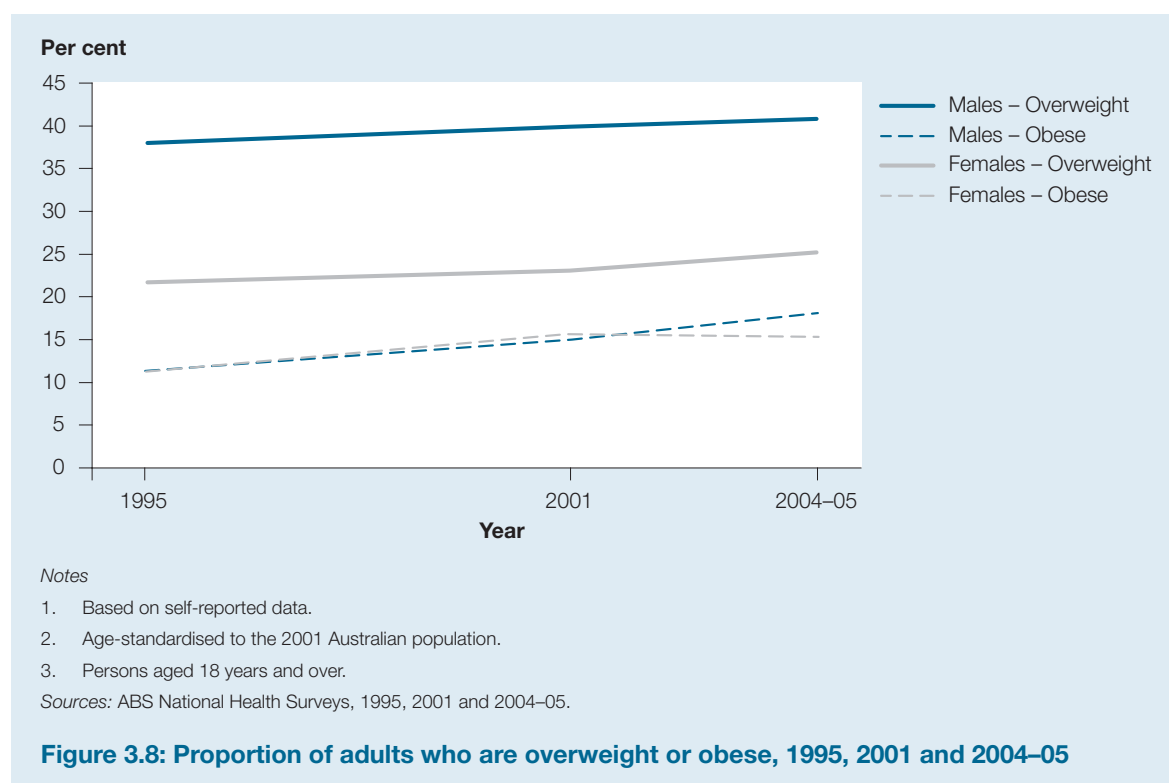
Prevalence

Indicators: Proportion of adults who are overweight

Proportion of children aged 2–14 years whose body weight is at an acceptable/unacceptable level as measured by body mass index scores

Proportion of young people aged 12–24 years who are overweight or obese according to their body mass index

Rates of overweight or obese people have increased steadily in the 10 years from 1995 for both males and females (Figure 3.8; Table B3.8). Rates for overweight (but not obese) males increased from 38% in 1995 to 41% in 2004–05, while the proportion of males who were obese increased from 11% to 18%. Rates for overweight (but not obese) females also increased over the same period from 21% to 25%. The proportion of females who were obese increased between 1995 and 2001 (from 11% to 15%) and then remained stable in 2004–05.

Notes
1.   Based on self-reported data.
2.   Age-standardised to the 2001 Australian population.
3.   Persons aged 18 years and over.
Sources: ABS National Health Surveys, 1995, 2001 and 2004–05.

Figure 3.8: Proportion of adults who are overweight or obese, 1995, 2001 and 2004–05

The most recent national data for children aged 2–14 years are from the 1995 National Nutrition Survey (NNS). BMI derived from the NNS was based on measured height and weight data. Previous data for children's body weight was collected by the 1985 Australian Health and Fitness Survey that also collected measured height and weight for children aged 7–15 years. Analysis of BMI between the 1985 and 1995 surveys suggests that the prevalence of children who are overweight or obese increased since 1985 (Magarey et al. 2001).

In 1995, the majority of children aged 2–14 years were considered to be of an acceptable weight (Table 3.6). However, a relatively high proportion (about 20%) was considered overweight or obese. A higher proportion of girls (22%) were overweight or obese compared with boys (18%).

In 2004, the NSW Schools Physical Activity and Nutrition Survey (SPANS) collected information about height and weight of children aged 5–16 years. This survey found that, overall, 25% of boys and 23% of girls were either overweight or obese.

At the time of writing this report, the Kids Eat, Kids Play Survey had begun. Results from this survey (expected to be published in 2008) will allow for trends in measured children's body mass to be analysed at a national level.

**Table 3.6: Children aged 2–14 years, by weight category[a], 1995 (per cent)**

Sex	Underweight	Acceptable	Overweight[b]	Obese
Males	6.9	75.0	14.3	3.7
Females	4.3	73.7	16.4	5.6
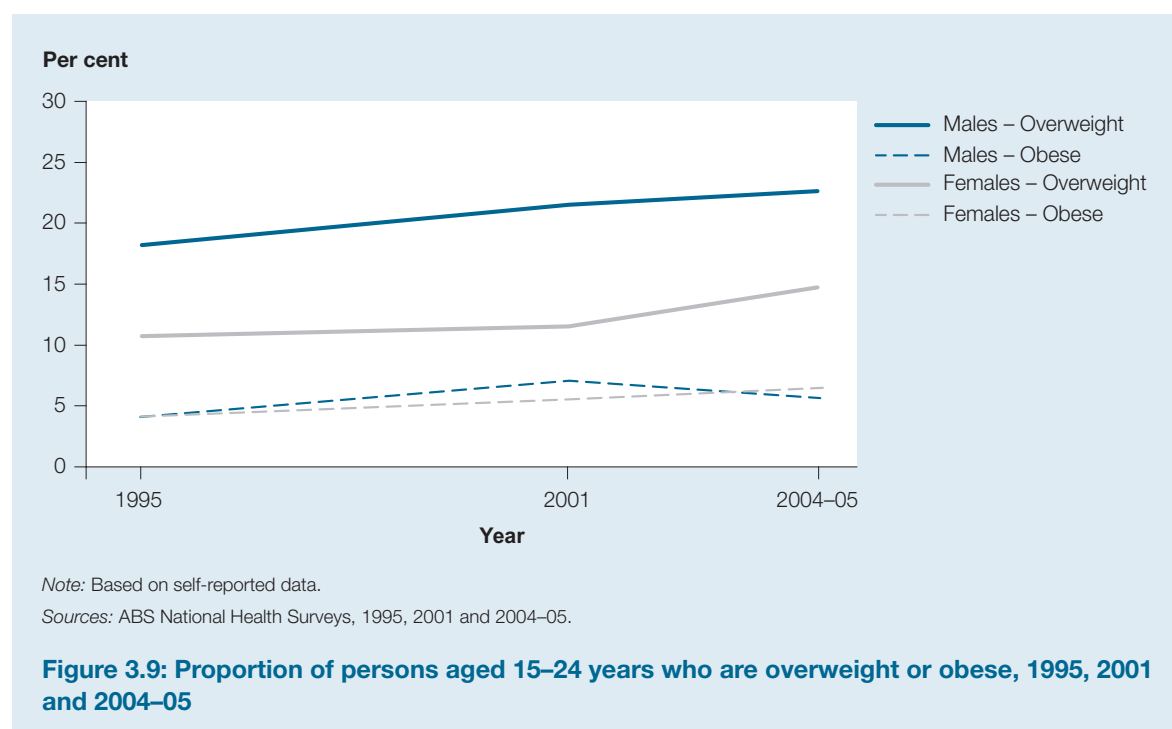
(a) Cole et al. (2000) developed age- and sex-specific BMI cut-off points that are appropriate for use with children, and these have been used to define the categories in this table.

(b) Overweight but not obese.

Source: ABS 1995 National Nutrition Survey.

For young people, trend estimates for overweight and obese are available from the NHS. However, information about height and weight is only collected for those young people aged 15 years and over, so data are not able to be reported for those aged 12–14 as specified by the indicator.

Rates of young persons who are overweight (but not obese) have increased over time (Figure 3.9; Table B3.9). From 1995 to 2004–05, the proportions of both males and females who were overweight increased from 18% and 11% respectively to 22% and 15% respectively. Rates for young females who were obese also increased over time, from 4% in 1995 to 6% in 2004–05. Rates for obese young males increased from 4% in 1995 to a peak in 2001 (7%) before decreasing slightly in 2004–05 to 5%.

Note: Based on self-reported data.

Sources: ABS National Health Surveys, 1995, 2001 and 2004–05.

Figure 3.9: Proportion of persons aged 15–24 years who are overweight or obese, 1995, 2001 and 2004–05
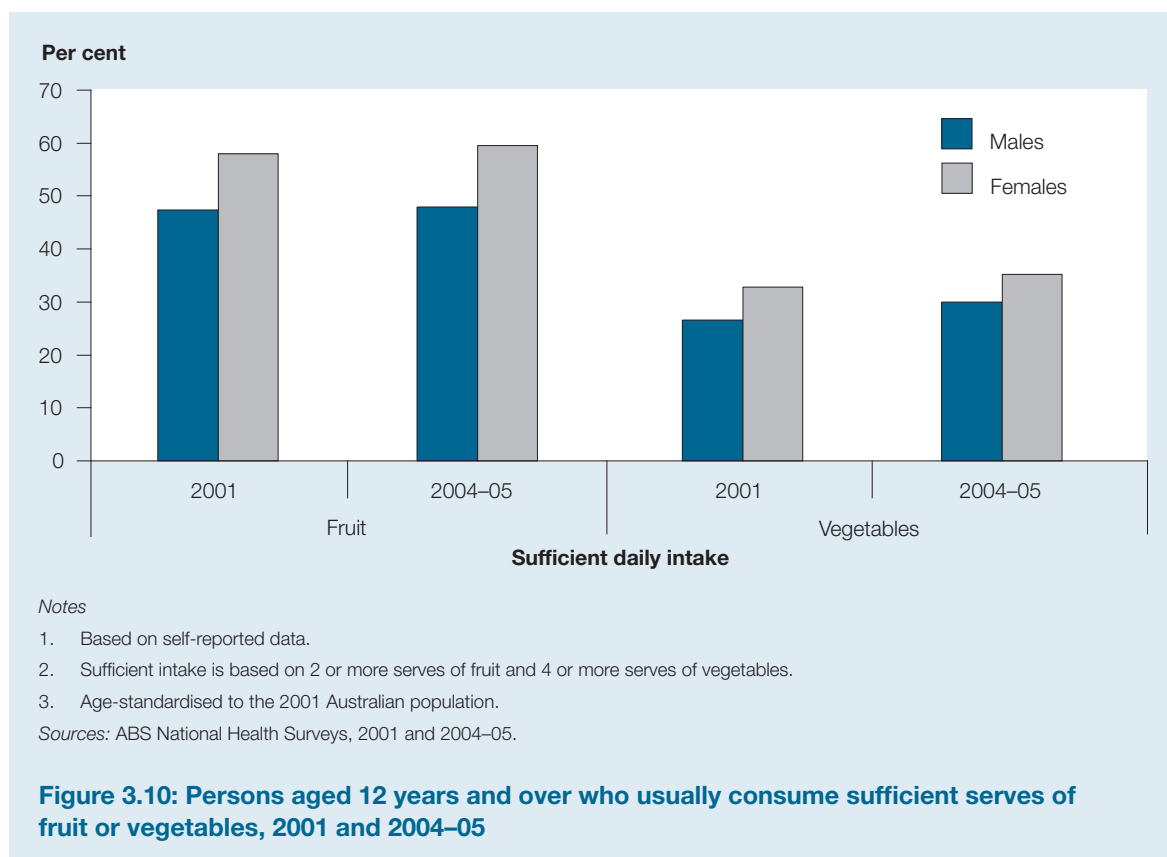
Nutrition

Nutrition is an important determinant of health and wellbeing that can either increase or decrease the risk of various chronic diseases or mortality. In Australia, dietary guidelines from the NHMRC recommend consuming a wide variety of nutritious foods, including a high intake of plant foods such as cereals, fruit, vegetables, legumes and nuts. Diets that are high in vegetables, fruits and legumes are associated with reduced risk of coronary heart disease, stroke and some cancers. They may also reduce the risk of hypertension, Type 2 diabetes, cataracts and macular degeneration of the eye (NHMRC 2003). Sufficient intake of fruit and vegetables is defined as at least 5 serves of vegetables per day and at least 2 serves of fruit per day. But it should be noted that, this report presents sufficient levels of vegetable intake as at least 4 serves of vegetables. This is due to data availability from the 2001 NHS.

Prevalence

Indicator: Proportion of people eating sufficient daily serves of fruit or vegetables

Rates for people usually eating sufficient serves of fruit have remained stable for 2001 and 2004–05 (Figure 3.10; Table B3.10). For both years, more females than males reported usually consuming 2 or more serves of fruit per day (59% compared with 48%). The proportion of people usually consuming a sufficient intake of eating enough vegetables rose slightly for both males and females, from 27% of males and 33% of females in 2001 to 30% and 35% respectively in 2004–05.

Notes

1.   Based on self-reported data.

2.   Sufficient intake is based on 2 or more serves of fruit and 4 or more serves of vegetables.

3.   Age-standardised to the 2001 Australian population.

Sources: ABS National Health Surveys, 2001 and 2004–05.

Figure 3.10: Persons aged 12 years and over who usually consume sufficient serves of fruit or vegetables, 2001 and 2004–05

Estimates from the 2004–05 NHS showed that sufficient consumption of fruit increased with age for both males and females (Table 3.7). In general, females were more likely to consume sufficient levels of fruit and vegetables at all ages compared with males. The exception was males in the 75 years and over age group whose consumption of sufficient vegetables was slightly higher than their female counterparts.

Table 3.7: Persons aged 12 years and over, proportion usually consuming sufficient[a] fruit or vegetables, by age group and sex, 2004–05 (per cent)

Food/sex	12–24	25–34	35–44	45–54	55–64	65–74	75 and over	Total
Fruit								
Males	43.9	39.3	42.7	50.1	56.1	60.7	61.8	47.9
Females	53.3	53.6	56.0	61.5	70.3	68.2	69.9	59.8
Vegetables								
Males	23.5	22.7	26.6	31.1	37.9	44.5	43.5	29.9
Females	25.2	31.3	35.1	39.7	44.6	45.8	39.0	35.6

(a)   Sufficient intake defined as 2 or more serves of fruit and 4 or more serves of vegetables.

Source: 2004–05 ABS National Health Survey.

Hypertension

Hypertension, also known as high blood pressure, is a major risk factor for coronary heart disease, stroke, heart failure, peripheral vascular disease, and kidney failure (AIHW 2004b). Blood pressure refers to the forces exerted by circulating blood on the walls of the arteries. The force is created by the pumping action of the heart, at contraction (systolic pressure) and at relaxation (diastolic pressure). Although the definition of what constitutes hypertension can be somewhat arbitrary, the National Heart Foundation (NHF) defines hypertension as:

- systolic blood pressure of 140mmHg or more, or
- diastolic blood pressure of 90mmHg or more, or
- receiving medication for high blood pressure (NHF 2004).

There are many modifiable causes of high blood pressure including diet (particularly high salt intake and saturated fat), obesity, excessive alcohol consumption, and insufficient physical activity. The risk of developing a chronic condition heightens with increased blood pressure. Positive changes to these risk factors can result in improved blood pressure.

Information about blood pressure can be collected by self-report or measurement. Taking blood pressure by measurement provides far more accurate results and enables analysis by the varying gradients of blood pressure. Currently there is a lack of measured data that enable analysis over time, so data from self-reports are presented in this report. Self-reported data about high blood pressure are collected for those people who had ever been told by a doctor or nurse that they have high blood pressure, and who currently have this condition or, whose current normal blood pressure is the result of medication.
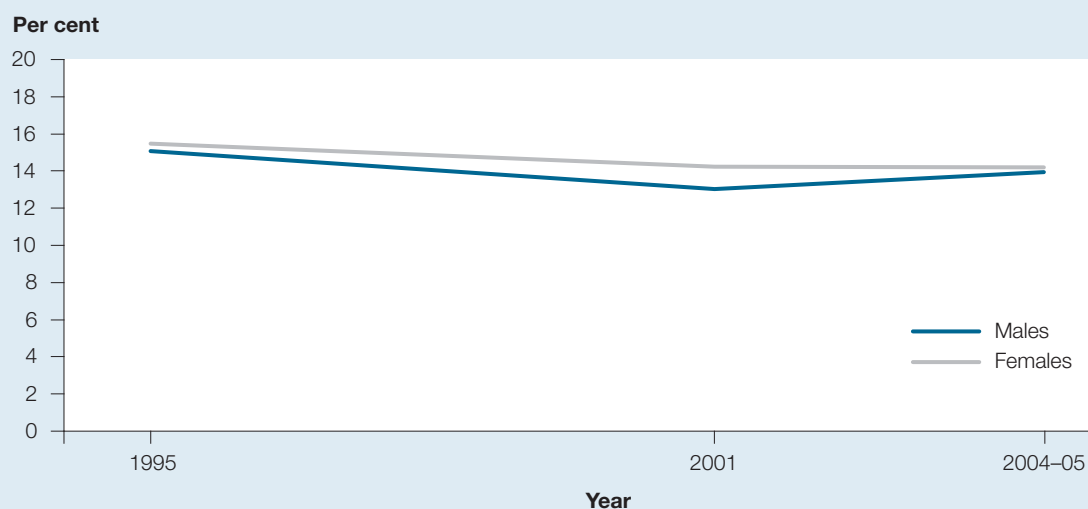
Prevalence

Indicator: Proportion of adults with high blood pressure

NHS results suggest that rates of adults with hypertension have decreased over 10 years (Figure 3.11; Table B3.11) from an average rate of 15% in 1995 to 14% in 2004–05. It should be noted that although rates appear to have dipped to 13% for males in 2001, the differences between 2001 to 2004–05 for both males and females are not significant (ABS 2006a).

For all years, a slightly higher proportion of females than males reported hypertension. However, the detailed scale of the figure needs to be kept in perspective as for most years the difference between males and females is less than 1%.

Per cent

Notes
1. Based on self-reported data.
2. Age-standardised to the 2001 Australian population.

Sources: ABS National Health Surveys, 1995, 2001 and 2004–05.

Figure 3.11: Proportion of adults with hypertension, 1995, 2001 and 2004–05

Estimates from the 2004–05 NHS show that just over 2 million adults (14% of those aged 18 years and over) reported having hypertension (Table 3.8). Hypertension is strongly linked to age. More than 80% of those who reported hypertension were aged 55 years and over. In the younger age groups (before 55 years of age) more males reported hypertension than females. This pattern changed with those aged 55 and over, where higher proportions of females reported hypertension.

Table 3.8: Proportion of adults with hypertension, by age group and sex, 2004–05 (per cent)

Sex	18–24	25–34	35–44	45–54	55–64	65–74	75 and over	Total
Males	0.5	2.4	5.3	14.6	25.6	35.4	38.6	13.5
Females	0.6	1.6	3.9	12.6	27.2	40.4	43.3	14.5
Persons	0.6	2.0	4.6	13.6	26.4	38.0	41.3	14.0

Source: ABS 2006a.

Dyslipidaemia

Dyslipidaemia refers to unhealthy levels of blood fats (lipids), and includes high levels of low-density lipoproteins (LDLs), low levels of high-density lipoproteins (HDLs), or high triglyceride levels. Dyslipidaemia is a major risk factor for diabetes-related complications, coronary heart disease (CHD), and possibly some types of stroke (AIHW 2002b). When combined with other risk factors, dyslipidaemia makes an important difference to the risk of early CHD (NHF 2001).

Determining levels of different fats in the blood can include measuring:

- **total cholesterol.** This includes LDL cholesterol and HDL cholesterol. The risk of heart disease increases steadily from low cholesterol levels. A total cholesterol level of 5.5 mmol/L or more is considered high, but this is an arbitrary definition

- **LDL cholesterol**, often referred to as bad cholesterol. High levels of LDL lead to greater risk of heart disease
- **HDL cholesterol**, also known as good cholesterol. This has a protective effect against heart disease
- **triglycerides.** These are fats that are formed from the digestion of fats in food. In excess they may contribute to the development of atherosclerosis.
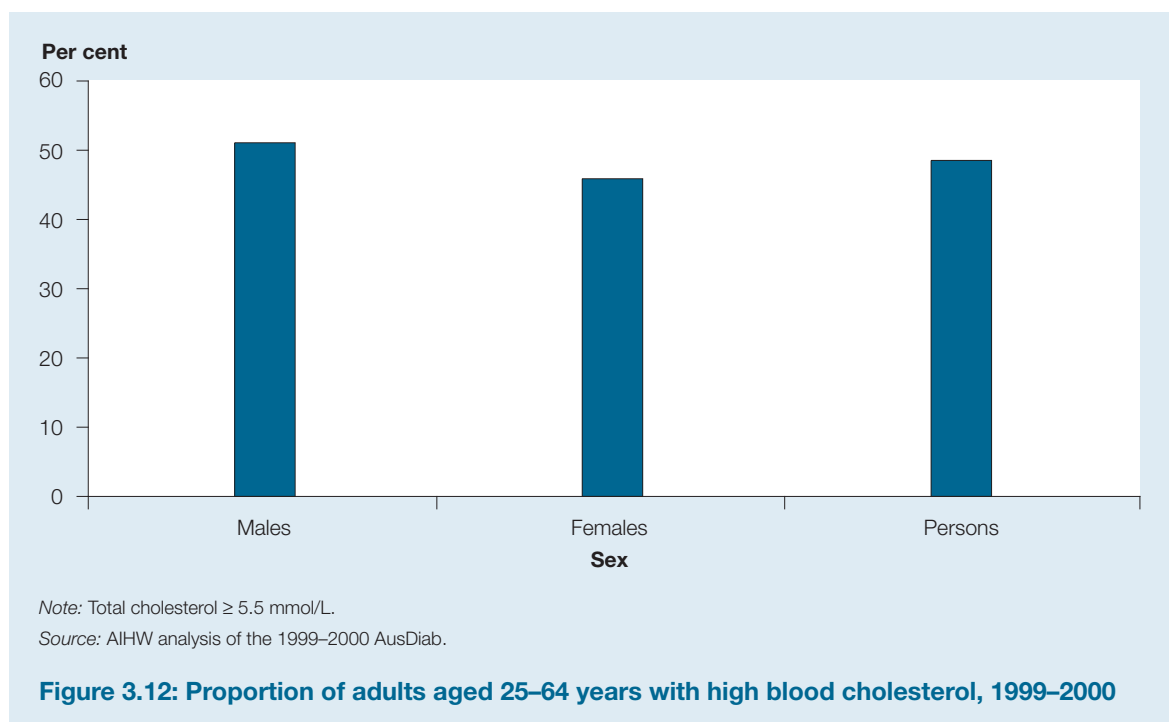
The most common risk factor for elevated cholesterol is consuming saturated fats in the diet.

The only indicator for dyslipidaemia that has been nationally endorsed is for adults aged 25–64 years and relates to high cholesterol. The Australian Diabetes, Obesity and Lifestyle (AusDiab) study, conducted in 1999–2000, included physical examinations and blood sampling (Dunstan et al. 2001). Estimates from this study are used against this indicator.

Prevalence
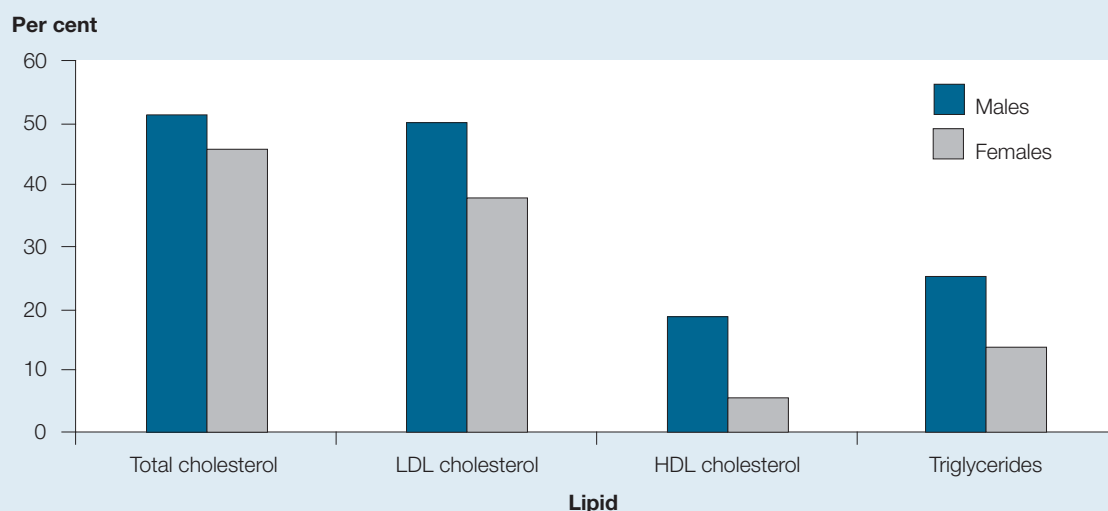
Indicator: Proportion of adults with high blood cholesterol, aged 25–64

The AusDiab study estimated that the prevalence of elevated blood cholesterol, that is a level of 5.5 mmol/L or more, in both males and females aged 25–64 years was 51% and 46% respectively (Figure 3.12; Table B3.12). There are no data available to indicate trends in dyslipidaemia, but analysis done by the AIHW on high blood cholesterol suggests that levels in 1999–2000 were similar to those 20 years earlier (AIHW 2006a).

Note: Total cholesterol ≥ 5.5 mmol/L.

Source: AIHW analysis of the 1999–2000 AusDiab.

Figure 3.12: Proportion of adults aged 25–64 years with high blood cholesterol, 1999–2000

The study also estimated that 25% of males and 14% of females aged 25–64 years had elevated levels of triglycerides (Figure 3.13; Table B3.13). Five years after the base AusDiab study, a follow-up study showed that those who were classified as having dyslipidaemia at the base survey (high triglycerides or low levels of HDL) had a greater chance of developing diabetes than those with normal levels of triglycerides or higher HDL.

Note: Abnormal lipid values are defined as any of the following: ≥ 5.5 mmol/L for total cholesterol, <1.0 for HDL, ≥ 3.5 for LDL, or ≥ 2.0 for triglycerides.

Source: AIHW analysis of 1999–2000 AusDiab.

Figure 3.13: Proportion of adults aged 25–64 years with dyslipidaemia, 1999–2000

Overall proportions of people reporting high total cholesterol were similar for males and females, and levels for both genders increased with age (Table 3.9).

Table 3.9: Prevalence of high total cholesterol, by age group and sex

Sex	25–34	35–44	45–54	55–64	Total
Males	32.3	55.3	61.4	61.8	51.2
Females	29.2	38.4	56.0	70.3	45.6
Persons	30.8	46.9	58.7	66.0	48.4

Source: AIHW analysis of the 1999–2000 AusDiab.

Impaired glucose tolerance

Impaired glucose tolerance (IGT) is the slower metabolism of glucose (the main sugar that the body uses for energy) due to insulin deficiency or resistance. IGT used collectively with the term impaired fasting glucose (IFG) is known as pre-diabetes.

IGT and IFG are defined on results from an oral glucose tolerance test (Table 3.10). This involves fasting for several hours (usually overnight), then consuming a highly concentrated glucose drink.

Table 3.10: Classification of IGT and IFG

Classification	Plasma glucose (mmol/L)		
	Fasting glucose		2-hour glucose
IGT	< 7.0	and	7.8–11.0
IFG	6.1–6.9	and	< 7.8
Normal glucose tolerance	< 6.1	and	< 7.8

Source: IDI 2006.

A fasting plasma glucose test of ≥ 7.0 mmol/L or 2-hour glucose of ≥ 11.1 mmol/L is classified as diabetes. Those who have IGT are at a high risk of progressing to Type 2 diabetes. Results from the follow-up AusDiab study indicated that people with pre-diabetes were 10–20 times more likely to develop diabetes than those with normal blood glucose levels (IDI 2006).

In its background paper *Preventing chronic disease: a strategic framework*, the National Public Health Partnership (NPHP) identified IGT as one of the biological risk factors that should be monitored in terms of chronic disease (NPHP 2001). There are no currently endorsed indicators for measuring the prevalence of Australians who have impaired glucose tolerance.

The Australian Diabetes, Obesity and Lifestyle (AusDiab) study showed 9% of all males aged 25 years and over, and 12% of all females in the same age group had IGT (Dunstan et al. 2001). The prevalence of IGT increased with age. The prevalence of IFG among those aged 25 years and over was 8% in males and 3% in females, but unlike IGT, the distribution of IFG peaked in the middle ages (Table 3.11).

Table 3.11: Prevalence of IGT and IFG, by age group, 1999–2000 (per cent)

Classification	25–34	35–44	45–54	55–64	65–74	75 and over	Total
IGT	3.5	6.6	9.8	15.0	21.7	22.7	10.6
IFG	1.9	5.4	7.1	8.6	7.3	6.6	5.7

Source: Dunstan et al. 2001.

Proteinuria

The term proteinuria refers to having excess protein in the urine. This is the result of protein leaking through the kidney, most often through the glomeruli (the structures located in the kidney that filter waste from the blood). Elevated levels of proteinuria indicate a strong possibility of disease in the kidneys. Early diagnosis of kidney disease and intervention provide the greatest opportunity for kidney function preservation (AIHW 2005a).

In Australia, screening for kidney disease is not regularly done, but there are certain population groups for which screening is recommended (ANZSN & KHA 2004). These include people with hypertension, known vascular disease, and a family history of renal disease. Aboriginal and Torres Strait Islander peoples and people with diabetes are also recommended for testing.

There are no currently endorsed indicators for measuring the prevalence of Australians with proteinuria. In the report, *Chronic kidney disease in Australia, 2005*, the AIHW recommended collection of data that measure the proportion of people with chronic kidney disease who have annual:

- blood pressure measurements
- urinalysis, including microalbuminuria dipstick or proteinuria
- glomerular filtration rate measurement.

The NPHP also identified proteinuria as a one of the biological risk factors/markers for chronic disease in Australia (NPHP 2001).

Psychosocial factors

Three facets of psychosocial factors are identified as areas where information is required:

- sense of control or resilience
- social support and social exclusion
- emotional wellbeing/stress.

There are no currently endorsed indicators for sense of control or resilience. Available indicators are for social support and exclusion, and emotional wellbeing/stress.

Although psychosocial factors do not align directly with any one particular chronic condition, they do affect a person's or family's capacity to cope with illness and their capacity to access services in the health system. Whether sustained psychological stress has an effect on an individual's other determinants such as blood pressure, is subject to further research, but stress is likely to have indirect effects by influencing harmful health behaviours associated with high blood pressure (AIHW 2006a).
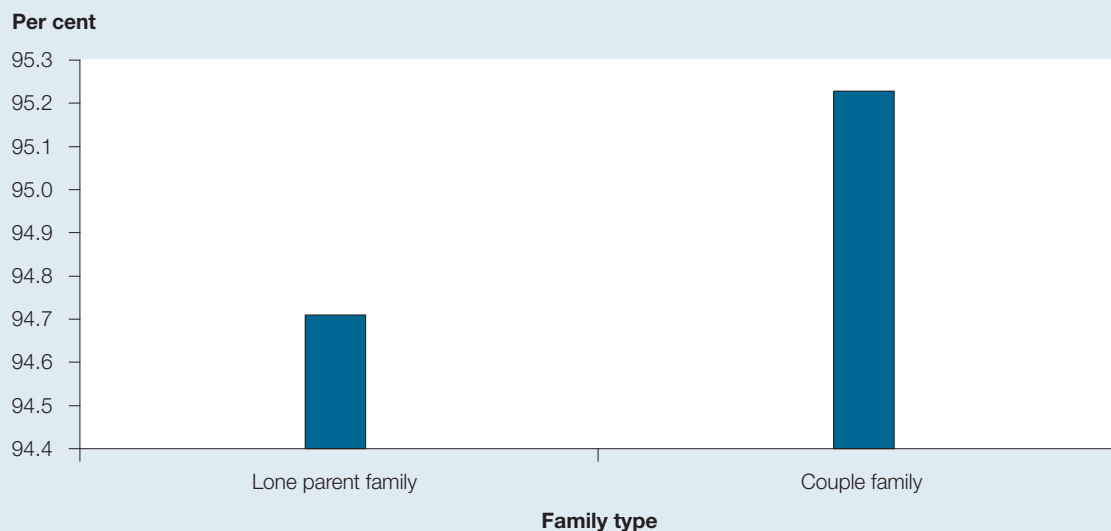
Prevalence

Indicators: Proportion of households with children under 15 years of age where respondent was able to get support in time of crisis from persons living outside household

Level of psychological distress as measured by the Kessler 10

Access to social support is suggested to have a positive impact on health. For many families with young children it is important to maintain a strong link with their families, friends, neighbours and community to whom they can turn when in need for support (AIHW 2005d).

In 2002, the ABS General Social Survey (GSS) collected data on various measures of social support networks by family characteristics. AIHW analysis of this survey showed that a large majority (95%) of families who had children aged 14 years or less could get support in times of crisis from people living outside the household (Figure 3.14; Table B3.14).


Source: AIHW analysis of 2002 GSS.
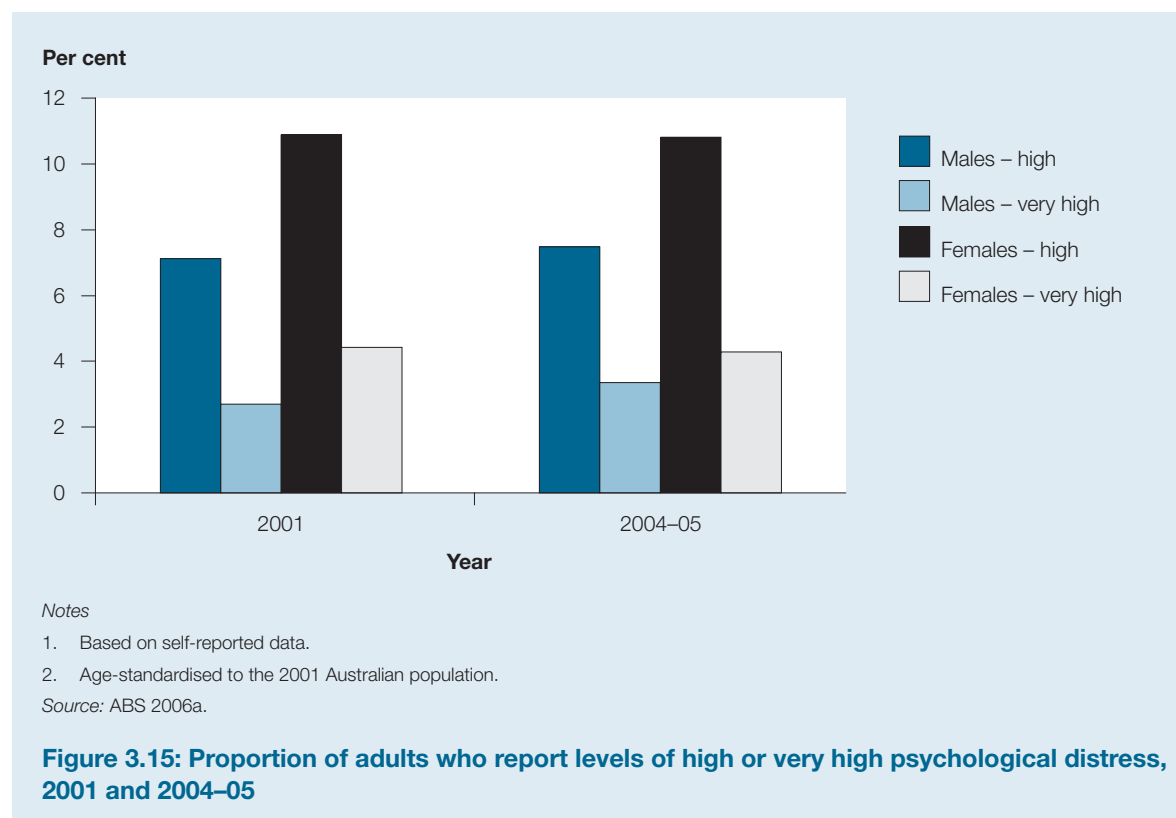
Figure 3.14: Proportion of adults living in households with children aged less than 15 years who had social support, 2002

Psychological distress is a major risk factor for mental disorders such as anxiety or depression (NHPC 2004). Psychological distress is often measured in surveys using a 10-item questionnaire called the Kessler 10 (K10). The questions in the K10 relate to a person's negative emotional states experienced in the 4 weeks before the interview. For output purposes K10 results are commonly grouped into four categories:

- low (scores of 10–15)
- moderate (scores of 16–21)
- high (scores of 22–29)
- very high (scores of 30–50).

Levels of very high psychological distress may indicate a need for professional help.

Estimates from the NHS indicate that levels of high or very high psychological distress increased slightly for adult males between 2001 and 2004–05, but stayed similar for adult females over the same period (Figure 3.15; Table B3.15). Higher proportions of females reported levels of high distress compared with males (11% and 7% respectively). Differences between levels of very high distress in males and females were slight and are not considered statistically significant (ABS 2006a).

Notes
1. Based on self-reported data.
2. Age-standardised to the 2001 Australian population.
Source: ABS 2006a.

Figure 3.15: Proportion of adults who report levels of high or very high psychological distress, 2001 and 2004–05

Early life factors

There are four areas of early life factors that are of interest to measure:

- maternal health
- low birthweight
- childhood infections
- abuse and neglect.

There are currently no indicators relevant to the area of childhood infections.

Prevalence

Indicators: Proportion of women smoking during pregnancy and after birth

Percentage of women who consume alcohol during pregnancy

Percentage of birthweights in each of a number of ranges (<1,500g, 1,500-2,499g, 2,500-4,199g, 4,200g +)
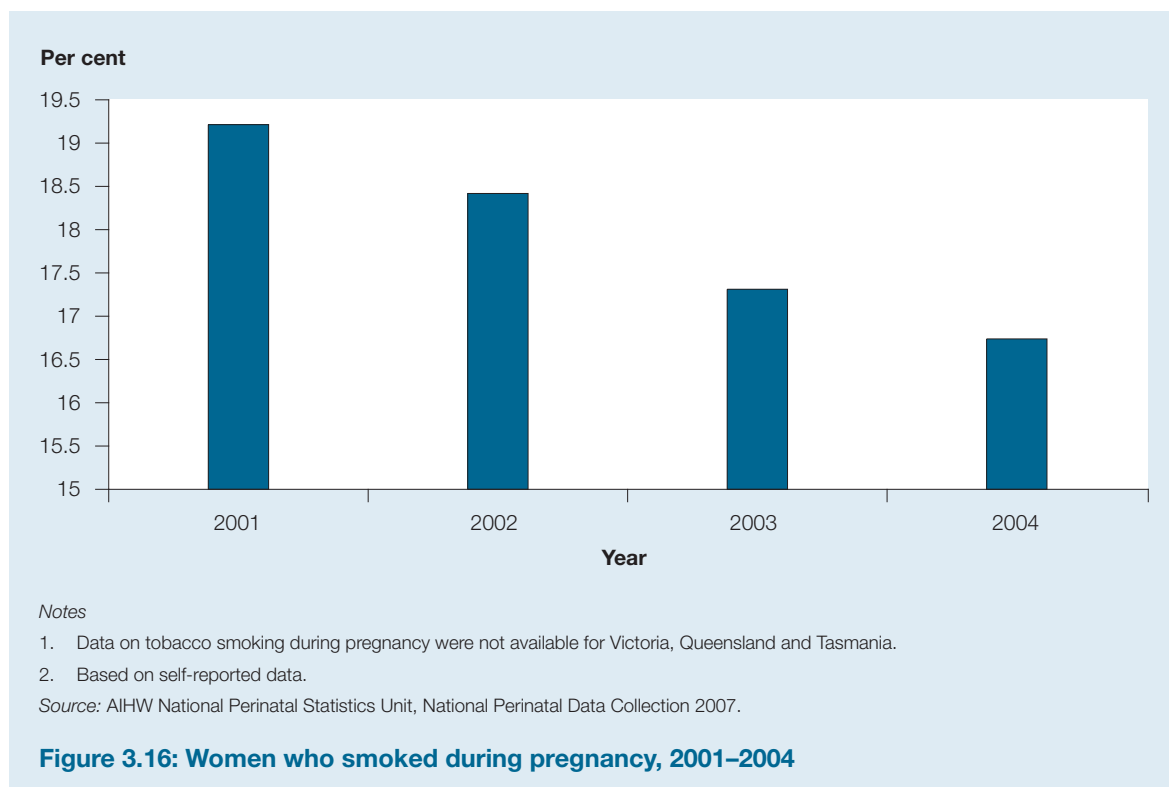
Rate of children aged 0–14 years who have been the victim of physical and sexual assault

Rate of young people aged 12–24 years who have been the victim of physical and/or sexual assault

Smoking during pregnancy is a risk factor for adverse outcomes for both the infant and mother. It is associated with low birthweight, pre-term birth, small for gestational age, and perinatal death (AIHW: Laws et al. 2006). Smoking during pregnancy also increases the mother's risk of spontaneous abortion, ectopic pregnancy, and other obstetric complications.

Data on maternal smoking was only collected by five states and territories: New South Wales, Western Australia, South Australia, the Australian Capital Territory and the Northern Territory, and were available for 4 years. These data show that rates of maternal smoking have decreased from just over 19% of mothers in 2001 to fewer than 17% in 2004 (Figure 3.16; Table B3.16).
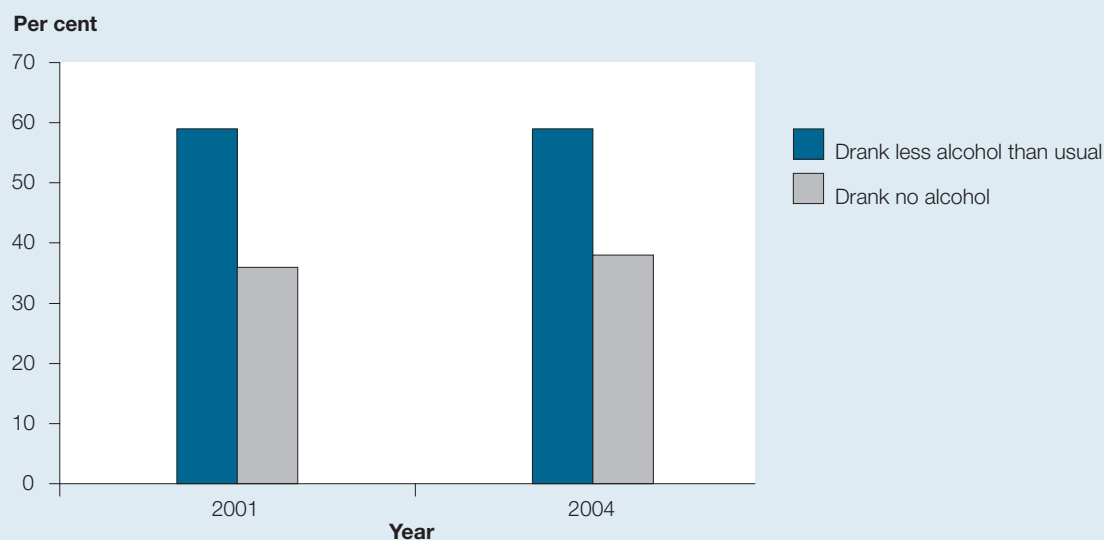
There are no national data available on maternal smoking after birth.

Per cent

Notes

1. Data on tobacco smoking during pregnancy were not available for Victoria, Queensland and Tasmania.
2. Based on self-reported data.

Source: AIHW National Perinatal Statistics Unit, National Perinatal Data Collection 2007.

Figure 3.16: Women who smoked during pregnancy, 2001–2004

As with smoking, alcohol consumption during pregnancy can have adverse effects on both the mother and unborn child. Alcohol can readily pass from a mother's bloodstream to her baby via the placenta. This can result in an increased risk of miscarriage or premature delivery and, in some cases, infants can be born with fetal alcohol syndrome or fetal alcohol effects. Currently it is not known whether there is a safe level of alcohol consumption during pregnancy, nor whether any stages of pregnancy are more vulnerable to the effects of alcohol. The WHO recommends that in the absence of demonstrated safe limits, abstinence from alcohol during pregnancy is recommended and should be encouraged (WHO 2006b).

Data about alcohol consumption during pregnancy were collected by the 2001 and 2004 NSDHS. Women were asked whether they had been pregnant or breastfeeding during the 12 months before the survey. Most women either abstained or reduced consumption while pregnant, and this pattern was similar for both 2001 and 2004 (Figure 3.17; Table B3.17). Over one-third of women did not consume alcohol while pregnant and almost two-thirds (59%) consumed less than normal. Less than 4% reported alcohol consumption patterns that were the same or more than when they were not pregnant.

Per cent
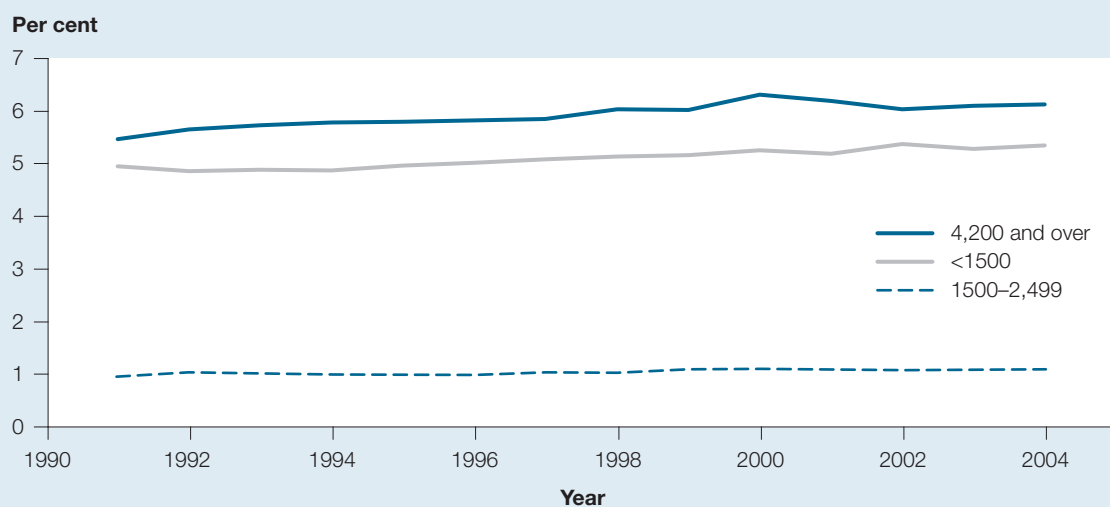
Note: Women aged 14 years and over who were pregnant in the 12 months before the interview.

Source: National Drug Strategy Household Surveys.

Figure 3.17: Alcohol consumption in women during pregnancy, 2001 and 2004

Low birthweight increases the risk of ill health and death for a baby, and is also associated with an increased likelihood of ill health during childhood and adult life. Babies with low birthweights often have an extended stay in hospital. Factors that may contribute to low birthweight include prematurity, size of parents, birth defects, socioeconomic status, the mother's nutritional status, and the mother's tobacco and alcohol intake during pregnancy. Low birthweight is defined as less than 2,500 grams, and those babies born less than 1,500 grams are categorised as having a very low birthweight. Due to larger proportions of babies born weighing 2,500 to 4,199 grams, trends for these are presented in a separate figure (Figure 3.19) so that trends in low birthweight (up to 2,499 grams) and higher birthweights (4,200 grams or more) can be clearly shown.
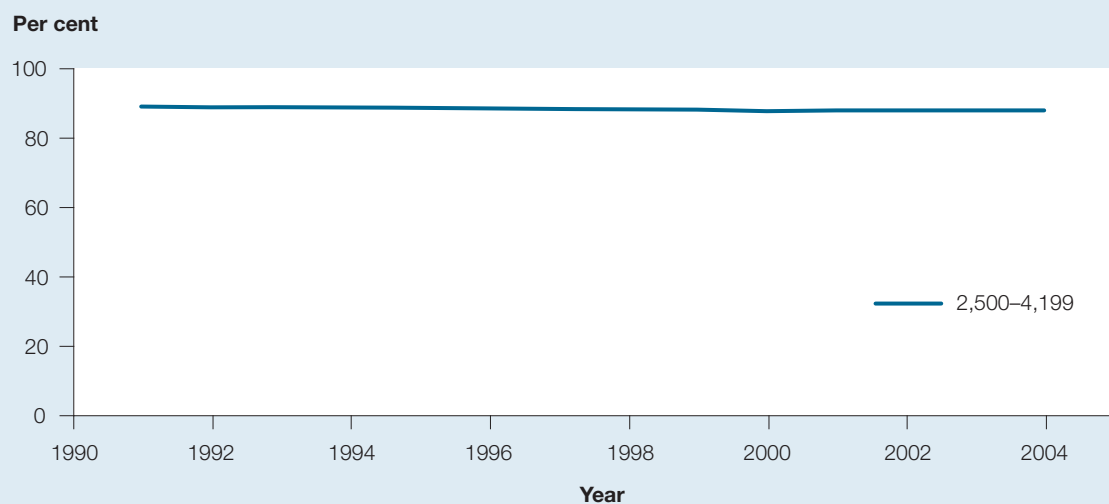
During the period 1991–2004, birthweights remained fairly stable. Babies born at very low birthweights were about 1% of all live births (Figure 3.18; Table B3.18). Those born weighing 1,500–2,499 grams were about 5%.

Source: AIHW National Perinatal Statistics Unit, National Perinatal Data Collection 2007.

Figure 3.18: Live births, by selected weights, 1991–2004

Most live born babies weigh 2,500 to 4,199 grams. This proportion has remained about 88% of all live births since 1991 (Figure 3.19; Table B3.19).

Source: AIHW National Perinatal Statistics Unit, National Perinatal Data Collection 2007.

Figure 3.19: Live births weighing 2,500–4,199 grams, 1991–2004

In 2004, the proportion of low birthweight live born babies of Aboriginal and Torres Strait Islander mothers was 13% (Laws et al. 2006). This was more than twice that of babies of non-Indigenous mothers (6%).

Children and young people who are victims of assault and sexual assault may not only experience harm in the short-term but are also at risk of further harm or harming others in later life (AIHW 2005d). Adverse outcomes from such crimes can range from injuries to suicidal ideation behaviour, depression, anxiety disorders, and substance abuse.

To measure the extent of children and young people who have been victims of assault or sexual assault, administrative data maintained by state and territory police are used (ABS 2006c). These statistics describe offences that are reported to police over a 1-year period. Generally these data are considered to underestimate the true extent of assault and sexual assault, as children especially may be reluctant to report these crimes, particularly in situations where the perpetrator is known to them. Crime victimisation surveys, such as the ABS Crime and Safety Survey, collect information about the number of victims who report crimes to the police. Those data are usually restricted to those aged 15 years and over, and, in terms of sexual assault, to those aged 18 years and over. From the 2005 Crime and Safety Survey, it is estimated that only one-third (31%) of assault victims report the crime to police (ABS 2006d).

The data presented in this report are based on crime statistics recorded in 2005, and are as reported by the ABS. Due to significant differences in recording practices across jurisdictions for assault and sexual assault, national data are not available. The data presented in Table 3.11 are for individual states and territories and are based on the particular recording practices adopted in each jurisdiction, so should not be compared across jurisdictions. Only data for those states where age and sex breakdowns are available are shown below. It should be noted that the age groups shown for young people do not align with those defined for the indicator, but are shown as available from the collection.

Table 3.12: Victims of assault and sexual assault, by sex and age, 2005

Sex/type	NSW	Vic	Qld	SA	WA
Number per 1,000 population					
Males 0–14 years					
Assault	5.0	1.2	3.2	4.4	4.0
Sexual assault	1.0	0.2	1.0	0.7	0.7
Males 15–24 years					
Assault	28.4	8.8	10.9	25.9	21.6
Sexual assault	0.5	0.3	0.5	0.6	0.3
Females 0–14 years					
Assault	3.5	1.0	2.4	3.4	3.0
Sexual assault	3.4	1.0	4.2	2.8	3.1
Females 15–24 years					
Assault	20.6	6.2	8.1	23.0	20.1
Sexual assault	4.1	2.9	3.9	5.6	4.5

Source: ABS 2006c.

4. Contextual indicators
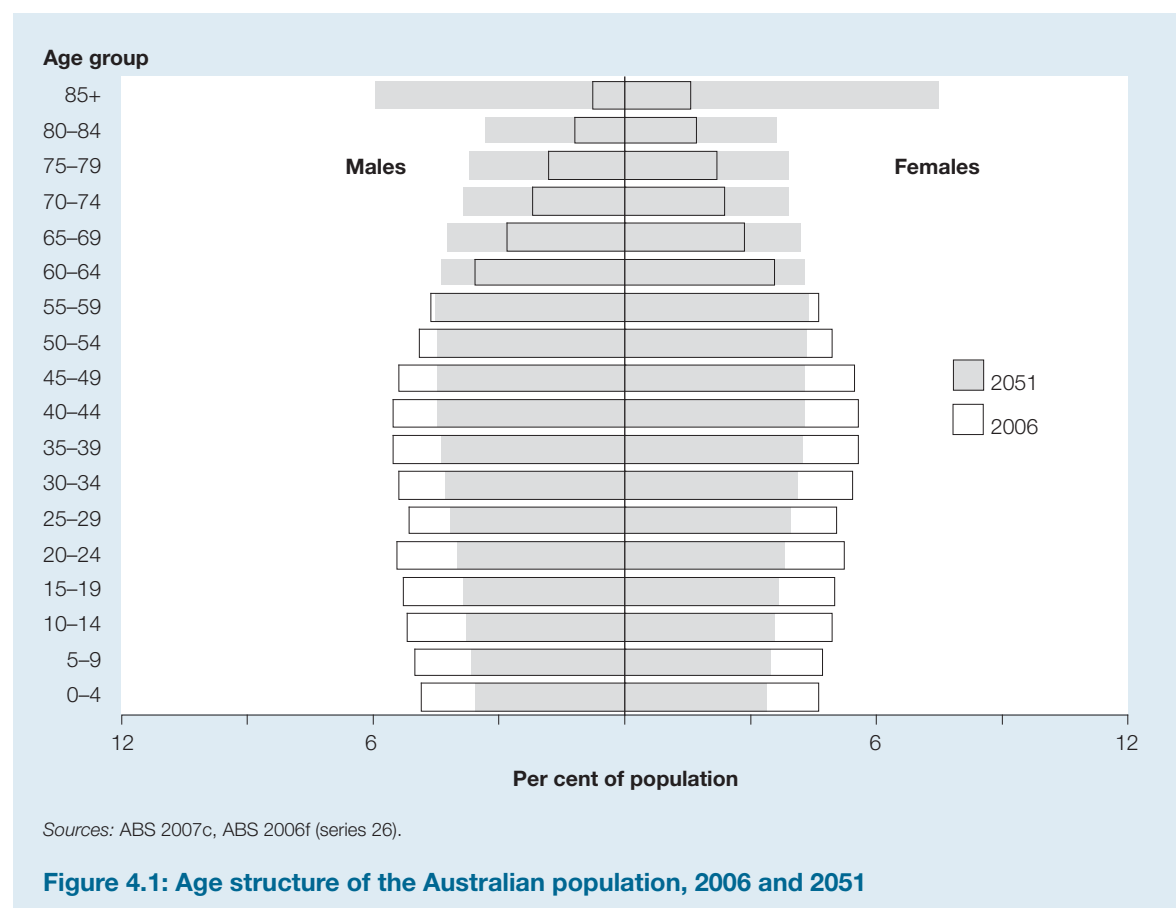
Unlike the trends shown in the previous chapters, most of the statistics presented for the following contextual indicators are not age-standardised. If rates have been age-standardised this is specified in the figure or table.

Population structure

The Australian estimated resident population (the population) at 30 June 2006 was 20.6 million (ABS 2007c). Based on ABS projections (series 26), the population is expected to increase to 29.8 million by the year 2051, and to 33.3 million the year 2101 (ABS 2006e).

The main influences on the population are declining fertility and mortality, that is, fewer babies are being born and people are living longer. These patterns result in larger proportions of people in older age groups than in previous years. Based on ABS projections, those aged 85 years and over will be the largest group within the total population in 2051 (Figure 4.1; Table B4.1).

Chronic diseases are more common in older age groups, so the number of people with chronic disease is expected to rise as the population ages. In addition, some chronic diseases are being diagnosed at earlier ages, for example Type 2 diabetes. With extended life expectancy this would affect the burden associated with those diseases for longer.

Sources: ABS 2007c, ABS 2006f (series 26).

Figure 4.1: Age structure of the Australian population, 2006 and 2051

Dependency ratio

The dependency ratio is a way of measuring the number of dependants (that is, those aged 0–14 years and 65 years and over) against the number of people of working age (that is, those aged 15–64 years). A reduced value for the dependency ratio indicates that there is a larger population of working age to support the population of non-working age. The total dependency ratio has fallen slightly over the decade to 2006 from 50 dependent persons per 100 working aged persons in 1995 to 48 in 2006 (Table 4.1).

Decreasing fertility rates have resulted in smaller proportions of children in the population. Therefore the child dependency ratio has decreased over the decade from 32 children per 100 working aged persons in 1995 to 29 in 2006. In contrast, increases in life expectancy have resulted in a larger proportion of older people in the population and a consequent increase in the aged dependency ratio. In 1995, the aged dependency ratio was 18 aged persons per 100 working persons; this has increased to 20 in 2006.

Table 4.1: Past, current and projected dependency ratios, 1995 to 2006

Year	Child (0–14 years)	Aged (65 years and over)	Total
	Number[a]		
1995	32.3	17.9	50.2
1996	32.1	18.1	50.1
1997	31.8	18.2	50.0
1998	31.5	18.4	49.9
1999	31.3	18.5	49.7
2000	31.0	18.6	49.5
2001	30.7	18.7	49.4
2002	30.3	18.9	49.2
2003	29.8	19.1	48.9
2004	29.5	19.3	48.7
2005	29.1	19.5	48.6
2006	28.7	19.7	48.4
	Projected number[b]		
2011	27.2	21.8	49.0
2021	26.3	29.5	55.8
2031	26.2	38.5	64.6
2041	25.7	46.1	71.9
2051	25.4	52.3	77.7

(a)   Dependents per 100 working-aged persons (15-64) years.

(b)   Projected dependency ratios are based on series 26 of the ABS projections.
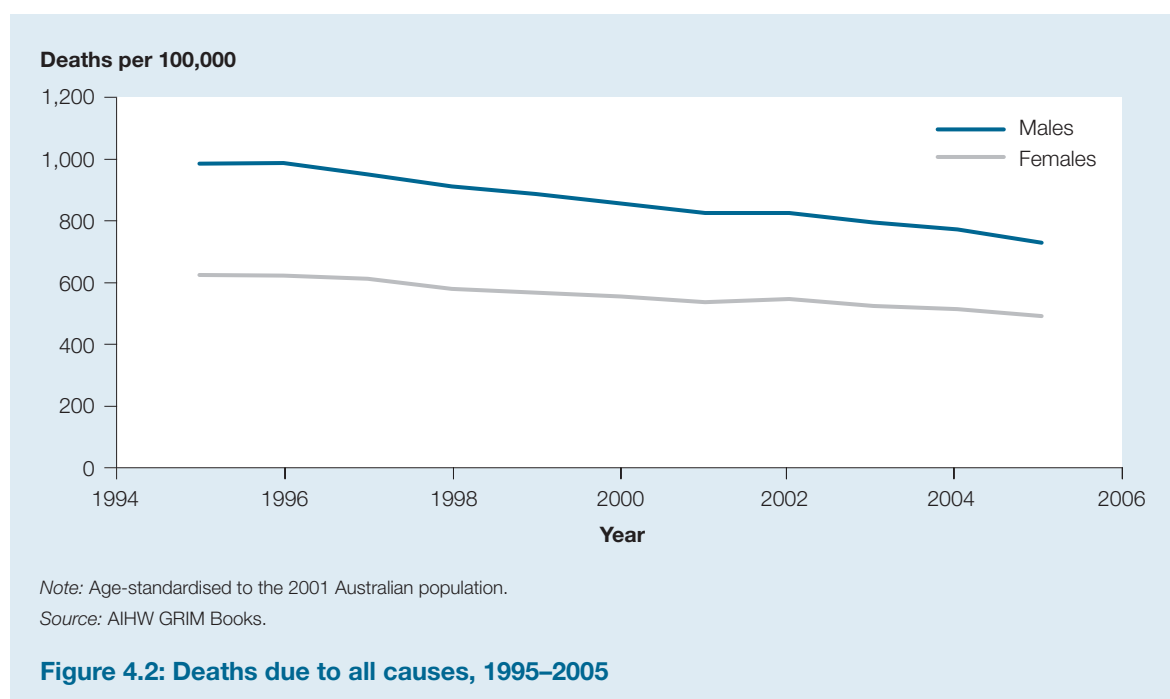
Sources: ABS 2007c, 2006e.

Based on ABS projections (series 26), the child dependency ratio will continue to decrease over time to 25 children per 100 working aged persons in 2051. The largest change will be in the aged dependency ratio that will increase to 52 aged persons per 100 working persons.

Mortality

All-cause mortality

Age-standardised mortality rates have decreased over the decade from 1995 for both males and females (Figure 4.2; Table B4.2). Male deaths fell from 983 deaths per 100,000 population in 1995 to 726 deaths in 2005, while females deaths for the same years decreased from 623 deaths per 100,000 population to 489 deaths. The rate of change in deaths over the last decade was on average 3% per annum.

Deaths per 100,000

Note: Age-standardised to the 2001 Australian population.
Source: AIHW GRIM Books.

**Figure 4.2: Deaths due to all causes, 1995–2005**
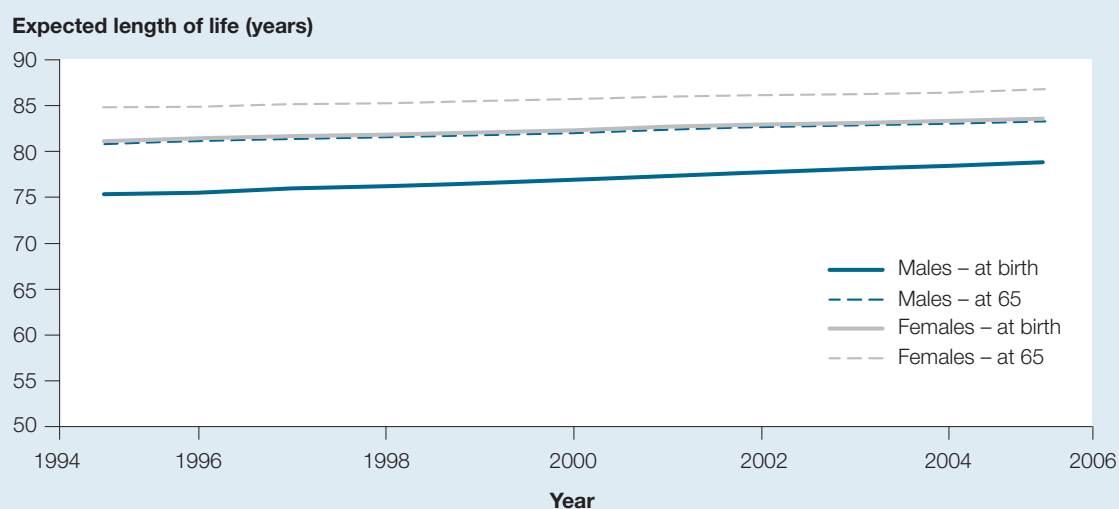
Life expectancy at birth and at 65 years of age

Life expectancy is the average number of years a person can expect to live (from a particular point in time) if the existing mortality patterns prevail over that person's lifetime. For both males and females life expectancy improved over the decade from 1995 (Figure 4.3; Table B4.3). In 1995, a male baby could have expected to live until 75 years of age. This has improved by over 3 years to just under 79 years in 2005. Similarly, a female born in 1995 could have expected to live almost 81 years, and this has improved by over 2 years to 83 in 2005.

With each year lived, life expectancy increases (AIHW 2006a). For example, a male aged 65 years in 1995 could have expected to live another 16 years, or until almost 81 years of age. In 2005, a 65-year-old male could expect to live another 18 years, or until just over 83 years of age. Females aged 65 in 1995 could have expected to live another 19 years, while in 2005 they could expect to live for another 21 years, or until just over 86 years of age.

Expected length of life (years)
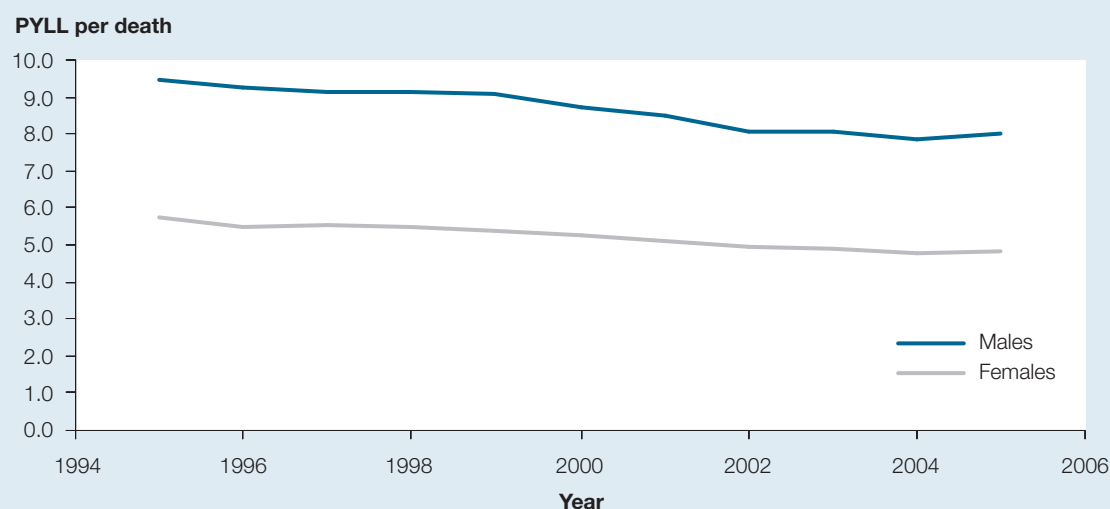
Source: ABS 2007a.

**Figure 4.3: Life expectancies at birth and 65 years of age, 1995–2005**

Premature mortality

The potential years of life lost (PYLL) is an indicator of premature or untimely death (AIHW 2006a). Although arbitrary, in this report a death before a person attains 75 years of age is considered premature. Therefore, potential years of life lost equates to 75 years minus the age at death. As an example, a person dying at the age of 60 has lost 15 years of potential life.

In the 10 years from 1995, the number of potential years lost due to premature death (expressed here as the number of premature years lost in a particular year divided by the total number of deaths in the same year) has decreased for both males and females (Figure 4.4; Table B4.4). The rate for males decreased from over 9 years lost per death in 1995 to 8 years lost in 2005. The rate for females decreased from just under 6 years lost per death in 1995 to almost 5 years lost in 2005.

PYLL per death
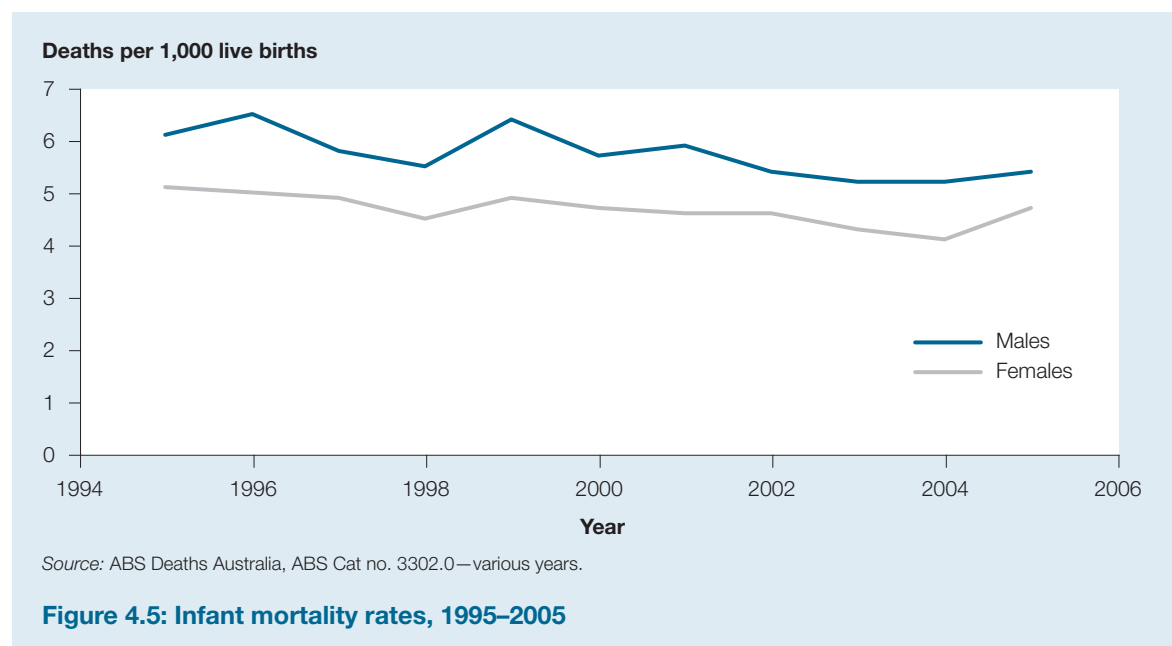
Source: AIHW GRIM Books.

Figure 4.4: Average potential years of life lost per death, 1995–2005

Infant mortality

The infant mortality rate is the number of deaths of babies aged under 1 year divided by the number of live births for that year. Infant mortality is an indicator of the quality of antenatal care, the effectiveness of obstetric services and the quality of infant care in the hospital and community (NPHC 2004). Over decade from 1995, infant mortality rates have decreased slightly from 6 and 5 deaths per 1,000 live births for males and females in 1995, to just over 5 and under 5 deaths respectively in 2005 (Figure 4.5; Table 4.5).

Deaths per 1,000 live births

Source: ABS Deaths Australia, ABS Cat no. 3302.0—various years.

Figure 4.5: Infant mortality rates, 1995–2005

Health status

Self-assessed health status

A self-rating of a person's overall health is often used as an indicator of health status and is sometimes used as a predictor of health care use and mortality. Estimates from the ABS National Health Surveys (NHS) show that over half of those aged 15 years and over self-rated their health as excellent or very good (Table 4.2). The proportion of those rating their health as excellent or very good was higher in 2004–05 than in the preceding survey years.

Table 4.2: Trends in excellent or very good health status, 1995 to 2004–05

Sex	1995	2001	2004–05
Males	53.9	50.1	54.7
Females	54.6	52.9	58.1

Notes

1. Based on self-assessed health status.

2. Age-standardised to the 2001 Australian population.

3. Persons aged 15 years and over.
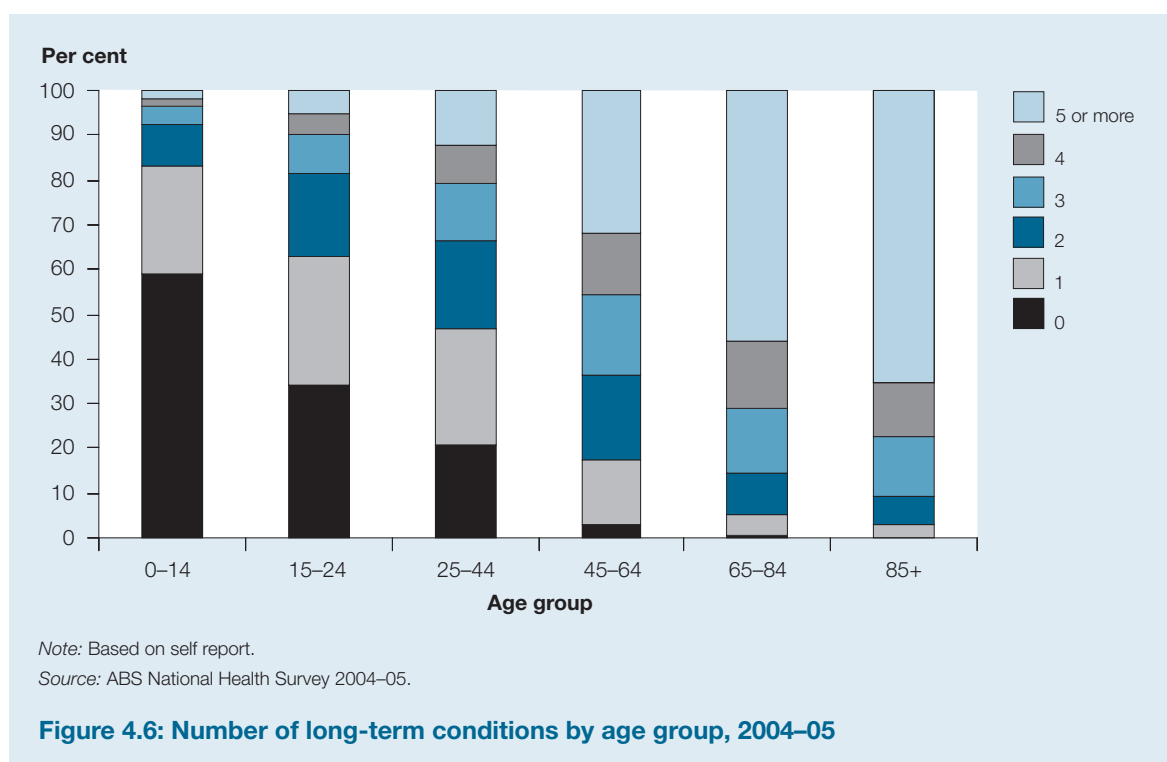
Source: ABS National Health Surveys, 1995, 2001 and 2004–05.

Long-term conditions

A long-term condition is one that has lasted or is expected to last for at least 6 months. According to estimates from the 2004–05 NHS, about 77% of Australians have 1 or more long-term conditions (Figure 4.6; Table B4.6). The number of long-term conditions reported increases by age. Of those aged less than 15 years, almost 60% reported no long-term conditions. In contrast, about 60% of those aged 65 years and over reported having 5 or more long-term conditions.

The most commonly reported conditions were not those conditions defined in this report as chronic. Sensory impairments (vision problems and deafness), back pain and disc problems, hay fever and allergic rhinitis featured as the most common self-reported long-term conditions (ABS 2006a). The most commonly reported long-term conditions that are also featured in this report include osteoarthritis (8%), asthma (10%), hypertensive disease (11%) and high cholesterol (7%).

Note: Based on self report.

Source: ABS National Health Survey 2004–05.

Figure 4.6: Number of long-term conditions by age group, 2004–05

Disability-adjusted life years

The disability-adjusted life years (DALY) is a measure based on the concept of potential years of life lost due to premature death (PYLL) and the equivalent years of healthy life lost because of poor health or disability (AIHW: Begg et al. 2007). It is calculated by summing the years of life lost due to premature mortality and the equivalent healthy years of life lost due to disability for incident cases of the individual health conditions. This measure enables the full health loss of different disease and injuries to be compared. More information about the calculation of these estimates is available in *The burden of disease and injury in Australia*.

In 2003, ischaemic heart disease was the leading cause of burden of disease for males (11%), and anxiety and depression was for females (10%) (Table 4.3). For males, the top 6 leading causes of burden of disease are chronic conditions described in this report, while for females, the top 4 are presented in this report.

**Table 4.3: Leading causes of burden (DALYs) in Australia, by sex, 2003**

Rank	Males	DALYs	Per cent of total	Females	DALYs	Per cent of total
1	Ischaemic heart disease	151,107	11.1	Anxiety & depression	126,464	10.0
2	Type 2 diabetes	71,176	5.2	Ischaemic heart disease	112,390	8.9
3	Anxiety & depression	65,321	4.8	Stroke	65,166	5.1
4	Lung cancer	55,028	4.0	Type 2 diabetes	61,763	4.9
5	Stroke	53,296	3.9	Dementia	60,747	4.8
6	COPD	49,201	3.6	Breast cancer	60,520	4.8
7	Adult-onset hearing loss	42,653	3.1	COPD	37,550	3.0
8	Suicide & self-inflicted injuries	38,717	2.8	Lung cancer	33,876	2.7
9	Prostate cancer	36,547	2.7	Asthma	33,828	2.7
10	Colorectal cancer	34,643	2.5	Colorectal cancer	28,962	2.3
11	Dementia	33,653	2.5	Adult-onset hearing loss	22,200	1.8
12	Road traffic accidents	31,028	2.3	Osteoarthritis	20,083	1.6
13	Asthma	29,271	2.1	Personality disorders	16,339	1.3
14	Alcohol abuse	27,225	2.0	Migraine	15,875	1.3
15	Personality disorders	16,248	1.2	Back pain	15,188	1.2
16	Schizophrenia	14,785	1.1	Lower respiratory tract infections	14,233	1.1
17	Osteoarthritis	14,495	1.1	Falls	13,269	1.0
18	Back pain	14,470	1.1	Parkinson's disease	13,189	1.0
19	Melanoma	13,734	1.0	Schizophrenia	12,717	1.0
20	Parkinson's disease	13,664	1.0	Rheumatoid arthritis	12,062	1.0
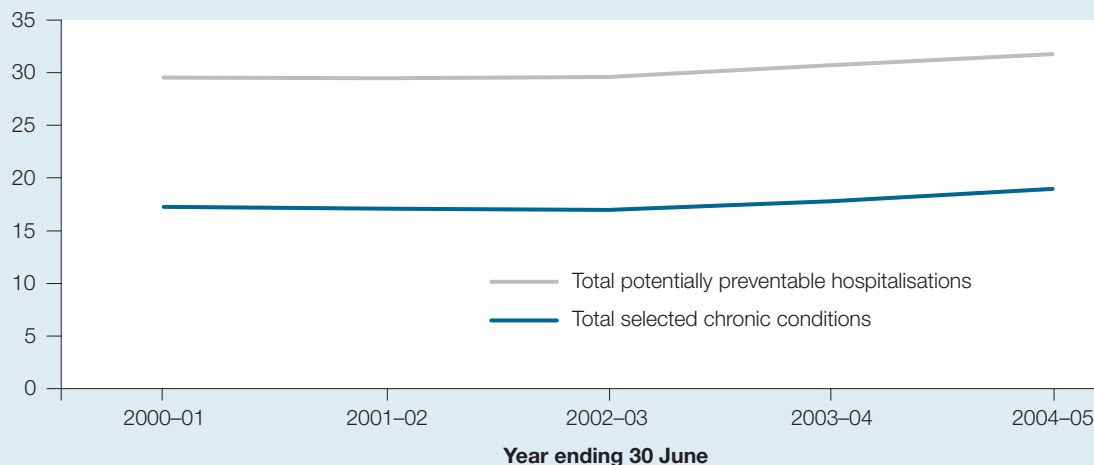
Source: Begg et al. 2007.

Potentially preventable hospitalisations

Potentially preventable hospitalisations are those conditions where hospitalisation is thought to be avoidable if timely and adequate non-hospital care had been provided (AIHW 2006e). Reporting on these hospital separations can indicate the quality or effectiveness of non-hospital care. A high rate of potentially preventable hospitalisation may indicate an increased prevalence of the conditions in the community, poorer functioning of the non-hospital care system, or an appropriate use of the hospital system to respond to greater need. It should be noted that data for these hospitalisations do not show the incidence of the condition. Both total potentially preventable hospitalisations and those due to chronic conditions increased over the 4 years from 2000–01 (Figure 4.7; Table B4.7).

Separations per 1,000 population

Year ending 30 June

Note: Chronic conditions that may be preventable through behaviour modification and lifestyle change. They are diabetes complications, asthma, angina, hypertension, congestive heart failure and chronic obstructive pulmonary disease.

Source: AIHW 2006e.
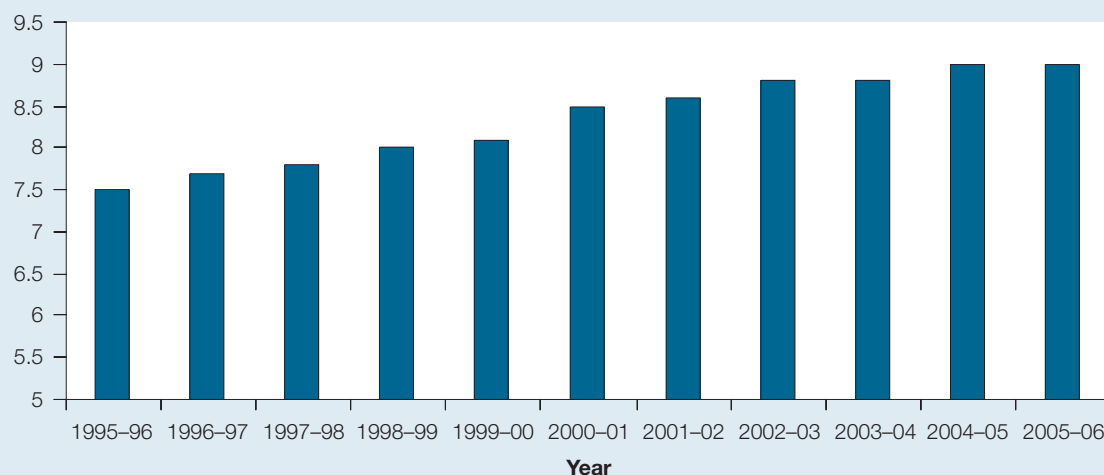
**Figure 4.7: Potentially preventable hospitalisations, 2000–01 to 2004–05**

In 2004–05, hospitalisations for chronic conditions were over half of the total potentially preventable hospitalisations in Australia (59%). Diabetes complications were the most common of those, with 9 separations per 1,000 population.

Expenditure on health

The estimated total expenditure on health in Australia in 2005–06 was $86.9 billion, or 9% of gross domestic product (GDP) (Figure 4.8; Table B4.8). A decade earlier, expenditure on health was under 8% of GDP (AIHW 2007a).

Per cent of GDP

Year

Source: AIHW 2007a.
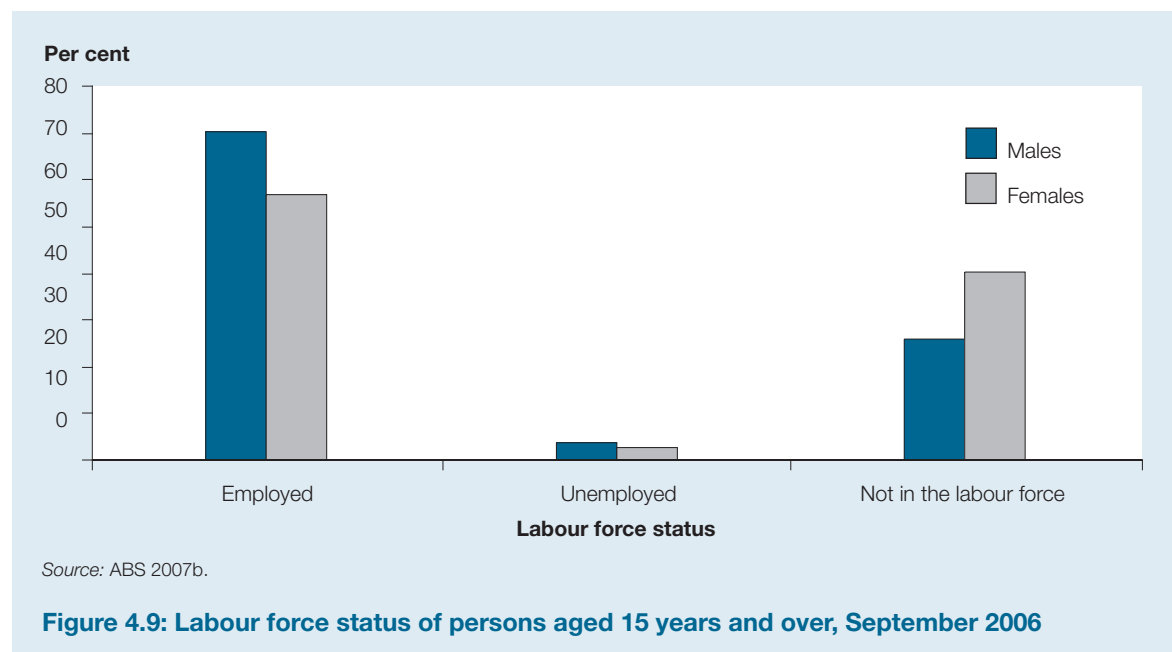
Figure 4.8: National health expenditure, proportion of GDP (current prices), 1995–96 to 2005–06

In 2005–06, Australia spent, on average, an estimated \$4,200 per person on health (AIHW 2007a). This expenditure included funding by the Australian Government, state and territory governments, local governments, health insurers and injury compensation insurers, as well as out-of-pocket expenditures by individuals.

Participation in labour force

The total civilian population aged 15 years and over can be divided into two main groups (ABS 2007b): those in the labour force (employed and unemployed) and those not in the labour force (Figure 4.9; Table B4.9). In September 2006, there were 16.2 million people in the civilian population. Two-thirds of these were in the labour force (10.8 million), and one-third was comprised of persons not in the labour force (5.4 million). Of those in the labour force, 10.3 million were employed and half a million were unemployed persons.

Higher proportions of males than females were in the labour force (both employed and unemployed); this pattern was reversed for those not in the labour force.

Source: ABS 2007b.

Figure 4.9: Labour force status of persons aged 15 years and over, September 2006

The most common main activities when not in the labour force in 2006 differed by age and sex (Table 4.4). Chronic disease can result in limitations and disability associated with ill health. As such, people with chronic disease may be limited in their ability to participate fully in the workforce, so are more likely to leave the workforce due to ill health, or retire earlier than intended.

Table 4.4: Main activity when not in the labour force, 2006 (per cent)

Activity	15–24	25–34	35–44	45–54	55–59	60–64	65–69	70 and over	Total
					Males				
Retired or voluntarily inactive	0.4	2.2	3.8	9.3	31.7	41.5	62.5	71.1	40.6
Home duties or childcare	1.4	13.2	23.2	15.1	11.5	8.2	7.5	7.1	8.3
Attending an educational institution	88.2	31.5	9.0	4.2	2.1	0.3	0.2	0.0	18.1
Own disability/illness/injury	5.3	35.8	44.7	53.1	38.0	30.1	11.1	8.5	18.7
Other	4.7	17.3	19.3	18.3	16.7	19.9	18.7	13.3	14.3
					Females				
Retired or voluntarily inactive	0.5	0.2	1.2	6.4	16.8	30.2	44.9	55.8	25.6
Home duties or childcare	16.5	80.5	81.3	60.0	49.1	40.5	34.4	28.2	44.7
Attending an educational institution	75.7	11.7	5.1	3.8	1.2	0.5	0.2	0.0	11.8
Own disability/illness/injury	4.0	3.2	7.4	16.7	15.3	10.1	5.0	6.2	7.7
Other	3.3	4.4	5.0	13.1	17.6	18.7	15.5	9.8	10.2

Source: ABS 2007b.