2.4 Colorectal cancer

Colorectal cancer (CRC) (ICD-9 codes 153 and 154; ICD-10-AM codes C18–C21) is a major cause of death, illness and disability. CRC comprises cancers of the colon and rectum, the two main sections of the large bowel. It is the most commonly diagnosed cancer in Australia, after skin cancers.

A large proportion of CRC cases are preventable given its association with modifiable risk factors such as poor diet and physical inactivity. This proportion may be as high as 66–75% (WCRF & AICR 1997). Also, if detected in its earlier stages, CRC is highly manageable and treatable.

Description

CRC typically develops from abnormal growths, known as polyps, that form on the internal lining of the colon and rectum. These polyps are usually harmless but some types can become cancerous and therefore capable of invading other tissues and spreading.

Symptoms of CRC can include blood in the faeces, anaemia, changes in bowel habits, general stomach discomfort and unaccountable weight loss (NHMRC 2000). The cancer may be detected in those with symptoms or via screening tests for people without symptoms. Tests include blood detection in faeces or examining cells of the bowel. The clinical diagnosis of CRC is made through study and examination of the tissue and cells of suspected cancerous polyps.

Disease severity and survival

CRC is a serious form of cancer. Survival for those diagnosed with CRC varies widely, depending largely on the extent of cancer development at diagnosis. The outcome for individuals diagnosed with CRC in its earliest stages is good. Currently, over 80% of those whose cancer is detected while still confined to the bowel wall are alive 5 years after treatment (NHMRC 2000). This contrasts with a survival of approximately 7% for those whose cancer at diagnosis has spread to distant parts of the body (see Figure 2.4.1). Overall, in 1992–1997, 5-year relative survival from cancer of the colon was 58%. For cancer of the rectum, the 5-year relative survival was 57% for males and 61% for females (AIHW & AACR 2001).

Figure 2.4.1: Five-year survival ratios for colorectal cancer

Source: NHMRC 2000:8.
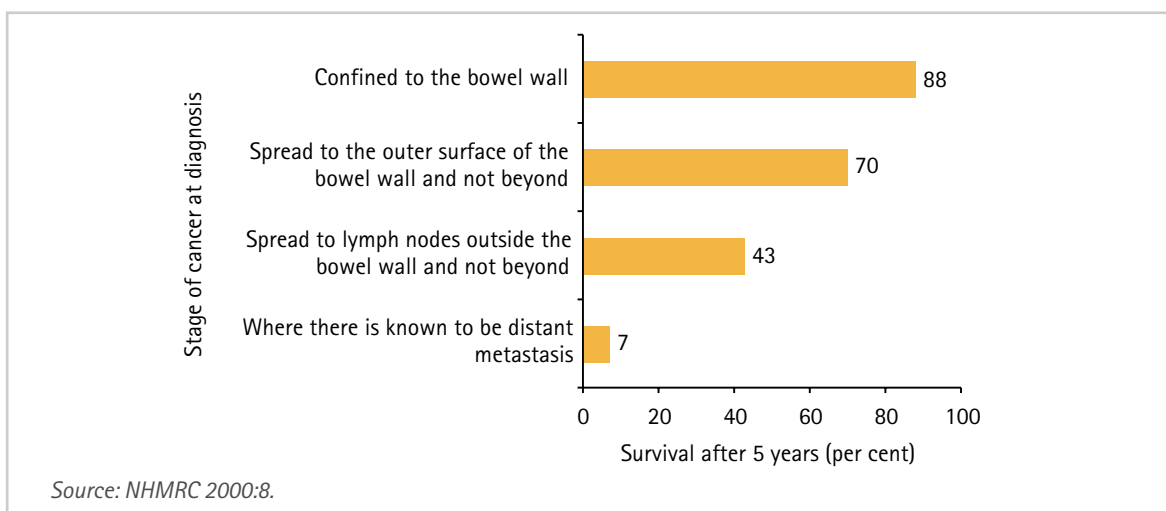
Risk factors

Factors that may play a significant role in increasing risk of CRC include heredity, a personal or family history of CRC or polyps, poor diet, physical inactivity and excess weight (Box 2.4.1).

Box 2.4.1: Risk factors for CRC

Predisposing factors
Heredity
Personal or family history of polyps or colorectal cancer
Inflammatory bowel disease
Age

Lifestyle factors
Diet
Physical inactivity
Excess weight

Source: Winawer et al. 1997; Cancer Council Australia 2001.

As shown in Figure 2.4.2, about 6% of CRCs are due to known genetic disorders (familial adenomatous polyposis and hereditary non-polyposis colorectal cancer). A further 10 to 30% either run in families or are rare types, but the majority (66–85%) are regarded as 'sporadic'.

Risk for CRC is increased in those who have been diagnosed with polyps or had a close relative diagnosed with a pre-cancerous (adenomatous) polyp below age 60 (Stevenson 2001). People with a family history of CRC but without an apparent defined genetic syndrome account for most of those at high risk (Winawer et al. 1997:608).
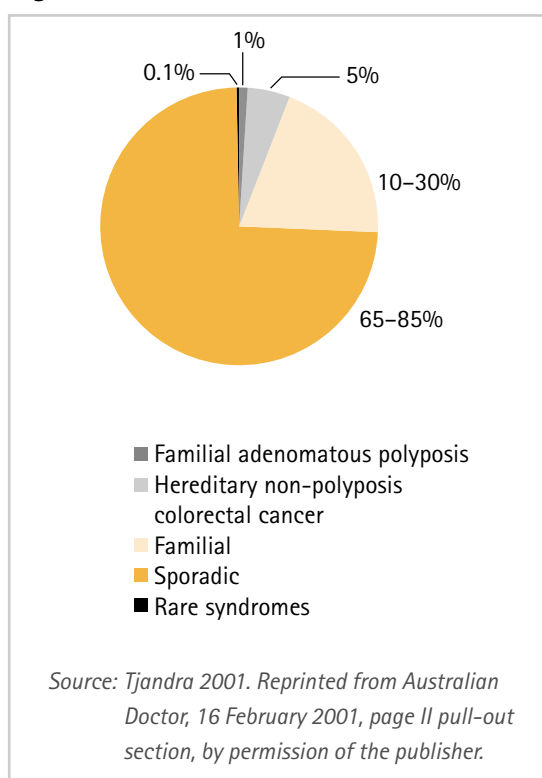
Inflammatory bowel diseases, such as Crohn's disease or ulcerative colitis, are conditions that cause the intestines to become inflamed and affect the digestive system. Persons with such diseases are at greater risk of CRC than people in the general population, but this contributes less than 1% of all new cases of CRC.
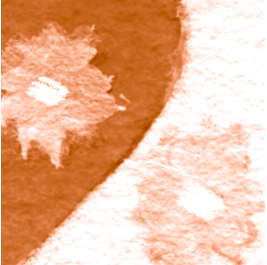
The risk for CRC increases with age. The absolute risk of an average member of the population developing colorectal cancer ranges from 1 in 7,000 for a 30-year old in the next 5 years, to 1 in 15 for a 70-year old in the next 20 years (Table 2.4.1).

The proportion of CRCs attributable to dietary factors has been estimated to be 50% (Cancer Council Australia 2001). Diets high in saturated fat (especially through meat intake), and/or low in fruit, vegetables and fibre have been associated with increased risk for CRC (Brownson et al. 1998). Fruit, vegetables and fibre, omega-3 fatty acids, calcium, folate and selenium may all play a preventive role for CRC (Tjandra 2001).

Physical activity protects against CRC and pre-cancerous polyps (AIHW: Armstrong et al. 2000) whereas physical inactivity, in particular when present with excess weight, increases the risk (WHO 2000). The estimated percentage of CRCs that could be prevented by a combination of diet and physical activity ranges from 66 to 75% (NHMRC 1999).

Figure 2.4.2: Causes of colorectal cancer

Source: Tjandra 2001. Reprinted from Australian Doctor, 16 February 2001, page II pull-out section, by permission of the publisher.

Table 2.4.1: Absolute risk of developing colorectal cancer, by age

Age of person	Risk period			
	5 years	10 years	15 years	20 years
30	1 in 7000	1 in 2000	1 in 700	1 in 350
40	1 in 1200	1 in 400	1 in 200	1 in 90
50	1 in 300	1 in 100	1 in 50	1 in 30
60	1 in 100	1 in 50	1 in 30	1 in 20
70	1 in 65	1 in 30	1 in 20	1 in 15

Note: Absolute risk is the observed or calculated likelihood of the occurrence of an event in a population under study.
Source: NHMRC 1999:23.

Impacts

Deaths

CRC is the second most common cause of cancer deaths among males after lung cancer and second equal with lung cancer among females (breast cancer is the most common cause of cancer deaths among females). There were 4,634 deaths (2,475 males and 2,159 females) from CRC in 1998, with a death rate of 22 per 100,000.

Since 1950, the male death rate for CRC remained fairly steady until the mid 1980s, and then declined from 32 per 100,000 in 1983 to 27 per 100,000 in 1998 (Figure 2.4.3). The female death rate on the other hand showed a steady decline. The reasons for these declines are not clear, but may be due to a combination of better diet and some use of screening (Stevenson 2001).

CRC is mainly a cancer of old age, with the majority of CRC deaths occurring in persons aged 50 and above (Figure 2.4.4). Death rates for both males and females are greatest in the 85+ age group (321 and 262 per 100,000 among males and females respectively in 1998). The highest proportion of male CRC deaths in 1998 was among those aged 70–74 (18% of male CRC deaths). Females aged 85 and above, account for the largest proportion of female CRC deaths (19% of female CRC deaths in 1998).

Incidence

CRC is the most commonly diagnosed cancer in Australia (excluding skin cancers), with 11,289 new cases (14% of all new cancer cases) diagnosed in 1998, an incidence rate of 56 per 100,000. CRC incidence in Australia is amongst the highest in the world, comparable with North America and New Zealand (NHMRC 2000:3).

Approximately 54% of newly diagnosed CRCs are in males. In 1998, there were 6,131 new cases in males (67 per 100,000) and 5,158 new cases in females (46 per 100,000).

The risk of CRC increases with age, being low in people under the age of 45, with a median age at diagnosis of 70. In both sexes the incidence of CRC rises sharply after 45 years of age (Figure 2.4.5).

Disability

Disability from CRC may result following removal of parts or all of the colon or rectum; secondary tumours, especially lung and liver tumours; or spread of the cancer to other organs. In 1998, almost 5,000 people reported a disabling condition due to colon cancer (1998 ABS Survey of Disability, Ageing and Carers, unpublished data).

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Use of health services

Most CRCs are diagnosed by specialists and treated in a hospital. In 1999–00, there were 23,758 hospital separations for CRC, accounting for 208,986 patient days. Information on GP encounters, management and costs associated with CRCs is unavailable.

In 1993–94, the estimated total health system expenditure for CRC was $205 million (0.6% of the total health system expenditure). The main components were hospital costs ($171 million), direct medical costs ($11 million) and pharmaceuticals ($3 million) (AIHW: Mathers et al. 1998).

Management

Preventive measures and early detection give great scope to reducing CRC morbidity and mortality. If CRC is detected early, treatment is highly effective. Most CRCs require surgery, commonly in combination with chemotherapy

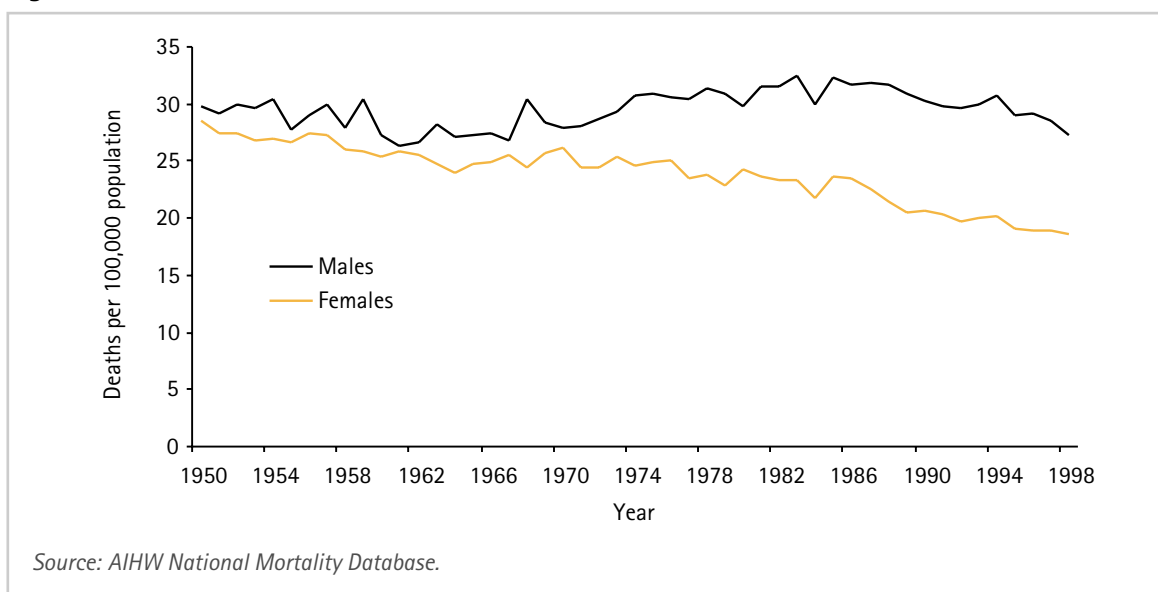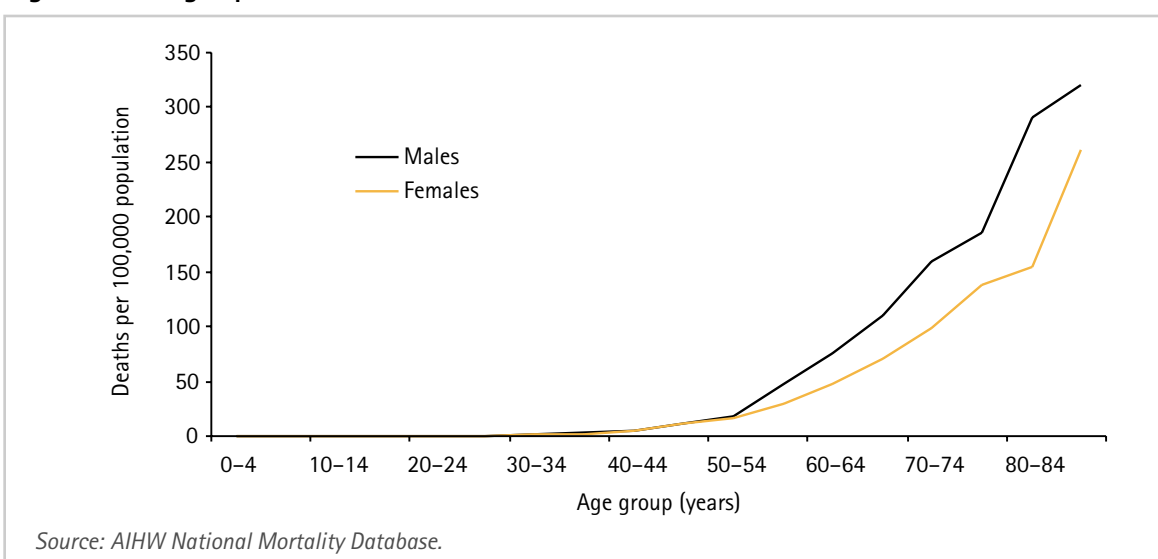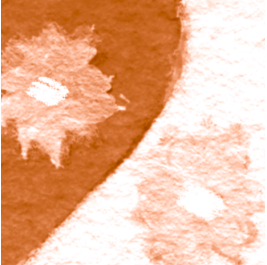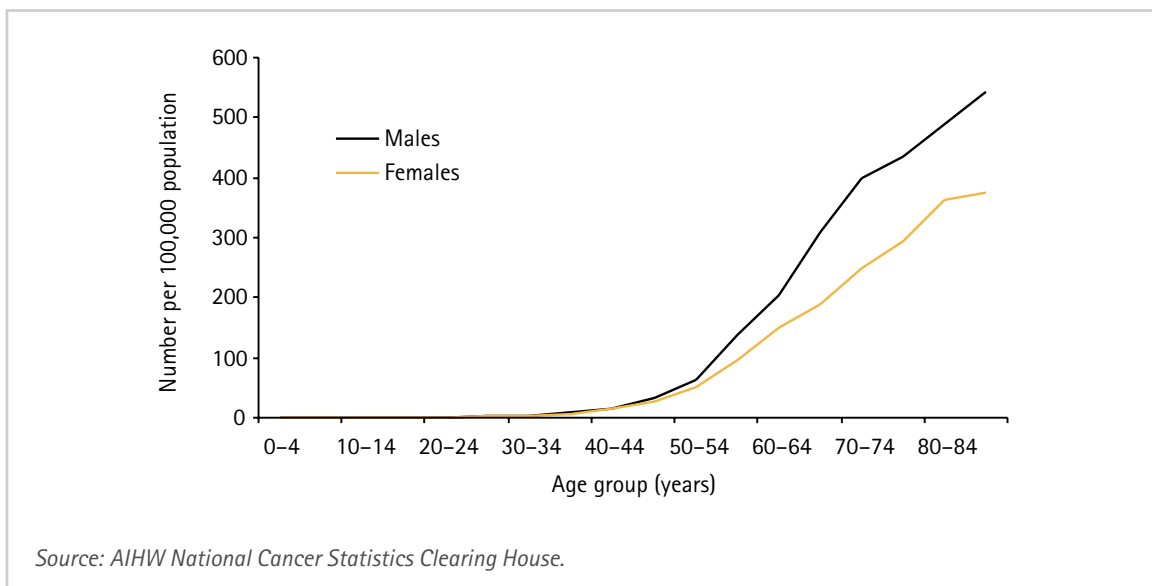**Figure 2.4.3: Death rates for colorectal cancer, 1950 to 1998**

Source: AIHW National Mortality Database.

Figure 2.4.4: Age–specific death rates for colorectal cancer, 1998

Source: AIHW National Mortality Database.

Figure 2.4.5: Age–specific incidence of colorectal cancer, 1998

Source: AIHW National Cancer Statistics Clearing House.

or radiotherapy. Surgery aims to remove the cancer and could include removal of part of the colon, rectum or surrounding structures. Following the surgery, patients are monitored regularly to detect re-occurrence or new cancers. Chemotherapy may be given either before or after surgery, and is often effective for people whose cancer has spread into the lymph nodes but no further (NHMRC 2000). Radiotherapy reduces the chance of the cancer coming back and of it spreading to other parts of the body.

Prevention and early detection initiatives

The main public health recommendations for CRC prevention are for a healthy diet—high in vegetables and fruit, and low in fat, with good control of total energy intake and regular physical activity (see Box 2.4.2).

Since CRC can develop with few or no symptoms, regular population-based screening would allow early detection and removal of polyps and CRCs. A number of screening tools are currently available including sigmoidoscopy, colonoscopy and faecal occult blood testing. It is reported that an estimated 33% or more of deaths from CRC could be prevented by regular screening (NCCDPHP 2000).

Box 2.4.2: NHMRC guidelines on primary prevention of colorectal cancer

Eat a range of wholegrain cereal fibres and wheat bran

Eat five or more potions a day of a variety of vegetables and fruits

Reduce intake of fat

Restrict the amount of energy in the diet (fewer than 2,500 kilocalories a day for adult males and fewer than 2,000 kilocalories a day for adult females)

Ensure a dietary calcium intake of 1,000–1,200 mg/day

Maintain 'sufficient' levels of physical activity

Also, avoid smoking and limit alcohol consumption

Source: NHMRC 2000.

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2.5 Depression

Depression (ICD-9 codes 296.2, 296.3, 296.9, 300.4, 311; ICD-10-AM codes F32, F33) is a chronic mental disorder and a significant public health problem worldwide. It is an affective (mood) disorder characterised by feelings of sadness, loss of interest or pleasure in nearly all activities, feelings of hopelessness, suicidal thoughts or self blame.

Depression is the fourth leading cause of disease burden in Australia, with high associated costs including reduced work productivity, days of lost work, educational failure, poor family functioning, poor social functioning, diminished sense of wellbeing and increased use of medical services. It is also a major risk factor for suicide and self-inflicted injury (DHAC & AIHW 1999).

Description

The term 'depression' is used in many different ways:

1) a normal human emotion;

2) a symptom characterised by persistent low mood, unhappiness, or distress that may be associated with a depressive illness or other disorders; or

3) a specific syndrome or disorder (clinical depression) (DHAC 2000).

Clinical diagnostic systems such as the DSM IV (Diagnostic Statistical Manual of Mental Disorders) provide more specific detail regarding appropriate diagnosis and definitions of mental disorders. The symptoms as described in Box 2.5.1 represent a list of common features that may predict and follow episodes of major depression, continue between episodes, or form a spectrum of depressive psychopathology. However, a mental problem is classified as 'depression' when at least five of the nine symptoms listed in Box 2.5.1 are present (APA 1996).

The ABS defines depression as 'a state of gloom, despondency or sadness lasting at least 2 weeks'. A milder form of depression lasting more than 2 years is termed dysthymia. Other related conditions are mania, hypomania, and bipolar affective disorder. These conditions are also referred to as affective disorders.

While some mention is made below of affective disorders in general and dysthymia, much of the discussion that follows focuses on depression as defined above.

Box 2.5.1: DSM IV major depressive symptoms

Depressed mood most of the day

Loss of interest or pleasure (in all or most activities, most of the day)

Large increases or decreases in appetite (significant weight loss or gain)

Insomnia or excessive sleeping (hypersomnia)

Restlessness as evident by hand wringing and similar other activities (psychomotor agitation) or slowness of movement (psychomotor retardation)

Fatigue or loss of energy

Feelings of worthlessness, or excessive and inappropriate guilt

Diminished ability to concentrate, or indecisiveness

Recurrent thoughts of death or suicide

Source: APA 1996.

Disease severity

The severity of depression ranges from minor stress to debilitating levels requiring professional help and medication. Usually depressive episodes run a fluctuating course and most people recover within a few years. In a small proportion the symptoms persist. Some need medication or specialised psychiatric treatment. Depression can be severe enough to carry a high risk of suicide. In some cases the excessive use of alcohol or drugs may complicate the clinical picture. Because of the strength and range of effects like these, depression has a high impact on the individual's family, friends and work colleagues.

Risk factors

Many factors increase the risk of depression (see Box 2.5.2). These range from biological and psychological susceptibility of the individual to social and structural factors.

A range of health risk behaviours often occur in combination with depression. These include tobacco use, illicit drug use, alcohol misuse and dependence, eating disorders and excess weight (Sartorius et al. 1996).

Depression is often associated with anxiety, including panic disorder and social phobia (Parker et al. 1999). It is also common in people with long-term physical illness such as chronic pain and fatigue, especially chronic fatigue syndrome (Simon & von Korff 1991; Hickie et al. 1996). Depression often accompanies blindness, deafness, immobility and multiple sclerosis. Studies have also reported considerable prevalence of depression in people diagnosed with other chronic diseases, such as cardiovascular disease, diabetes, cancer, and rheumatoid arthritis (DHAC & AIHW 1999).

There are also a number of recognised protective factors for depression (see Box 2.5.3). Having an easy-going temperament and good

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Box 2.5.2: Risk factors for depression

Biological and psychological factors

Family history of depression

Being a female adolescent

High trait anxiety and pre-existing anxiety disorders

Temperament—reacting negatively to stressors

Negative thought patterns

Avoidant coping style

Environmental and social factors

Poverty, unemployment

Conflict, poor parenting practices

Child abuse

Exposure to adverse life events (e.g. relationship break-up, bereavements, family separation, trauma, family illness)

Caring for someone with a chronic physical or mental disorder

For older adults, being in residential care

Source: DHAC & AIHW 1999:40.

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perceived social support, especially having a relationship with a supportive adult, may help prevent depression (Werner 1992). A coping style that favours problem solving is also protective (Folkman et al. 1986).

Box 2.5.3: Protective factors for depression

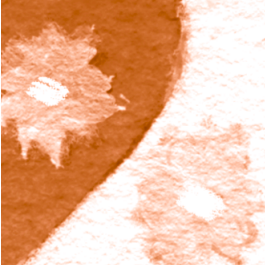*Good interpersonal relationships (i.e. a supportive relationship with at least one other person)*

Family cohesion (i.e. positive parent–child relations)

Social connectedness

Academic/ sporting achievements

Source: DHAC & AIHW 1999.

Impacts

Deaths

While the major impact of depression is in terms of morbidity and disability, depression is a factor commonly associated with suicide (ICD-9 codes E950–E959) and attempted suicide. A majority of people who commit suicide meet the criteria for depressive disorder in the weeks before death.

Suicide rates are higher among males at all ages. High-risk groups are young males between the ages of 20 and 39 years (Figure 2.5.1). Attempted suicide (or 'parasuicide') is more common among females. A recent study has estimated that there are six attempted suicides (based on hospital separations other than death for 'self-harm') per completed suicide among young males (aged 15–29), while among young females the ratio is almost 44 to 1 (Ruzicka & Choi 1999:39).

Prevalence

The 1997 ABS National Survey of Mental Health and Wellbeing found some 700,000 Australian adults, 6% of persons aged 18 years and over, had experienced depression during the 12 months prior to the survey. Depression is more prevalent among females.

The child and adolescent component of the survey, in which parents reported about their children, found that depression was present in about 3% of children (aged 6–12 years) and 5% of adolescents (aged 13–17 years) (Figure 2.5.2).

Depression is reported to be highly prevalent in Indigenous Australians. A high proportion of people attending Aboriginal Medical Services are reported to have mental disorders or are psychologically distressed (McKendrick et al. 1992; Swan & Fagan 1991).

Complications

Depression is associated with a range of health risk behaviours and complications. Depressed smokers are less likely to give up smoking than those who are not depressed, and may have taken up smoking to self-medicate their depressive symptoms (DHAC & AIHW 1999). Furthermore, while causation is not established, there are a number of health risks associated with depression including alcohol misuse, exposure to adversity and socioeconomic disadvantage (Jorm et al. 1999).

There is accumulating evidence that depression commonly precedes progression to both alcohol misuse and dependence, especially in younger drinkers. Similarly in dieters, depression

Figure 2.5.1: Age–specific suicide rates, 1998

Source: AIHW National Mortality Database.
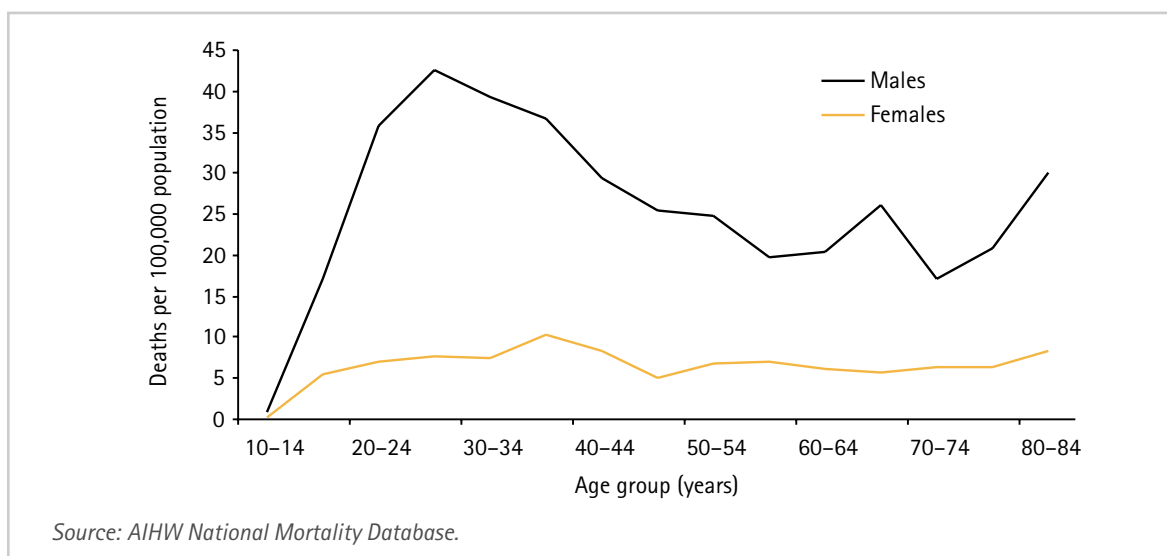
may cause the development of symptoms of bulimia nervosa (DHAC & AIHW 1999).

Disability

Depression is a major cause of disability. According to the 1998 ABS Survey of Disability, Ageing and Carers, 63,450 Australians (0.3% of the total population), were classified as disabled with depression as the primary cause of their disability.

People with affective disorders (mainly depression and dysthymia) are reported to have almost three times the number of disability days (not fulfilling normal daily activities) of those who are well. This ratio rises to six times for those who have affective disorders in association with physical illness (ABS 1998:33).

Use of health services

In 1999–00, there were 59,909 hospital separations for depression (1% of all separations). Depression accounted for a quarter of all separations for mental and behavioural disorders.

More females than males were hospitalised with a principal diagnosis of depression, with hospital use highest among females aged 45–49 and among males and females aged 75 and over (Figure 2.5.3).

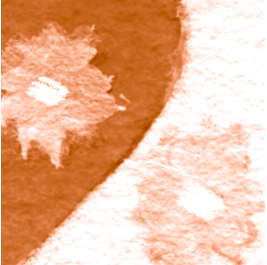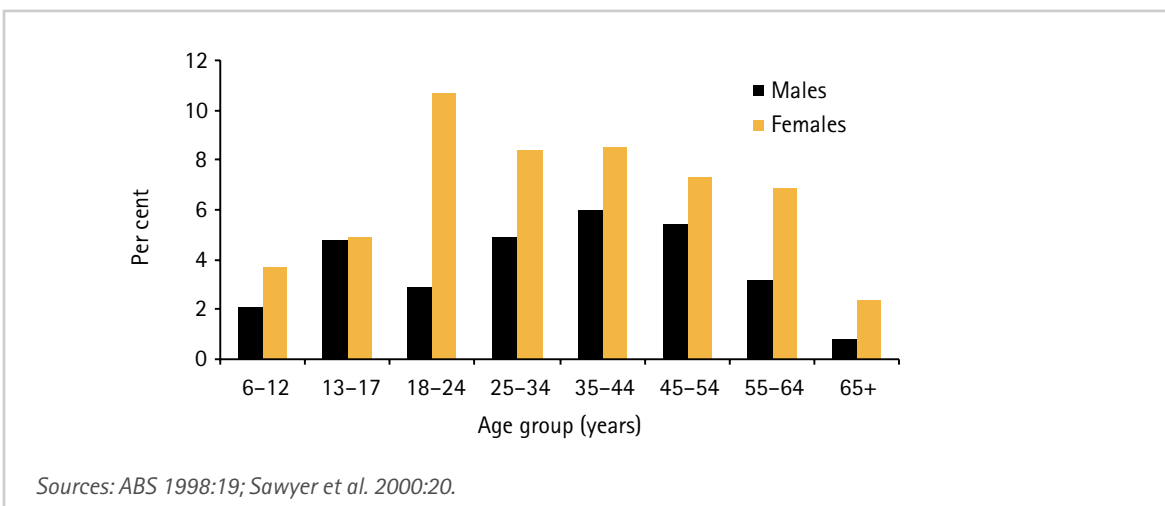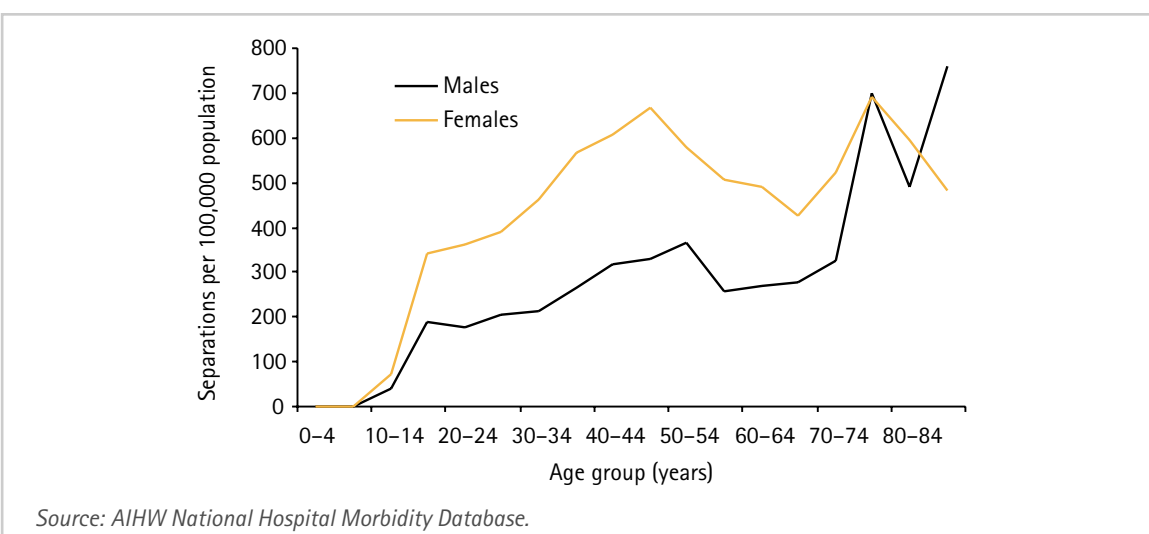**Figure 2.5.2: Age-specific prevalence of depression, 1998**

Sources: ABS 1998:19; Sawyer et al. 2000:20.

Figure 2.5.3: Age-specific hospital use for depression, 1999–00

Source: AIHW National Hospital Morbidity Database.

Depression is the fourth most common problem managed by general practitioners. The majority (68%) of patients are females between the ages of 25 and 64 (AIHW: Britt et al. 1999). There is some evidence that depression is under-diagnosed and under-treated in primary care settings.

Management

Effective management of depression depends on the early recognition of the symptoms and identification of all contributing psychological and social risk factors as well as co-morbidities and complications.

Many people attempt to cope with the situation without professional help, by using their social relationships for informal 'counselling' and support. Others might turn to telephone counselling, naturopathy, exercise, relaxation and meditation.

Psychological interventions, such as cognitive, behavioural and interpersonal psychotherapies, have been found to be effective in some cases (Brown & Schulberg 1998; Clarkin et al. 1996; Jacobson & Hollon 1996). Cognitive and behavioural therapy involves teaching individuals to identify their maladaptive and/or irrational patterns of thinking and to challenge these in the light of evidence. This could be done by participation in pleasant events, training in problem-solving skills, self-monitoring, self-evaluation, self-reinforcement, relaxation, and social skills.

The interpersonal approach involves the therapist helping the person to systematically identify and resolve relationship problems that may contribute to depressive symptoms. It aims to improve the person's relationships and communications with others. In most instances, treatment involves a combination of these approaches rather than any one element in isolation.

Several medical interventions are available to manage depression. Antidepressant drugs play an important role in the treatment of depressive disorders. Such drugs are targeted to address changes in the patterns of brain neurotransmitters. The type of drug, dosage and length of treatment must be managed carefully by prescribing medical practitioners. Electroconvulsive therapy, the passing of electric current through the brain to produce a convulsion, is a safe and effective treatment for depressive disorder that either fails to respond to antidepressants or is of delusional intensity (DHAC & AIHW 1999:68–74).

Prevention

Depression can afflict anyone. Primary prevention strategies are relevant for the whole population; some strategies are more usefully targeted at groups with particularly high risk.

The development of depression and depressive symptoms may be averted through recognition of and response to risk factors. The National Action Plan for Depression, a major initiative under the National Mental Health Strategy, provides a framework encompassing the health care continuum for a coordinated approach for prevention, assessment and treatment of depression nationally. The plan aims to reduce the prevalence and impact of depression through interventions and activities at all sectors of government, health education and human services (DHAC 2000).

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2.6 Diabetes

Diabetes mellitus (ICD-9 code 250; ICD-10-AM codes E10–E14) is a major cause of death, illness and disability in Australia. It is also a leading cause of blindness and lower limb amputations, and can lead to pregnancy-related complications for both the mother and foetus or newborn child. Diabetes is an important risk factor for several other chronic diseases including heart disease, stroke and renal disease.

Description

Diabetes is classified as a metabolic disorder (disturbances of carbohydrate, fat and protein metabolism), marked by high levels of blood glucose (hyperglycaemia). This is caused by either a deficiency of the hormone insulin or a decreased ability of the body to use it.

Insulin is produced by the pancreas and helps glucose (sugar) enter cells for conversion into energy. It is also needed to help synthesise protein and store fat.

In uncontrolled diabetes, glucose builds up in the bloodstream; this, along with the inadequate supply of glucose to the cells, can lead to a range of short- and long-term problems, including damage to vital organs.

There are three main types of diabetes: Type 1, Type 2 and gestational (see Box 2.6.1). The focus of this report is on Type 2 diabetes (ICD-9 code 250.X0; ICD-10-AM code E11), which accounts for 85–90% of all cases of diabetes in Australia and is largely preventable. A person with Type 2 diabetes may have the disease for many years before the symptoms become apparent. The main symptoms are excessive thirst, frequent urination and weight loss. Diagnosis is by identifying elevated blood glucose concentrations (Bishop et al. 1998:423–5).

Co-morbidities

Diabetes overlaps with and contributes to the development of a number of other diseases and conditions, particularly vascular and heart diseases such as coronary heart disease (CHD),

> **Box 2.6.1: Major types of diabetes**
>
> **Type 1 diabetes:** *results when the pancreas stops producing insulin. This condition often arises in childhood, and persons with this type of diabetes require daily injections of insulin to survive. Type 1 diabetes lasts through life and can lead to a variety of complications if not managed properly.*
>
> **Type 2 diabetes:** *results from reduced production of insulin or the inability of the body to use insulin properly. The condition more commonly develops in people over 40, in particular among those with excess weight and a family history of the disease. Type 2 diabetes is usually managed by diet control, exercise and oral drugs that lower blood glucose. Insulin therapy may be required in some cases.*
>
> **Gestational diabetes:** *first occurs during pregnancy in about 4–6% of females not previously diagnosed with diabetes. Gestational diabetes typically resolves itself soon after the delivery. However, those diagnosed with this form of diabetes are at greater risk of developing Type 2 diabetes later in life.*

stroke and peripheral vascular disease. Diabetes-shares common risk factors with these diseases, but is also an independent risk factor for them.

CHD appears earlier in life and is more often fatal among those with diabetes. People with diabetes may have a worse prognosis after stroke, and the role of elevated blood pressure in stroke may be accentuated by the presence of diabetes. Mortality is also increased among people with diabetes and peripheral vascular disease, in particular if foot ulcerations,

infection or gangrene occur (DHAC & AIHW 1999:26–7).

Risk factors

Both genetic and environmental factors contribute to the onset of Type 2 diabetes (see Box 2.6.2), although the genetic basis has not been fully explained. The genetic component in Type 2 diabetes determines which individuals are more likely to develop it under certain environmental conditions. However, it is recognised that environmental risk factors play a large role in the development of diabetes.

Box 2.6.2: Risk factors for Type 2 diabetes

Predisposing factors
Heredity
Pregnancy
Low birthweight
Age

Behavioural and biomedical factors
Excess weight, particularly obesity
Impaired glucose tolerance
Physical inactivity
Poor diet and nutrition

Source: DHAC & AIHW 1999:13.

Prominent among the risk factors for Type 2 diabetes is obesity. Males aged 30 and over with Type 2 diabetes in Australia are almost two-and-a half times more likely to be obese than males in the general population. Females with Type 2 diabetes are more than three times as likely to be obese than females in the general population (Figure 2.6.1).

The risk of developing diabetes rises continuously with increasing obesity (DHAC & AIHW 1999:13). In addition, an increased central distribution of body fat (when fatness is concentrated in the abdomen) also appears to be associated more often with Type 2 diabetes (Bishop et al. 1998:430–1).

Low birthweight has been identified as a marker of lifetime risk for developing diabetes, probably because of a link with poor nutrition in foetal and early infant life (AIHW 2000:85). Advancing age is associated with diabetes due to increasing insulin resistance in older persons.

People with diabetes often have a clustering of risk factors for heart and vascular diseases, a condition called the metabolic syndrome (AIHW 2001a:63). That is, a person with diabetes with one risk factor, typically obesity, is likely to have other heart and vascular risk factors, such as high blood pressure and high blood cholesterol. While high blood pressure and high blood cholesterol are not in themselves risk factors for diabetes, they contribute to increased complications from the disease.

Physical activity plays a protective role against Type 2 diabetes. All other factors being equal, people who undertake regular exercise have a 30 to 60% lower risk of developing Type 2 diabetes than those who do not (DHAC & AIHW 1999:13).

Impacts

Deaths

Diabetes is a major cause of mortality in Australia. The cause-of-death statistics do not distinguish between the various forms of diabetes; the information presented here therefore does not pertain to Type 2 diabetes alone.

As the underlying (primary) cause of death, according to information on death certificates, diabetes ranked seventh in Australia in 1998, with 2,927 deaths (over 2% of total deaths). Because it often leads to other, more fatal conditions, diabetes is more often listed as an associated cause of death. The total number of deaths involving diabetes in 1998, either as
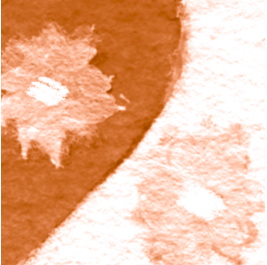
Figure 2.6.1: Prevalence of overweight and obesity among persons aged 30 years and over with Type 2 diabetes and in the general population, 1995

Source: ABS 1997.
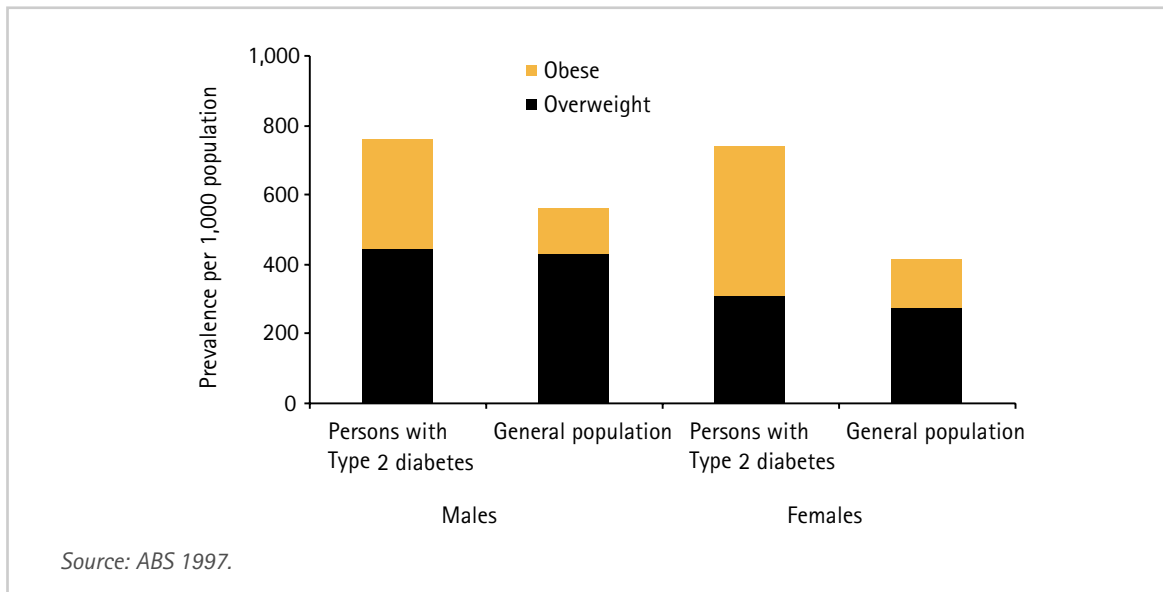
an underlying cause or as an associated cause, was 9,454 (7.5% of all deaths) (AIHW 2001a:65).

People with diabetes are at increased risk of death from a variety of other causes. Analysis of deaths from the National Diabetes Register indicates that the death rate for registrants in 1999–2000 was three-and-a-half times that of the general population (AIHW 2001b:15).

Trends over the past half a century indicate that diabetes death rates in males are now higher than in 1950, but lower than their peak in 1968 (Figure 2.6.2). In females, the diabetes death rates are now about half the level they were in 1950, and well below those for males.

Indigenous Australians have much higher death rates for diabetes than non-Indigenous Australians. In 1995–97, the death rate for diabetes among Indigenous males was nine times that of all Australian males, and among Indigenous females it was 16 times that of all Australian females (Cunningham & Paradies 2000:40).

Prevalence

Estimates of the prevalence of diabetes in Australia are based on surveys using self-reported information and blood tests. However, self-reported information is known to underestimate the true prevalence of diabetes, as many people may not know that they have the disease. Nearly 430,700 persons (2.4% of the total population) reported having had diabetes at some time during their lives in the 1995 ABS National Health Survey. This figure is however a significant underestimate, as a large proportion of diabetes in the community remains undiagnosed and thus not reported (DHAC & AIHW 1999:8).

The Australian Diabetes, Obesity and Lifestyle (AusDiab) Study, conducted in 1999–2000, estimated that 938,700 Australians aged 25 and over had diabetes, a prevalence rate of 7.5% (8.0% for males, 7.0% for females) (Dunstan et al. 2001:7–8). The prevalence of diabetes increases with age, approaching 25% among those over 75 (Figure 2.6.3). It should
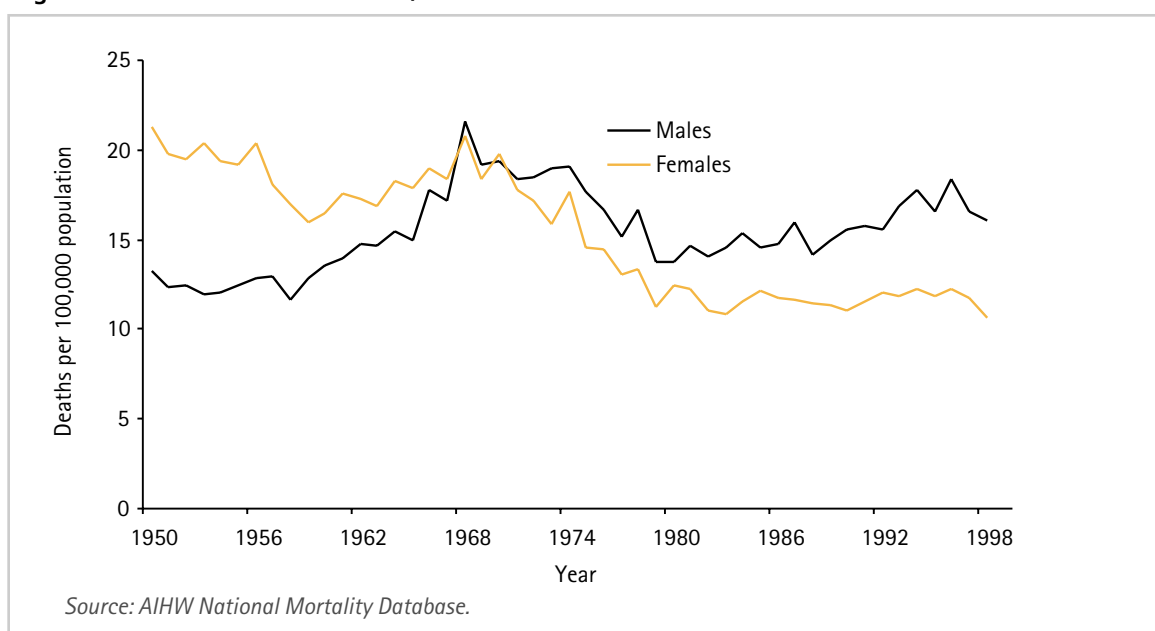
be noted though that the effect of any non-response bias on estimates from AusDiab is yet to be determined. Approximately 50% of eligible households participated in the household interview, and 55.2% of eligible adults in these households took part in the physical examination.

Prevalence of Type 2 diabetes in Indigenous Australians is among the highest in the world. In 1995, the self-reported prevalence of diabetes for Indigenous Australians aged 25–54 was seven to eight times that for non-Indigenous people. Among those aged 55 and over, it was more than twice as high (AIHW 2001a:64).

The 1995 ABS National Health Survey indicated that diabetes is almost two-and-a-half times as high among the lowest socioeconomic

Figure 2.6.2: Diabetes death rates, 1950 to 1998

Source: AIHW National Mortality Database.

Figure 2.6.3: Age–specific prevalence of diabetes (Type 1 and Type 2), 1999–2000

Note: The effect of any non-response bias on estimates from AusDiab is yet to be determined. Appoximately 50% of eligible households participated in the household interview, and 55.2% of eligible adults in these households took part in the physical examination.
Source: Dunstan et al. 2001:8.
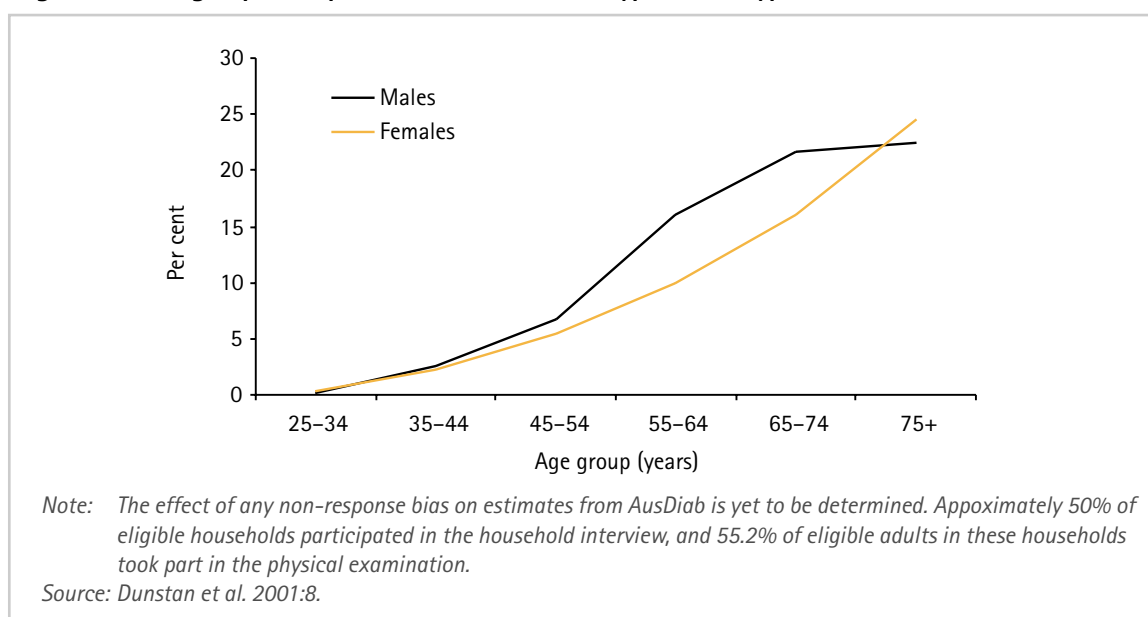
category compared to the highest category. Diabetes is also more common among certain migrant groups, in particular those from Pacific Island nations, India, China and Southern Europe. However, differences in diabetes prevalence between metropolitan, rural and remote areas were not significant (AIHW 2001a:64).

Complications

Uncontrolled diabetes leads to a variety of complications, often resulting in limitation of activity, disability, illness and premature mortality. These complications can be broadly classified as microvascular (affecting the small blood vessels), macrovascular (affecting the large blood vessels) and those associated with pregnancy (Box 2.6.3).

Box 2.6.3: Major diabetes–related complications

Microvascular complications
Nephropathy (kidney disease)
Retinopathy (eye disease)
Neuropathy (nerve complications)

Macrovascular complications
Coronary heart disease
Stroke
Peripheral vascular disease

Pregnancy–related complications
Foetal malformation
Spontaneous abortion
Stillbirth
Neonatal hypoglycaemia (low blood sugar)

Source: DHAC & AIHW 1999:14.

There are no recent data in Australia on the extent of complications of diabetes. The 1995 ABS National Health Survey collected information on self-reported prevalence of diabetes and associated conditions. Compared to those without diabetes, people with diabetes were far more likely to report conditions such as high blood pressure, high blood cholesterol, heart disease, stroke, vision problems, kidney disease, and limb amputation (Figure 2.6.4).

While some of these are known complications of diabetes, conditions such as high blood pressure and high blood cholesterol, when superimposed on diabetes, raise the chances of complications.

Disability

According to the 1998 ABS Survey of Disability, Ageing and Carers, almost 64,000 Australians have a disability due to diabetes. The rate of disability in the population aged 45 and over due to diabetes was 863 per 100,000 persons. Some well known forms of disability resulting from diabetes are limb amputation and blindness.

Use of health services

In 1999–00, there were 336,976 hospitalisations for diabetes as either a principal or an additional diagnosis, accounting for almost 6% of all hospitalisations. The average length of stay in hospital for diabetes treatment was over 7 days, which was twice as long as for non-diabetic conditions. Over 80% of hospitalisations where diabetes is either a principal or an additional diagnosis are due to Type 2 diabetes.

The 1999–00 survey of general practice activity found that diabetes was the eighth most common problem managed by general practitioners (GPs), up from twelfth place a decade earlier (AIHW: Britt et al. 2000:39). About 90% of GP visits for diabetes relate to Type 2 diabetes (AIHW: Senes & Britt 2001:xii–xiii).

The estimated health system costs of diabetes in 1993–94 were $372 million ($217 million for Type 2 compared with $155 million for Type 1 diabetes). An additional $309 million in costs were for complications of diabetes, but it is not possible to divide this amount between Type 1 and Type 2 diabetes (AIHW: Mathers & Penm 1999:17).

Figure 2.6.4: Persons with and without diabetes reporting other diseases and conditions, 1995

Source: ABS 1997.
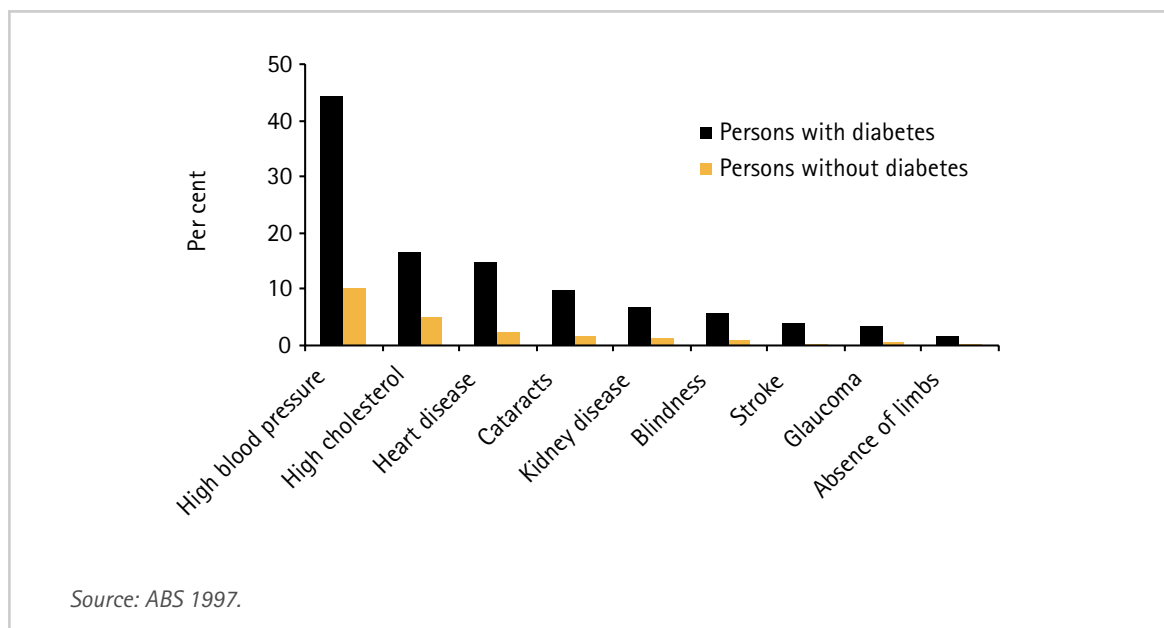
Management

Diabetes requires lifelong care. Good management requires a team of professionals including a GP, a diabetes educator, a dietitian, and others, depending on individual complications. Following the initial evaluation of the person's condition, it is important to establish treatment goals, develop a management plan, and provide care for complications that may arise. Patient education and continuing support are central to diabetes management.

A major element of diabetes care is daily self-management. In addition to home testing to monitor blood glucose levels, it involves adherence to a dietary regime, often specific for the individual. Weight reduction is also important in the control of hyperglycaemia. Substantial benefits can also come from a physically active lifestyle. In many persons with Type 2 diabetes, achievement of these treatment goals will remove the need for medication (Bishop et al. 1998:437).

Prevention and screening

Type 2 diabetes is considered to be largely preventable through efforts similar to those for preventing CHD. These aim at reducing obesity and increasing the level of physical activity. However, recent trends in the prevalence of these risk factors have been unfavourable, with adverse consequences for the future incidence of diabetes (DHAC & AIHW 1999:38).

Another useful approach is to aim at high-risk populations, particularly Indigenous Australians, through community-based interventions. Programs that emphasise lifestyle changes including low-fat, high-fibre diets, cessation of tobacco smoking, and increased physical activity should be encouraged (Bishop et al. 1999:434).

GPs are well placed to screen patients at risk of diabetes and to link them with specialist services. There are a number of resources and programs aimed at assisting GPs in this task. A variety of guidelines have been developed on diabetes, but these have focused on clinical practice, with few guidelines outlining evidence-based best practice in prevention (DHAC & AIHW 1999:49–51).

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