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UNITS 3 & 4

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Meredith FETTLING

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UNIT 3

AUSTRALIA'S HEALTH

AREA OF STUDY

1 Understanding Australia's health

2 Promoting health in Australia

OUTCOME

Compare the health status of Australia's population with other developed countries, compare and explain the variations in health status of population groups in Australia and discuss the role of the National Health Priority Areas in improving Australia's health status.

Discuss and analyse approaches to health and health promotion, and describe Australia's health system and the different roles of government and non-government organisations in promoting health.

CHAPTER 1

Health of Australians

WHY IS THIS IMPORTANT?

Overall, Australians experience excellent health compared to global averages and improvements are continually being made. An understanding of the concept of health is essential to gain an appreciation of the overall levels of wellbeing experienced in Australia. Knowledge of the methods used to measure health status is also important if accurate judgements are to be made about the level of health of Australians. To put the health of Australians in perspective, the health status of Australians can be examined and compared to other developed countries.

KEY KNOWLEDGE

1.0 Definitions of physical, social and mental dimensions of health and health status (pages 4–9)

1.1 Different measures of health status of Australians, including the meaning of burden of disease, health adjusted life expectancy and disability adjusted life years (DALYs), life expectancy, under-five mortality rate, mortality, morbidity, incidence and prevalence (pages 2–27)

1.2 Health status of Australians compared with populations in other developed countries (pages 28–34)

KEY SKILLS

- Define key health terms (pages 8, 11, 16, 22, 27, 35, 38–40).
- Use and interpret data to compare the health status of Australia's population with that of other developed countries (pages 34, 35–7).

The Indigenous community is a population group that does not receive the same level of health as the rest of the population.

KEY TERM DEFINITIONS

burden of disease a measure of the impact of diseases and injuries, specifically it measures the gap between current health status and an ideal situation where everyone lives to an old age free of disease and disability. Burden of disease is measured in a unit called the DALY.

chronic condition any disease or condition that lasts a long time (usually longer than six months). It usually can't be cured and therefore requires ongoing treatment and management. Examples include arthritis and asthma.

developed country a country that has advanced adequately with regards to economy, technology and health status

disability adjusted life year (DALY) a measure of burden of disease. One DALY equals one year of healthy life lost due to premature death and time lived with illness, disease or injury.

dynamic continually changing

health adjusted life expectancy (HALE) a measure of burden of disease based on life expectancy at birth, but including an adjustment for time spent in poor health. It is the number of years in full health that a person can expect to live, based on current rates of ill health and mortality.

health indicators standard statistics that are used to measure and compare health status

health status 'An individual's or a population's overall health, taking into account various aspects such as life expectancy, amount of disability and levels of disease risk factors.' (AIHW, 2008)

hospital separation episodes of hospital care that start with admission and end at transfer, discharge or death

incidence the number or rate of new cases of a disease during a specified period of time (usually a twelve month period)

infirmity state of being weak, lacking in strength (especially from old age)

ischaemic heart disease a disease characterised by a blockage of blood vessels (and therefore blood and oxygen) to the heart, also known as coronary heart disease

life expectancy 'An indication of how long a person can expect to live, it is the number of years of life remaining to a person at a particular age if death rates do not change.' (AIHW, 2008)

mental health 'State of well-being in which the individual realises his or her own abilities, can cope with the normal stresses of life, can work productively and fruitfully, and is able to make a contribution to his or her community' (WHO, 2009)

morbidity 'Refers to ill health in an individual and the levels of ill health in a population or group.' (AIHW, 2008)

mortality deaths in the population

mortality rate (sometimes referred to as 'death rate') the measure of the proportion of a population who die in a one-year period (usually per 100 000)

physical health relates to the efficient functioning of the body and its systems, and includes the physical capacity to perform tasks and physical fitness

prevalence 'The number or proportion of cases of a particular disease or condition present in a population at a given time.' (AIHW, 2008)

social health being able to interact with others and participate in the community in both an independent and cooperative way

trend a general change or movement in a particular direction. For example, trends indicate a significant increase in obesity rates over the past 20 years.

under-five mortality rate (U5MR) 'The number of deaths of children under five years of age per 1000 live births.' (WHO, 2008)

years lost due to disability (YLD) a measure of how many healthy years of life are lost due to illness, injury or disability

years of life lost (YLL) a measure of how many years of expected life are lost due to premature death

1.1 Understanding health

KEY CONCEPT Understanding the concept of health, its various dimensions and the way the dimensions interrelate

In this section, the concept of health is explored. Health is a term that is used regularly in everyday life yet is often not completely understood. To be able to make judgements about the levels of health being experienced by individuals, groups or populations, a thorough understanding of this concept is essential.

There has been wide debate about the meaning of health since the first commonly accepted definition was released by the World Health Organization (WHO) in 1946:

Health is a state of complete physical, mental and social wellbeing and not merely the absence of disease or infirmity.

When delegates first met to form the United Nations in 1945, establishing a global health body was discussed. The World Health Organization officially came to life in 1948 as the branch of the United Nations concerned with promoting health globally. More than 60 years later, the WHO stands as a global health force offering leadership on global health matters, providing direction for research and technical support to countries, and gathering evidence on and assessment of health trends.

FIGURE 1.1 The WHO headquarters in Geneva, Switzerland

This definition was significant because it was the first time that health had been considered as being more than physical health. However, it is still limiting because it doesn't give everyone the opportunity to be considered healthy. Complete wellbeing in all three dimensions (physical, mental and social) is difficult and beyond the capacity of most people. However, this definition is still recognised as the accepted definition by the World Health Organization and is the one referred to in this course.

Forty years after this definition was drafted, it was clarified by adding that health is 'seen as a resource for everyday life, not the objective of living. Health is a positive concept emphasising social and personal resources, as well as physical capacities.'

With this in mind, the definition of health becomes more inclusive and achievable. The notion of complete wellbeing is clarified by stating that wellbeing is an individual concept and will differ from person to person depending on many factors, such as biological and behavioural determinants, and the physical and social environments in which people live.

The WHO definition recognises health as being a *state* of physical, social and mental wellbeing. This is a key word for gaining an accurate understanding of what health is. As well as being a state, health is also **dynamic**. Health can be good one moment and then events such as accidents, illness, relationship breakdown and stressful events can alter the state of health very quickly. Health also has the potential to improve quickly. A person with a migraine who is experiencing poor health can rest and possibly take medication that can return them to good health.

Dimensions of health

According to the WHO definition, health is a combination of the physical, social and mental dimensions. The physical dimension of health is often the focus of individuals, groups, government organisations and non-government organisations. Most statistics relating to health also tend to focus on the physical dimension of health. However, it is important to remember that the physical dimension of health is only one part of being healthy, and the social and mental dimensions must be taken into account if we are to get an understanding of the overall health experienced by individuals or groups.

Physical health

The body and its components are the focus of **physical health**. Physical health is defined as 'the efficient functioning of the body and its systems, and includes the physical capacity to perform tasks and physical fitness' (VCAA, 2012). Other aspects of physical health include the absence or presence of disease, injury and disability, and the functioning of the body's systems. Simply 'not being sick' is perhaps the most basic level of physical health, but there are many other aspects of physical health. A person may be free from disease and injury, but may not have enough energy to complete the tasks they need to. They may be unfit or overweight, all of which relate to physical health. It is only when the whole body and its systems are functioning to the best of their ability that a person can be considered as having optimal physical health.

Someone who is physically healthy may demonstrate the characteristics displayed in figure 1.3.

FIGURE 1.2 Fitness is an aspect of physical health that is one part of overall health.

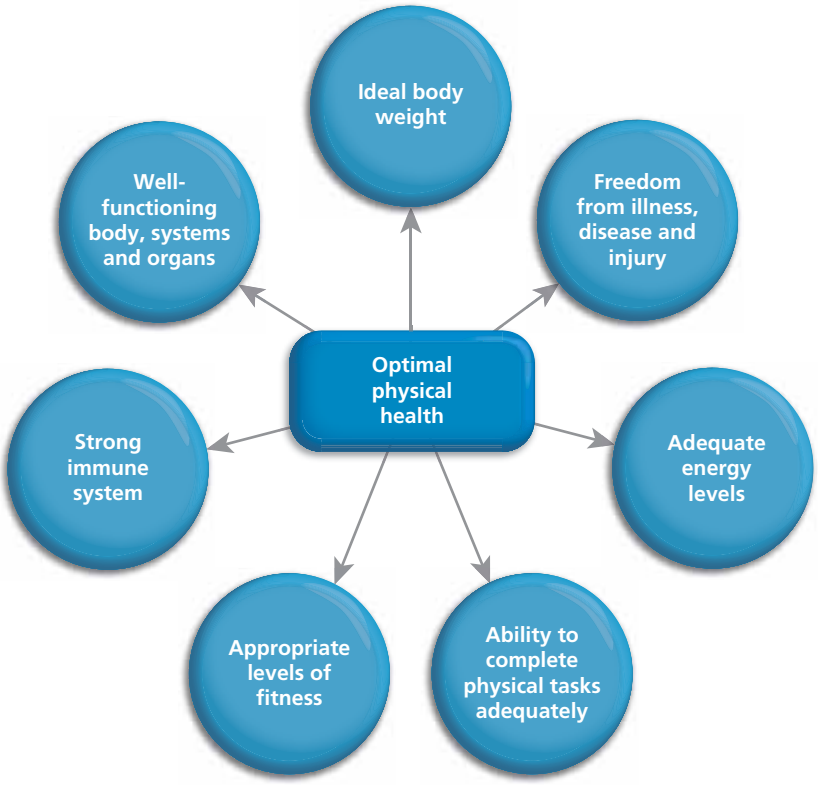

FIGURE 1.3 There are many aspects of optimal physical health.

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Unit 3 AOS 1 Topic 1 Concept 1 **Physical health** Concept summary

studyon
Unit 3 AOS 1 Topic 1 Concept 2
Social health
Concept summary

Social health

Social health is defined as 'being able to interact with others and participate in the community in both an independent and cooperative way' (VCAA, 2013). The quality of relationships that individuals have with others is a key aspect of social health. Humans are social beings and interacting with others is an important aspect of human existence. Sometimes these interactions are positive and add value to life. When an individual has a supportive group of friends, a supportive and well-functioning family and maybe an intimate relationship with another person, their social health is optimal. At other times, such interactions may not be as effective: a person may be in conflict with friends and family, or in the process of breaking up with a partner. Under these circumstances, social health would not be considered optimal. Like all dimensions of health, there will be changes over time. When optimal health is not being experienced, there is potential for improvements.

FIGURE 1.4 A supportive network of friends is an aspect of good social health.

Aspects of optimal social health are summarised in figure 1.5.

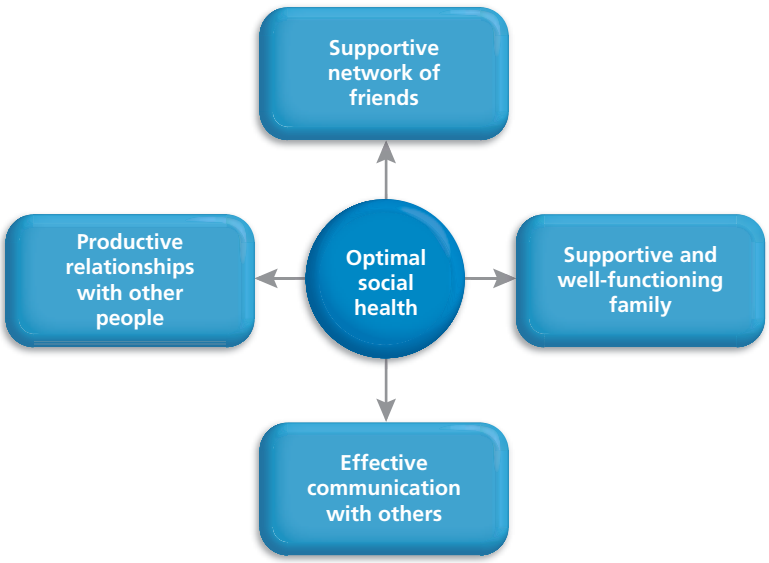

FIGURE 1.5 Social health refers to the quality of relationships that individuals have with others.

Mental health

According to the World Health Organization, **mental health** is defined as a 'state of wellbeing in which the individual realises his or her own abilities, can cope with the normal stresses of life, can work productively and fruitfully, and is able to make a contribution to his or her community'. Mental health relates to the current state of the mind, how a person is feeling about themselves and how they deal with situations in which they find themselves. The human mind is a complex thing and is what sets us apart from other animals. The way the mind functions determines mental health. When stress levels are low and a person feels relaxed and positive about themselves and life, mental health can be said to be optimal. Conversely, if a person is stressed and experiencing negative thought patterns about themselves, others or the world in general, mental health may not be optimal. As with the other two dimensions of health, there are many factors that influence the levels of mental health being experienced.

Aspects of optimal mental health are summarised in figure 1.6.

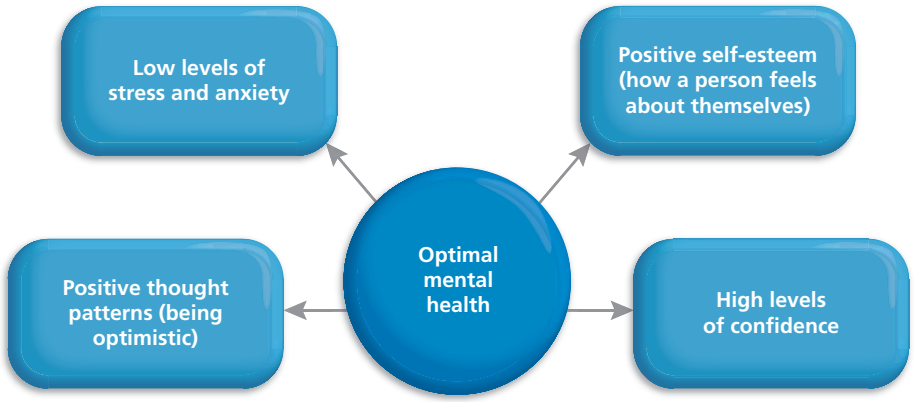

FIGURE 1.6 Mental health relates to aspects of an individual's state of mind.

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Mental health
Concept summary

Interactions between the dimensions of health

The level of health experienced by an individual depends on their current circumstances. Their level of health may be different for each dimension (physical, social and mental), although each dimension of health interrelates with and impacts on the other two dimensions (as shown in figure 1.7).

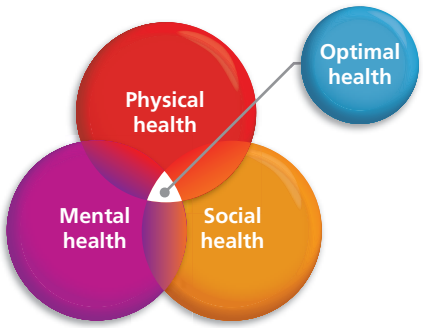

FIGURE 1.7 Achieving a balance between the three dimensions of health is the key to achieving optimal health.

Optimal health refers to the best level of health an individual can realistically attain. Everyone is born with different genetics and in different environments. As a result of these and other factors, every person's level of optimal health is different.

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Time Out: 'Dimensions of health'
Searchlight ID: int-1421

The three dimensions of health affect each other and therefore interrelate. When someone experiences optimal health in one of the dimensions, they are more likely to experience optimal health in the other dimensions.

Imagine a person who is physically healthy. They would have the energy to be socially active, and they may feel good about the state of their body and the relationships they have with friends and family. Their confidence may be high as a result of their social interactions, and their levels of stress and anxiety may be low.

Now imagine a person who is not physically healthy. They may be confined to bed, not able to eat, have a fever, vomiting, diarrhoea or even be in hospital. Their social health may be poor at this time as they may not have the energy or desire to socialise. This may impact on their mental health as they may feel depressed about their current situation.

These examples illustrate just two ways that the three dimensions of health interrelate. This does not mean that they will change to the same degree and at the same time, but changes in one dimension will produce changes in the other two.

Case study

Rachael's health

Rachael is a 26-year-old lawyer who works in a large corporation in the city. She has many responsibilities and generally copes with these very well. Recently, she was given a large contract to work on. The demands of the contract are substantial and her work life has begun to dominate her free time as well as her working hours. She has been feeling the stress associated with such a large responsibility and has not been sleeping adequately. Rachael has also found that she has had to cut back on her social activities and other things she enjoys such as going to the gym and cooking.

Case study review

1. **Identify one example from Rachael's story that relates to physical health, social health and mental health.**
2. **For each dimension of health, identify how Rachael's health might have recently changed and justify your response.**
3. **Explain how the dimensions of health have interrelated in Rachael's case.**
4. **To what extent would changes in Rachael's health affect the level of health experienced by the Australian population as a whole?**

TEST your knowledge

1. What is the WHO definition of health? Why might this definition have its limitations?
2. Define the three dimensions of health. Give two examples that relate to each.

APPLY your knowledge

3. (a) Devise your own definition of health.
   (b) How does your definition differ from the WHO definition?
4. Either on your own or with a partner, brainstorm ways that:
   (a) physical health could affect social and mental health
   (b) social health could affect physical and mental health
   (c) mental health could affect physical and social health.

1.2 Measuring health status

KEY CONCEPT Exploring the life expectancy and health adjusted life expectancy of Australians

So far, the concept of health and the three dimensions that contribute to health have been examined. As well as exploring physical, social and mental health, it is useful to be able to measure the level of health being experienced by individuals, groups or whole populations. Measurable aspects of health provide an ability to make judgements relating to the **health status** experienced by individuals, groups or populations.

FIGURE 1.8 Health statistics are based on large groups of people and therefore do not give information about the health status of individuals.

Measurements used to determine health status are referred to as **health indicators** and they include:

- life expectancy
- mortality
- morbidity
- burden of disease.

The various statistics give specific information and, when used together, can give accurate information about health status. It is useful to look at a range of statistics as quite often one set of statistics will provide only limited information about overall health status. Examining various health indicators allows governments and other groups to identify **trends** in levels of health and, if necessary, assist individuals, groups or populations in achieving optimal health.

In the coming section, these health indicators and data relating to each will be explored.

In terms of gathering data on health status, physical ill health is generally the easiest to measure and therefore forms the basis of a majority of the health data available. However, data are also available on depression and other aspects of mental health, and some data exist that relate to social health, such as participation in community activities.

It is also beneficial to examine statistics relating to different population groups within a country. Statistics are based on averages and do not always accurately reflect the challenges to health being faced by different groups. The Indigenous population in Australia is an example of this. Their health status is below the rest of the population, but this would not be apparent if only whole population

statistics were used in isolation. Statistics relating to population groups are examined later.

Life expectancy

Life expectancy is defined as 'an indication of how long a person can expect to live; it is the number of years of life remaining to a person at a particular age if death rates do not change' (AIHW, 2008). Although life expectancy figures most commonly relate to a baby born at the present time, they can relate to a person of a different age. If life expectancy data are provided for people of different ages, they will be specified in the data.

A male born in Australia in 2013 could expect to live (on average) to 80.1 years, whereas a male aged 65 in 2013 could expect to live to 84.2 years. For females, life expectancy at birth in 2013 was 84.3 years, while at the same time was 87.1 years for a female aged 65. As life expectancy is based on the average age at death, life expectancy increases as a person gets older (see table 1.1). If a person survives the periods of birth, childhood and youth, their chance of reaching older age increases. Some people will not survive through their childhood, youth and adulthood stages, which brings the average down for those at birth.

Life expectancy has increased over time as indicated in figure 1.9. Life expectancy continues to increase, but due to trends such as increasing rates of obesity, some people question the capacity of Australia to continue making improvements in life expectancy.

TABLE 1.1 Life expectancy for people at different ages in Australia, 2013

	Life expectancy (2013)	
Age	**Males**	**Females**
0 (birth)	80.1	84.3
1	80.4	84.6
15	80.5	84.7
25	80.8	84.9
45	81.8	85.4
50	82.2	85.7
65	84.2	87.1
85	91.1	92.1

Source: ABS, *Deaths 2013, 2014.*

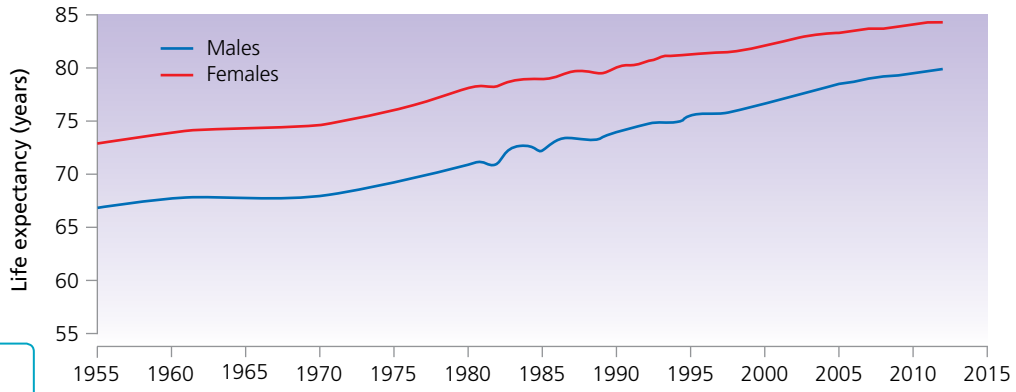

FIGURE 1.9 Life expectancy of Australians, 1955–2013

Life expectancy is especially useful for comparing different countries and population groups, which can assist governments and non-government organisations in identifying areas for potential improvement. Unlike mortality and morbidity figures, however, life expectancy does not provide information on the health issues facing a country or population group.

Although it is an important health indicator, life expectancy doesn't give any indication of the quality of life being experienced; it is based on quantity of life. A measurement that considers life expectancy data and the impact of ill health in a population is **health adjusted life expectancy** or **HALE** (often simply referred to as 'healthy life expectancy'). This refers to the number of years lived without reduced functioning (including decreased mobility and the decline in the functioning of body systems) due to ill health and is therefore an indicator of both quantity and quality of life.

The figures in table 1.2 mean that the average male born in 2013 can expect to live to 80.1 years of age and spend 9.1 years of those years with ill health. A female born in 2013 can expect to live to 84.3 years of age and spend 10.3 of those years with ill health.

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Unit 3 AOS 1 Topic 2 Concept 3
Life expectancy and health adjusted life expectancy
Concept summary

TABLE 1.2 The life expectancy and HALE in Australia for males and females

	Males	Females
Life expectancy (2013)	80.1	84.3
Health adjusted life expectancy — HALE (2012)	71	74

Source: WHO, 2015.

Case study

Those born today will live longer than ever

By Peter Martin

WE ARE likely to drop dead much later than ever before but being Indigenous, single or divorced or living outside a city shortens your life.

The latest life tables from the Bureau of Statistics show an Australian girl born today can expect to live 84.3 years if she survives her relatively dangerous first year.

An Indigenous Australian girl can expect to live 10 years less. A boy born today can expect to live 79 years; an Indigenous boy 11 years less.

In the past 20 years, the average annual death rate has slipped from 8.6 per 1000 Australians to 7. The infant death rate has slid from 8.2 per 1000 live births to 4.1.

Men who live in Melbourne and on the Gold Coast have the best life expectancy, both at 80.7 years. Women who have the best life expectancy live on Queensland's Gold and Sunshine coasts; both can look forward to just over 85 years.

The first such analysis by the bureau finds cities far safer to live in than regional areas and a lot safer than the bush, with an average annual death rate around 6 per 1000 compared with 8 in very remote areas.

Married men and women, including those widowed and divorced, have greater life expectancy at any age than men and women who have never been married.

The ABS report says married people 'are less likely to participate in risky behaviour and more likely to nurture each other's health through promoting good diet and physical care', although it says it can't rule out the other possibility that healthy people are more likely to marry.

Australians born outside of the country have a lower rate of dying in any given year than those within it, the lowest being those born in Vietnam, whose annual average death rate is only 2.8 in 1000 compared with the annual average Australian rate of 7.

The ABS tables say a typical boy born today can expect to live to 79, one of the highest life expectancies in the world, but Australians already at that age needn't despair. The bureau says if you have reached 79 you can expect a further nine years.

Source: Sydney Morning Herald, 11 November 2011.

Case study review

1 Explain why life expectancy increases for individuals as they get older.
2 Discuss reasons that may account for men in Melbourne living longer than men in other parts of Australia.
3 Explain why those who marry may live longer than those who never marry.

TEST your knowledge

1 Explain the difference between life expectancy and health adjusted life expectancy as health status indicators.
2 (a) According to table 1.2, what was the life expectancy and health adjusted life expectancy for males and females in Australia respectively?
(b) What do these numbers mean in relation to quantity and quality of life for males compared to females?
3 (a) What is a trend?
(b) Identify two trends evident in figure 1.9.
(c) Would you expect this trend to continue into the future? Why/why not?

APPLY your knowledge

4 (a) Using data from table 1.1, discuss the changes experienced in life expectancy at birth for males and females between 1901–10 and 2010–12.
(b) Brainstorm as many reasons as you can think of that may have contributed to the increase in life expectancy between 1901–10 and 2010–12.
5 (a) Which dimension of health is generally the focus of health statistics?
(b) Why would this be the case?
6 (a) Suggest reasons that might account for the lower life expectancy experienced by men compared with that of women.
(b) Would you expect this trend to be the same in all countries? Why/why not?
7 Watch the clip in the **Joy of statistics** links in the Resources section of your eBookPLUS to find the weblink and questions for this activity.

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1.3 Mortality

KEY CONCEPT The mortality, mortality rates and under-five mortality rates of Australians

Mortality refers to deaths, particularly at a group or population level. The **mortality rate** is therefore the number of deaths (usually expressed per 100 000 people, in a 12-month period) from a specific cause or all causes. For example, if the mortality rate for cancer in a population of one million is 50 per 100 000, there would be approximately 500 cancer deaths during that year.

Over time, this information allows trends in deaths to be identified. These trends can guide governments and other organisations in developing and funding strategies that attempt to reduce mortality rates from the leading causes of death (or those that have an increasing mortality rate).

Mortality data can also be collected for particular age or population groups, or for geographical areas. Some examples of these mortality measures include:

- ***under-five mortality rate (U5MR)***. The U5MR measures the number of children that die before their fifth birthday, usually expressed per 1000 live births.
- *infant mortality rate*. The infant mortality rate measures the rate of deaths of infants between birth and their first birthday, usually expressed per 1000 live births.
- *maternal mortality ratio*. The maternal mortality ratio is the rate of deaths of women who are either pregnant or in the first 42 days after giving birth or having a termination, expressed per 100 000 live births.

According to the annual *Deaths*, *Australia* information released by the Australian Bureau of Statistics (2012):

- 147 095 deaths were registered in Australia in 2012
- male deaths outnumbered female deaths (74 792 compared with 72 303), with a death rate ratio of 103.4 male deaths for every 100 female deaths
- about 25 per cent of male and 15 per cent of female deaths in 2012 were of people aged under 65

FIGURE 1.10 Although it was not a significant cause of ill health 100 years ago, obesity is now a major contributor to ill health.

- age-standardised mortality rates (see the interest box on page 13) for females fell by about 75 per cent between 1907 and 2012, from 1844 to 462.8 per 100 000 population. For males, the mortality rate fell by 70 per cent, from 2234 to 657.5 per 100 000 in the same period.
- U5MR rates are low in Australia (five deaths per 1000 live births in 2012), and have also fallen over time. Declining mortality rates from sudden infant death syndrome (SIDS) have been largely responsible for this trend.

Trends in mortality

The causes of death in Australia have changed markedly over the past century. Developments have been made with regards to the economy, technology and education. As a result, many diseases that were common causes of death 100 years ago, such as influenza and tuberculosis, cause relatively few deaths these days. This has helped to prolong life and give most Australians the opportunity to achieve optimal health. As people live longer they are more likely to suffer from lifestyle-related illnesses. Diseases such as cardiovascular disease, cancers, dementia and diabetes have emerged as the leading causes of death in Australia. These are shown in table 1.3. When analysing these figures it is important to remember that they are based on all deaths. As older people account for the majority of deaths in Australia, the causes of their deaths are the ones most likely to appear in these figures.

TABLE 1.3 Leading causes of death (as a percentage of all deaths), 2012

Rank	Cause	% of all male deaths
1	Coronary heart disease	14.6
2	Lung cancer	6.5
3	Cerebrovascular diseases (including stroke)	5.7
4	Chronic obstructive pulmonary disease	4.7
5	Dementia and Alzheimer's disease	4.6
6	Prostate cancer	4.1
7	Blood cancers (including leukaemia)	3.1
8	Colorectal cancer	3.0
9	Diabetes	2.9
10	Intentional self-harm	2.5
Rank	**Cause**	**% of all female deaths**
1	Coronary heart disease	12.6
2	Dementia and Alzheimer's disease	9.6
3	Cerebrovascular diseases (including stroke)	9.0
4	Lung cancer	4.5
5	Chronic obstructive pulmonary disease	4.3
6	Breast cancer	3.9
7	Diseases of the urinary system	2.8
8	Diabetes	2.8
9	Heart failure	4.1
10	Colorectal cancer	2.5

Source: Adapted from ABS, *Causes of Death, 2012*.

Some causes of death are common in certain age groups yet cause relatively few deaths in other age groups. Examining the major causes of death for each age group allows health promotion programs to be put in place that target the most common causes of death for each specific age group. For example, causes such as birth defects (also known as congenital anomalies) and issues occurring during birth (perinatal conditions) are the main causes of death for infants; accidental causes of death such as transport accidents and other injuries are most common in children, youth and young adults, while conditions commonly associated with lifestyle factors and advancing age such as cardiovascular (heart) disease, cancer and dementia are most common among middle and late adults. Table 1.4 outlines the major causes of death for various age groups.

WHAT ARE AGE-STANDARDISED RATES?

Age-standardised rates allow us to compare populations that have a different spread of ages. For example, Australia's population is ageing and as a result, we would expect more deaths than a country with a younger population, as older people are more likely to die. Age standardising manipulates data to make the age groups of different populations relative so they can be compared more accurately.

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Interactivity:
Measures of epidemiology
Searchlight ID: int-1613

TABLE 1.4 Leading causes of death, by age group, 2010–12

Age group	Cause of death	Number	% of total
Infants (less than 1 year)	Maternal, perinatal and congenital causes	2 565	75.4
	Sudden infant death syndrome (SIDS)	227	6.7
	Ill-defined causes	144	4.2
	All causes	3 400	100
1–14	Land transport accidents	201	13.8
	Maternal, perinatal and congenital causes	130	8.9
	Accidental drowning and submersion	97	6.6
	All causes	1 460	100
15–24	Suicide	964	26.2
	Land transport accidents	933	25.3
	Accidental poisoning	189	5.1
	All causes	3 686	100
25–44	Suicide	2 860	18.4
	Accidental poisoning	1 521	9.8
	Land transport accidents	1 328	8.5
	All causes	15 545	100
45–64	Coronary heart disease	6 882	11.4
	Lung cancer	5 726	9.5
	Breast cancer	2 964	4.9
	All causes	60 153	100
65–85	Coronary heart disease	24 962	13.3
	Lung cancer	15 060	8
	Cerebrovascular diseases (including stroke)	12 712	6.8
	All causes	187 720	100
85–94	Coronary heart disease	25 124	18.1
	Dementia and Alzheimer's disease	15 906	11.4
	Cerebrovascular diseases (including stroke)	15 115	10.9
	All causes	139 067	100
95+	Coronary heart disease	5 451	20.6
	Dementia and Alzheimer's disease	3 786	14.3
	Cerebrovascular diseases (including stroke)	3 019	11.4
	All causes	26 451	100

Source: AIHW, National Mortality Database, Table S2 Leading Causes of death by age group, 2010–12.

Understanding the leading causes of death is important, but it is also useful to identify trends that have occurred in the causes of death over time. These trends give important feedback on the success of current interventions (policies, strategies and campaigns aimed at reducing the impact of health conditions) and allow predictions to be made about the future so relevant interventions can be put into place to improve health status.

Some key trends in mortality figures reported by the Australian Institute of Health and Welfare (AIHW) are listed below.

- There has been a 95 per cent drop in deaths from infectious diseases (from around 140 per 100 000 in the early 1920s to 9 per 100 000 in 2012).

- Mortality rates from colorectal cancer have fallen by about 40 per cent since the 1980s.
- Cervical cancer deaths have fallen by about 75 per cent since the 1960s.
- Deaths from motor vehicle accidents have fallen by almost 80 per cent since the 1970s.
- Male mortality rates from lung cancer are still higher than for females, but the mortality rate from lung cancer has fallen steadily for males since the 1980s. The rates for females have risen steadily since the 1960s.
- Mortality rates have fallen for cancer, cardiovascular disease, strokes, injury and asthma.
- Heart attack rates have fallen and survival rates have improved.
- The rate of type 2 diabetes is rising, with prevalence doubling in the past 20 years.
- Mortality rates due to dementia have increased by around 75 per cent since 2000.

FIGURE 1.11 Safety features such as airbags have contributed to the decline in mortality rates from motor vehicle accidents over the past few decades.

Case study

Heart disease deaths still falling, but dementia on the rise

Deaths from heart disease have fallen steadily since 2003, while deaths from dementia and Alzheimer's disease continue to increase, according to figures released today by the Australian Bureau of Statistics.

'Heart disease is still the leading cause of death, with 20 046 deaths in 2012, however this has fallen steadily since 2003. Heart disease accounted for 14 per cent of all deaths in 2012 compared to 19 per cent of all deaths in 2003,' said James Eynstone-Hinkins, ABS Director of the Health and Vitals Statistics Unit.

'There were 10 779 deaths from Cerebrovascular diseases (including haemorrhages, strokes, infarctions and blocked arteries of the brain) in 2012, making these the second most common cause of death.

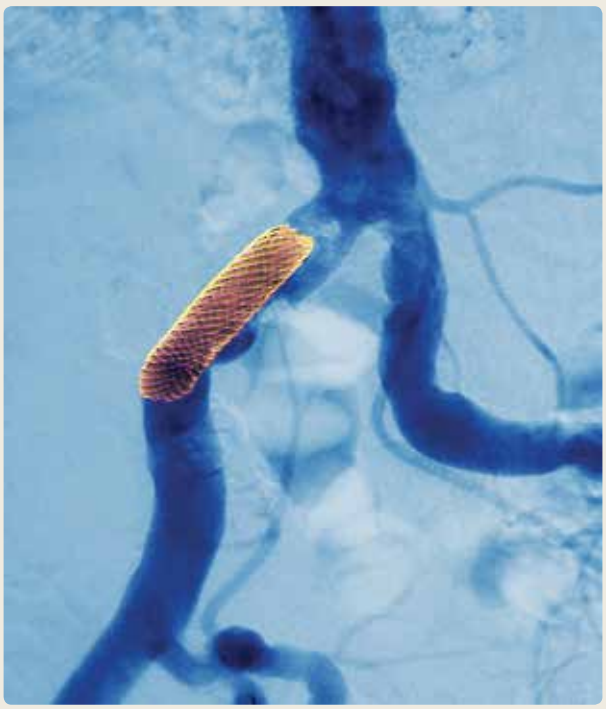

FIGURE 1.12 A coloured x-ray of a stent, which is a metal tube inserted into a blocked artery and left permanently to keep it open

(continued)

'Dementia and Alzheimer's disease was the third leading cause of death, accounting for 10 369 or seven per cent of all deaths in 2012. Most (95 per cent) of these deaths occurred in people aged 75 or over.

'For women, dementia and Alzheimer's disease has overtaken cerebrovascular diseases as the second leading cause of death in 2012, while breast cancer remained the sixth most common cause of death.

'For men, lung cancer remains the second leading cause of death. Dementia and Alzheimer's disease is now the fifth leading cause, replacing prostate cancer which is now ranked sixth for males.

'Suicide was the 14th most common cause of death in 2012 overall, but remains the 10th leading cause for men. Suicide is the leading cause of death for males and females aged between 15 and 44.

'Overall, the death rate for Aboriginal and Torres Strait Islanders was double that of non-Indigenous Australians. The leading cause of death for Aboriginal and Torres Strait Islander people was heart disease, with diabetes ranked as the second leading cause.' said Mr Eynstone-Hinkins.

Source: ABS Media release, 25 March 2014.

Case study review

1 How many deaths were caused by cardiovascular (heart) disease in 2012?
2 (a) What trends are emerging with regards to cardiovascular disease deaths?
(b) Suggest factors that may account for these trends.
3 (a) What trends are emerging for dementia deaths?
(b) Suggest factors that may account for these trends.
4 Outline the difference in mortality rates between Indigenous and non-Indigenous Australians.
5 Using information from the case study, identify one similarity and one difference between males and females in relation to mortality.

TEST your knowledge

1 Define the following:
- mortality
- infant mortality
- maternal mortality
- mortality rate
- under-five mortality rate.

2 List the top three causes of death for men and women.
3 List two similarities and two differences from table 1.4.
4 How have the causes of death changed over time in Australia?
5 (a) How do the leading causes of death change as people get older?
(b) Suggest reasons that may account for these changes.

APPLY your knowledge

6 If the mortality rate for cardiovascular disease for 25–34-year-old males is seven per 100 000 and there are approximately 400 000 males in this age group in Victoria, approximately how many of these men would die from cardiovascular disease each year according to these estimates?
7 (a) Discuss with a partner the causes of death from table 1.3 and collate a list of factors that could contribute to each cause of death.
(b) Place an asterisk next to each factor that is preventable and compare the number of preventable with the number of non-preventable factors.
(c) Which of the top 10 causes of death for men and women would you consider to be largely preventable?
8 Brainstorm factors that may have contributed to the trends identified on pages 14–15.

1.4 Morbidity

KEY CONCEPT The morbidity of Australians, including incidence and prevalence rates

In the previous section, mortality rates were examined. Although these are important statistics, they tell only part of the story. Many people experience conditions that impact significantly on health but do not lead to death. Many causes of mortality also contribute to significant illness prior to causing death. Looking at levels of illness and disability is therefore important in making judgements about overall health status.

Morbidity 'refers to ill health in an individual and the levels of ill health in a population or group' (AIHW, 2008). Therefore, the morbidity rate is a measure of how many people suffer from a particular condition during a given period of time. Morbidity rates can look at **incidence** (the number or rate of new cases of a disease during a specified time, usually a 12-month period) or **prevalence** (the number or proportion of cases of a particular disease or condition present in a population at a given time.

As mortality rates have fallen, morbidity rates for many causes have increased. As people are living longer, there is more time for a range of determinants to have a negative impact on health. There have also been increases in conditions such as obesity that result in an increased rate of associated conditions, such as type 2 diabetes, cardiovascular disease and some cancers. Even though the rates of some of these conditions have increased, there are other, non-life threatening conditions that affect many more people, such as arthritis and osteoporosis.

According to the Australian Institute of Health and Welfare estimates, around 75 per cent of Australians experience a long-term health condition. The proportion of people experiencing one or more long-term conditions increases with age. The National Health Survey (2007–08) reported that 27 per cent of people under 15 years of age had a long-term condition. This rate increased to about 95 per cent of those aged over 45. The most commonly reported conditions are outlined in table 1.5. Many of the causes shown do not contribute to death, but they may reduce the quality of life over a long period.

Morbidity figures represent a snapshot of the whole population. Australians are living longer than ever, so some of these conditions are very common in the older population, but virtually non-existent in the younger population. As a result, it is also useful to examine the most reported long-term conditions for different age groups (see table 1.6). This allows government and non-government organisations to develop appropriate strategies and allocate funds to address the most common conditions in each age group.

FIGURE 1.13 Morbidity data include data on sickness, injury or disability in a population.

TABLE 1.5 The most commonly reported long-term conditions, 2011–12

	Males		Females	
Condition	**Per cent**	**Rank**	**Per cent**	**Rank**
Long-sightedness	25.1	1	30.8	1
Short-sightedness	20.4	2	26.7	2
Hay fever and allergic rhinitis	16.2	3	17.3	3
Back pain/problems, disc disorder	13.3	4	12.1	4
Hearing loss	12.6	5	8.3	11
Hypertensive disease	10	6	10.5	8
Asthma	9.5	7	10.9	6
Mood (affective) problems	7.5	8	11.5	5
Chronic sinusitis	7.3	9	10.1	9
High cholesterol	6.9	10	6.7	12
Osteoarthritis	5.6	11	10.9	7
Migraine	3.7	14	8.5	10

Source: ABS, *Australian Health Survey 2011–12, 2013*.

TABLE 1.6 Five most commonly reported long-term conditions, by age group, 2011–12

Age group	Condition	Per cent[a]
0–14	Asthma	9.3
	Hay fever and allergic rhinitis	9.5
	Long-sightedness	4.6
	Short-sightedness	4.2
	Allergy (undefined)	3.4
15–24	Hay fever and allergic rhinitis	18.8
	Short-sightedness	18.7
	Asthma	10.6
	Long-sightedness	9.2
	Mood (affective) disorders	8.7
25–34	Short-sightedness	25.1
	Hay fever and allergic rhinitis	21.9
	Back pain & disc problems[b]	11.9
	Asthma	11.1
	Mood (affective) disorders	10.2
35–44	Short-sightedness	25.6
	Hay fever and allergic rhinitis	22.5
	Back pain & disc problems[b]	17.6
	Long-sightedness	14.6
	Mood (affective) disorders	12.8
45–54	Long-sightedness	53.0
	Short-sightedness	30.1
	Hay fever and allergic rhinitis	18.9
	Back pain & disc problems[b]	18.6
	Mood (affective) disorders	14.0
55–64	Long-sightedness	62.3
	Short-sightedness	35.9
	Hypertensive disease	22.8
	Back pain & disc problems[b]	19.9
	Osteoarthritis	19.7
65–74	Long-sightedness	64.1
	Short-sightedness	38.9
	Hypertensive disease	35.5
	Hearing loss	28.8
	Osteoarthritis	27.8
75+	Long-sightedness	56.3
	Hearing loss	43.0
	Hypertensive disease	41.5
	Osteoarthritis	33.5
	Short-sightedness	30.7

(a) The proportion in each age group who reported that long-term condition.
(b) Includes back problems not elsewhere classified.
Source: ABS, *Australian Health Survey 2011–12, 2013*.

FIGURE 1.14 Vision problems are common in all age groups.

GP visits

According to AIHW data (2014) an estimated 133 million visits to general practitioners (GPs) were made in 2013–14, which is approximately six visits per person each year. Females are more likely to visit doctors than males. This does not mean that they are more likely to be ill, but that they are more likely to visit a doctor when symptoms or concerns arise.

TABLE 1.7 Principal reason for GP visits, 2013–14

Reason for visit	% of total visits
Check-up	9.1
Prescription	8.5
Test results	6.0
Cough	3.5
Immunisation/vaccination	3.3
Administrative procedure	2.1
Back complaint	2.1
Rash	1.7
Throat symptom/complaint	1.6
Blood test	1.7
Depression	1.4
Upper respiratory tract infection	1.1
Observation/health education/advice/diet	1.1
Fever	1.2
Hypertension/high blood pressure	1.2
Skin symptom/complaint	1.2
Abdominal pain	1.3
All other reasons	51.9

Source: Adapted from Britt, H, et al., 2014, 'General practice activity in Australia 2013–14', General practice series.

Morbidity requiring care

Illnesses and disabilities vary in their severity and many people will require professional care in order to improve health. As a result, morbidity data from doctors and hospitals can be used to make judgements about health status.

Hospitals

Hospital care encompasses care for **chronic conditions**, where the patient is admitted to receive treatment, and emergency care that involves unforeseen events that end up requiring medical care, such as car accidents, sporting accidents and premature births. Figure 1.15 on page 20 shows the major causes of **hospital separations**.

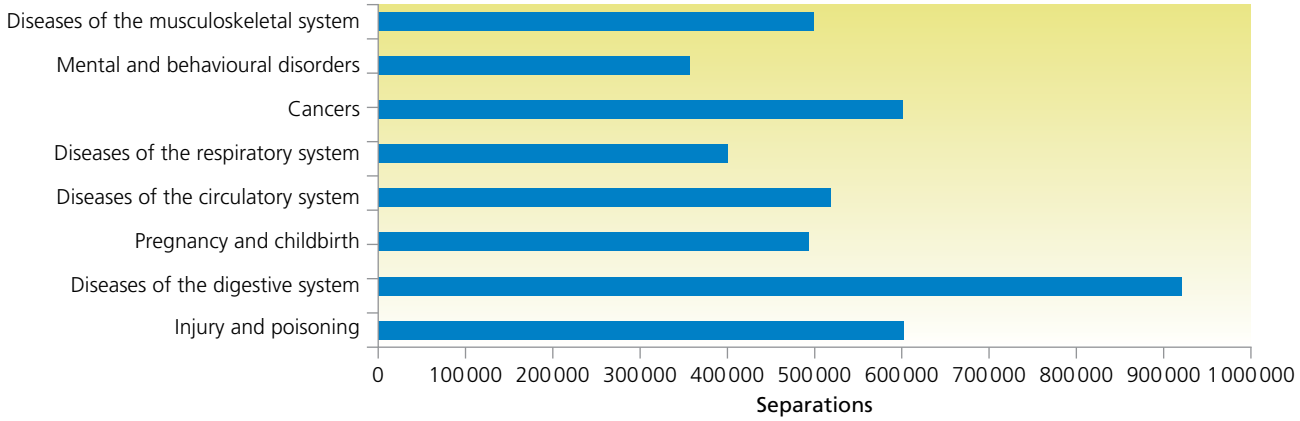

FIGURE 1.15 Major causes of hospital separations, Australia, 2012–13

Source: AIHW 2014, *Australian hospital statistics 2012–13*. Health services series no. 54. Cat no. HSE 145. Canberra: AIHW.

Case study

Health of young Aussies slipping: report

By Tamara McLean

The health of the average 20-something Australian has slipped steadily in the past two decades, according to a report showing a fatter, more depressed young population.

A leading population health expert has challenged the official government view that young people today are much healthier than previous generations.

In his report, to be circulated to health authorities, Richard Eckersley claims that while death rates are falling among people in their 20s, this does not reflect improving health.

'The death rates have dropped significantly and there seems to be an orthodox view that people are happier and healthier from self-reports,' said Mr Eckersley, of the National Centre for Epidemiology and Population Health at Australian National University in Canberra.

'But what I argue is that these are not the best representations, and what we really have is a steady deterioration in young people's physical and psychological health across a range of health measures for the past 20 years or more.'

The claim is contentious because there is a dearth of solid data to compare generations, but the report claims huge growth in non-fatal, chronic illnesses, especially mental disorders.

'Research suggests 20 to 30 per cent of young people are suffering significant psychological distress at any one time, with less severe stress-related symptoms such as frequent headaches, stomach-aches and insomnia affecting as many as 50 per cent,' the researcher said.

'The weight of evidence suggests that the prevalence of mental disorders has increased over successive generations of youth, as have some physical illnesses, notably diabetes, linked to rising levels of obesity.'

Allergies and asthma were also on the rise, as were levels of poor nutrition and physical exercise.

The declines were being led by factors like family breakdown, work pressures, media and technological impacts, dietary changes, environmental pollution and excessive materialism, Mr Eckersley said.

'This requires action now,' he said.

'We've got to stop thinking of health as a matter of healthcare services and think about it more as a product of our way of life in the 21st century that we need to change.'

Source: Reproduced from © AAP 2008, 'Health of young Aussies slipping: report' by Tamara McLean, 25 September 2008.

Case study review

1 **Why would falling death rates not necessarily equal better health?**
2 **Suggest reasons why young people report higher numbers of mental health issues these days.**
3 **How could developments in technology affect the health of young people?**

Trends in morbidity

A number of morbidity trends are emerging that are worth considering. The long-term effects of some of these trends will influence future mortality and morbidity rates, but this takes time. Some of the key trends identified by the Australian Institute of Health and Welfare include:

- decreased rates of asthma among children and young adults since 2001
- a significant increase in the prevalence of overweight and obese people over the past 20–30 years (see figure 1.16)

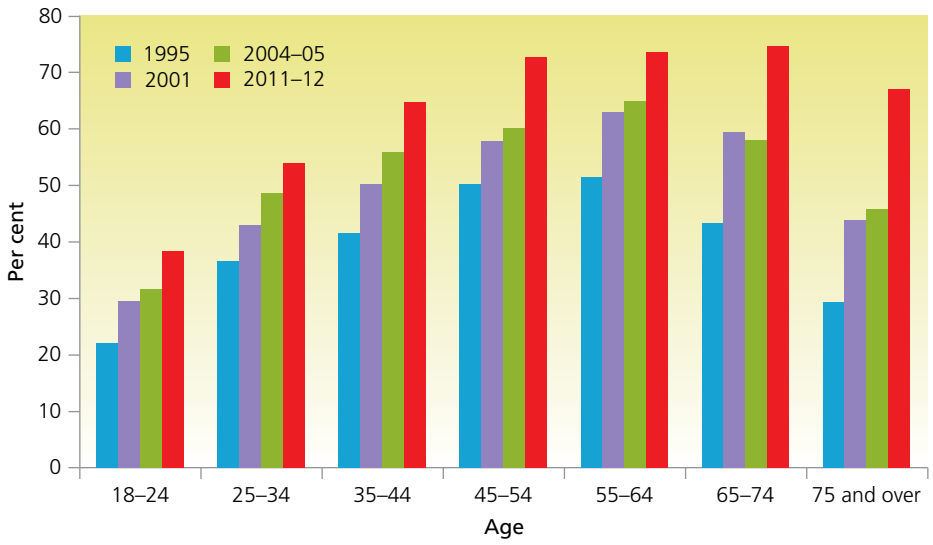

FIGURE 1.16 Trends in overweight and obesity prevalence, by age, 1995–2012

- increased rates of impaired glucose regulation (a precursor to type 2 diabetes) since 1980
- trebled rates of diabetes in the past two decades
- increased rates of kidney disease (attributed to the increased rates of diabetes)
- decreased rates of meningococcal infection between 2001 and 2012
- increased rates of pertussis (Whooping cough) infections between 2007 and 2010
- a fourfold increase in the rate of chlamydia infections between 1999 and 2007.

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Unit 3 AOS 1 Topic 2 Concept 4

Health status indicators
Concept summary

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TEST your knowledge

1 Explain what is meant by the following terms:
(a) morbidity
(b) incidence
(c) prevalence.
2 Explain why morbidity rates have increased as mortality rates have decreased.
3 (a) Identify two trends evident in overweight and obesity over the life span according to figure 1.16.
(b) Suggest factors that may have led to these trends.
(c) Which age group is most likely to be overweight or obese according to figure 1.16?

4 (a) List one difference between the long-term conditions of males and females as shown in table 1.5.
(b) Suggest factors that may have led to this difference.
5 How do the causes of morbidity change over the life span as shown in table 1.6?
6 (a) What are the most reported conditions in the 15–24 age group as shown in table 1.6?
(b) Which of these conditions could be considered life threatening?
7 Which causes from figure 1.15 do you think would be responsible for the most hospitalisations of people your age?
8 (a) Calculate the average number of visits to the doctor per person for people in your class in the past 12 months.
Note: Each person can write their number of visits to the doctor over the past 12 months and hand it to the teacher. The teacher can then calculate the average number of visits per person for the class. This will protect each individual's privacy.
(b) Is this figure higher or lower than the average number of visits per person in 2013–14? Suggest reasons for this.

APPLY your knowledge

9 When looking at morbidity rates, why is it important to consider both incidence and prevalence rates?
10 'Breast cancer — incidence up, death rate down, survival rates improve'. Is this headline possible? Explain your response.
11 Look at figure 1.13. This person's physical health has been affected. How might his social and mental health be affected? Are they all negative effects?
12 According to the AIHW (2006) approximately 10 per cent of hospital separations are preventable. Look at figure 1.15, and list three causes that may be preventable and justify your choices.
13 (a) Why might females be more likely to visit doctors?
(b) What consequences does this have on the health status of males versus females?
14 Are hospital and GP data completely accurate in indicating the level of morbidity in the population? Why/why not?
15 Describe how increasing rates of obesity could have a large impact on mortality and morbidity statistics in the future.
16 How could living with cancer affect mental health?

1.5 Burden of disease

KEY CONCEPT The burden of disease experienced in Australia, including DALYs

Burden of disease statistics take the impact of both mortality and morbidity into account and therefore provide a way of examining the total burden that a condition places on society.

In the past, if someone wanted to examine mortality and morbidity data to compare the effect that asthma has on Australians compared to the impact cancer has, it would have been difficult. How could a comparison be made between asthma (which affects more people than cancer, can last a lifetime, but causes relatively few deaths) and cancer (which causes thousands of deaths per year)? To overcome this problem, scientists and health professionals devised a system that allows a comparison of conditions that cause death, conditions that cause illness or disability, and those that cause both.

Burden of disease is measured in a unit called **disability adjusted life year** or **DALY** (pronounced 'dally'), where one DALY is the equivalent of one healthy year of life lost due to premature death or through living with a disease or disability. If 1000 DALYs were lost due to asthma in a population, it means that 1000 years of healthy life have been lost as a result of premature death or by people suffering from the condition who experienced a reduced quality of life. If 2000 DALYs were lost due to mental illness in the same population, it means that mental illness was twice the burden of asthma.

DALYs are useful for comparing population groups and can provide valuable information about trends and where interventions are required. DALYs can also be used to gauge the contribution of various risk factors to the overall burden of disease experienced. DALYs are often calculated for a range of conditions and added to produce a grand total. In 2010, it was estimated that 2.8 million years of 'healthy' life were lost in Australia.

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Unit 3 AOS 1 Topic 2 Concept 2
Burden of disease in Australia Concept summary

FIGURE 1.17 Burden of disease data allow us to compare the overall burden of conditions such as type 1 diabetes (which rarely causes death) with conditions that lead to many deaths.

Disability adjusted life year is calculated by adding **years of life lost (YLL)** due to premature death and the number of **years lost due to disability (YLD)**, illness or injury (see figure 1.18 and the following section).

FIGURE 1.18 The equation for calculating burden of disease

Years of life lost (YLL)

Years of life lost (YLL) are the fatal component of DALYs. Each YLL represents one year of life lost due to premature death. YLL can be calculated for any condition that causes premature death. The younger a person is when they die from a condition, the greater the number of YLL will be added for that condition. If life expectancy is 80 and a person dies from cancer at 60, then 20 years of life have been lost.

Years lost due to disability (YLD)

Years lost due to disability (YLD) are the non-fatal component of DALYs. A complex formula is used to calculate YLD because conditions vary in their severity. For example, Alzheimer's disease generally has a greater impact on a person's life than asthma, and this needs to be considered when calculating YLD. Because the formula used to calculate YLD takes such considerations into account, it is possible to make a more accurate comparison. If a person suffers from a disease for 10 years that makes them only 'half well', then they have lost five 'healthy' years due to this condition.

YLL and YLD are equal in value in that both represent one year of life lost. However, YLL is from premature death whereas YLD is from illness, injury or disability.

FIGURE 1.19 Asthma can generally be managed effectively by using preventers and relievers such as Ventolin.

Burden of disease in Australia

Australians' health is among the best in the world and continues to improve. However, the prevalence and incidence of certain diseases and conditions have not improved and have actually deteriorated. Many of these are largely preventable conditions that occur as a result of the choices people make throughout their lives. These 'lifestyle' diseases are now the focus of many government and non-government initiatives.

By looking at burden of disease data, a more complete picture of the conditions that are having the largest impact on the Australian population can be gained.

The largest contributors to overall burden of disease are shown in figure 1.20. You can see in this graph the burden contributed by the fatal (YLL) and non-fatal (YLD) component of each condition.

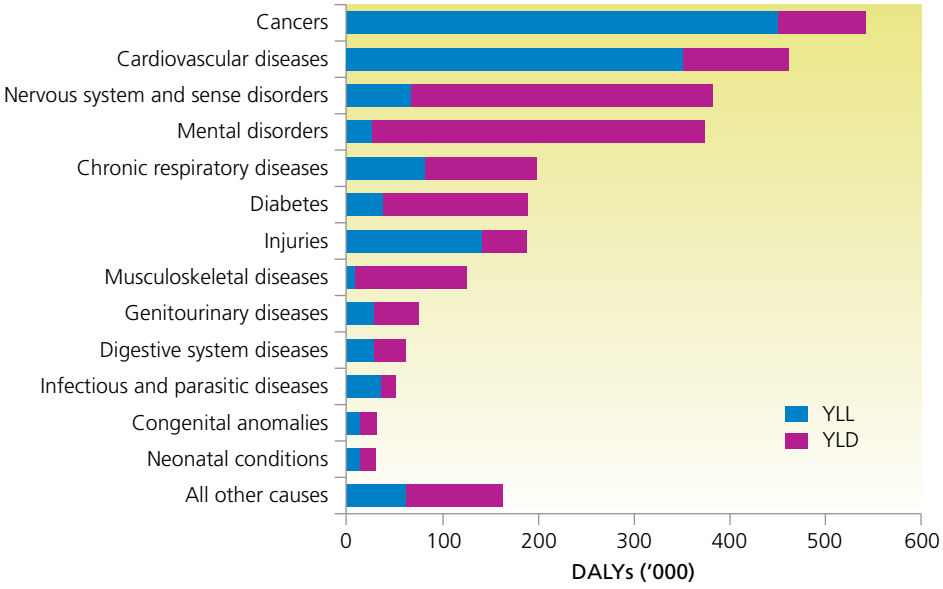

FIGURE 1.20 Projected burden (YLL, YLD and DALYs) of major disease groups, 2010

Source: AIHW, *Australia's health 2010*.

The overall burden of disease is different for young people when compared to the overall figures (see table 1.8). The contribution of various conditions changes for people aged 15–44 as shown in table 1.9.

TABLE 1.8 Leading causes of DALYs in 0–14-year-olds by sex, Australia, 2003

Males			
Rank		**DALYs**	**Per cent of total**
1	Asthma	21 953	17.6
2	Autism spectrum disorders	11 703	9.4
3	Anxiety & depression	9 554	7.7
4	Low birth weight	8 281	6.6
5	Attention-deficit hyperactivity disorder	7 082	5.7
6	Birth trauma & asphyxia	5 086	4.1
7	Congenital heart disease	3 434	2.8
8	Epilepsy	3 246	2.6
9	Neonatal infections	2 156	1.7
10	Road traffic accidents	1 991	1.6

Females			
Rank		**DALYs**	**Per cent of total**
1	Asthma	16 490	17.0
2	Anxiety & depression	15 507	16.0
3	Low birth weight	7 142	7.4
4	Birth trauma & asphyxia	4 221	4.4
5	Attention-deficit hyperactivity disorder	2 840	2.9
6	Epilepsy	2 446	2.5
7	Congenital heart disease	2 202	2.3
8	Autism spectrum disorders	2 056	2.1
9	Otitis media	1 377	1.4
10	Road traffic accidents	1 336	1.4

Source: Begg, S., et al, 2007. *The burden of disease and injury in Australia* 2003. PHE 82. Canberra: AIHW, p. 48.

TABLE 1.9 Leading causes of DALYs in 15–44-year-olds by sex, Australia, 2003

Males			
Rank		**DALYs**	**Per cent of total**
1	Anxiety & depression	42 237	13.0
2	Suicide & self-inflicted injuries	27 592	8.5
3	Road traffic accidents	22 845	7.1
4	Schizophrenia	14 376	4.4
5	Alcohol abuse	13 953	4.3
6	Type 2 diabetes	12 868	4.0
7	Heroin abuse	11 882	3.7
8	Personality disorders	10 526	3.2
9	**Ischaemic heart disease**	9 750	3.0
10	COPD	6 840	2.1

Females			
Rank		**DALYs**	**Per cent of total**
1	Anxiety & depression	84 717	27.4
2	Migraine	14 105	4.6
3	Type 2 diabetes	12 487	4.0
4	Asthma	11 311	3.7
5	Schizophrenia	11 064	3.6
6	Personality disorders	9 389	3.0
7	Breast cancer	9 068	2.9
8	Infertility	8 057	2.6
9	Suicide & self-inflicted injuries	7 174	2.3
10	Road traffic accidents	6 751	2.2

Source: ibid, p. 50.

Trends in burden of disease

The Australia Burden of Disease Study (2007) shows that cancer has overtaken cardiovascular disease as the leading contributor to overall burden of disease. This is despite the fact that cardiovascular disease causes more deaths in Australia. The study also made some predictions of future burden of disease trends based on previous observations, including the following.

- Burden of disease associated with disability should decline in all age groups except for those over 80. Increases in the rate of diabetes will contribute to the increase in disability experienced by those aged 80 and above.
- Australia's ageing population will result in an increase in the burden attributable to diseases associated with advancing age, such as dementia, Parkinson's disease, hearing and vision loss, and osteoarthritis.
- Overall burden of disease should increase in the next 20 years, largely as a result of the growing number of obese and overweight people.

Other predictions concerning the major contributors to burden of disease are shown in figure 1.21.

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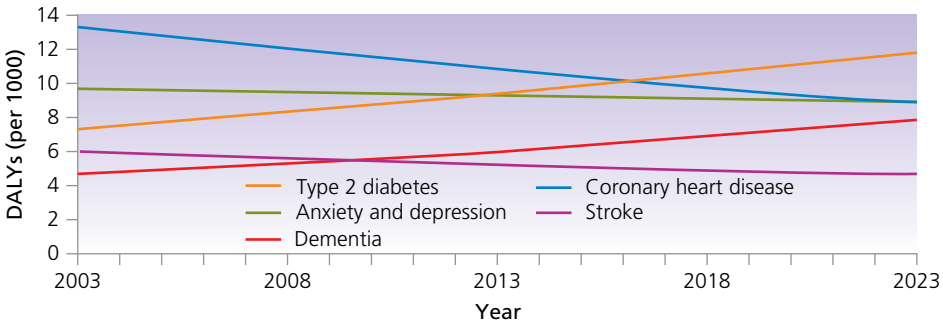

FIGURE 1.21 Projected trends in leading causes of disease burden, 2003–23

Source: AIHW, *Australia's health 2010*.

TEST your knowledge

1 (a) What is meant by the term 'burden of disease'?
(b) What is the benefit of using burden of disease as a health indicator?
(c) What is the unit of measurement for burden of disease data?

2 (a) What is one DALY equal to?
(b) How are DALYs calculated?

3 Explain the difference between YLL and YLD.

4 (a) According to figure 1.20, what are the top three contributors to YLL in Australia?
(b) According to figure 1.20, what are the top three contributors to YLD in Australia?
(c) According to figure 1.20, what are the top three contributors to overall burden of disease in Australia? Approximately how many DALYs are contributed by each of them?

5 Identify one similarity and one difference in figure 1.21.

APPLY your knowledge

6 If cardiovascular disease kills more people than cancer, how is it possible that cancer contributes more YLL, as shown in figure 1.20?

7 Describe how the social health of an individual may be affected when suffering from cancer.

8 If you were the Minister for Health and could select three conditions on which to focus resources, which would you pick? Justify your choice.

1.6 The health status of Australians compared to other developed nations

KEY CONCEPT How the health status of Australians compares to Japan, New Zealand, the UK and the USA

The statistics in this section are from the most recent years available (2003–13). Collecting statistics from various countries is time consuming and care must be taken to ensure that the statistics have been collected in the same manner. The WHO collects such data for all of its member states, but this process is not carried out regularly and, as a result, data are not as current as statistics available for each individual country.

Most indicators of health status show that Australia is a healthy country. But how do we compare to other countries that have similar economic and technological resources to Australia? Does Australia still have high levels of health? These questions are looked at more closely in this section.

The health status of Australians is generally similar to that of other **developed countries** and in many cases, it is better. For example, Australia ranks in the top five countries globally for life expectancy and in the top 10 countries for a range of other health indicators.

It would be difficult to compare Australia to every other developed country, so we will use the following countries for comparison:

- Japan
- New Zealand
- United Kingdom (UK)
- United States of America (USA).

Some average data are also available for OECD and high income countries. Where relevant, these data are included to provide comparison between Australia and the averages for a range of developed countries. See the interest box on page 29 for more information about these classifications.

Life expectancy

Life expectancy in Australia is comparable with other developed nations, as shown in figure 1.22.

FIGURE 1.22 Life expectancy and healthy life expectancy of selected developed countries

Source: WHO, *World Health Statistics 2014*; map by MAPgraphics.

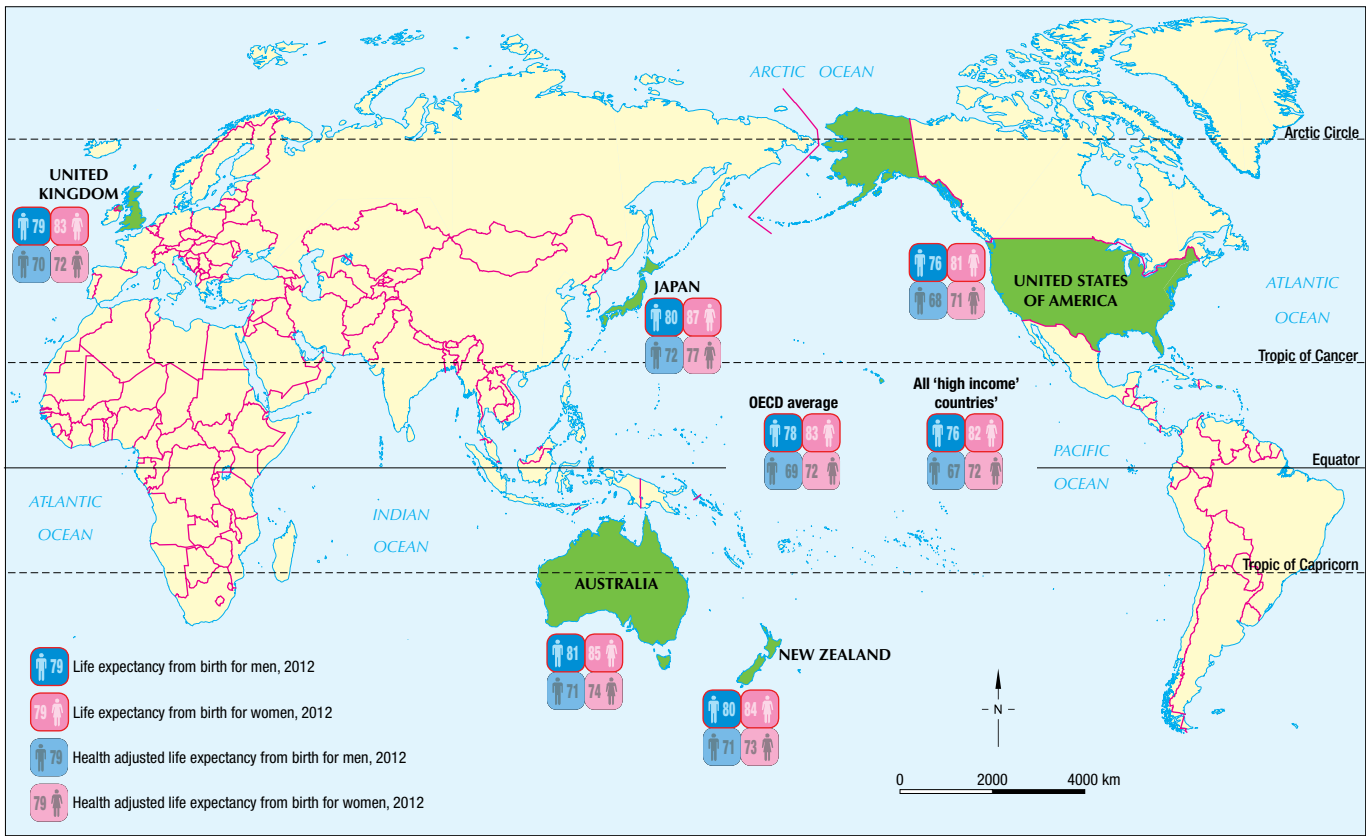

Figure 1.23 shows the change in life expectancy in Australia at birth and at age 65 for males and females between 1990 and 2009. Australia ranks in the 'best third' for each of these indicators compared to other OECD countries.

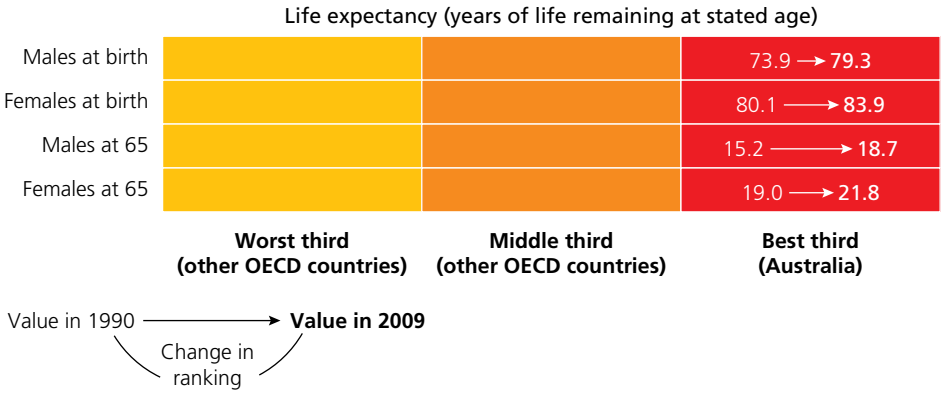

FIGURE 1.23 Change in life expectancy in Australia at birth and at age 65 for males and females between 1990 and 2009 and life expectancy in Australia compared to other OECD countries

Source: AIHW, *Australia's Health 2014*.

Mortality

Australia's mortality rates from all causes are among the lowest in the world, consistent with Australia's relatively high life expectancy. Age-standardised mortality rates in selected countries are shown in figure 1.24.

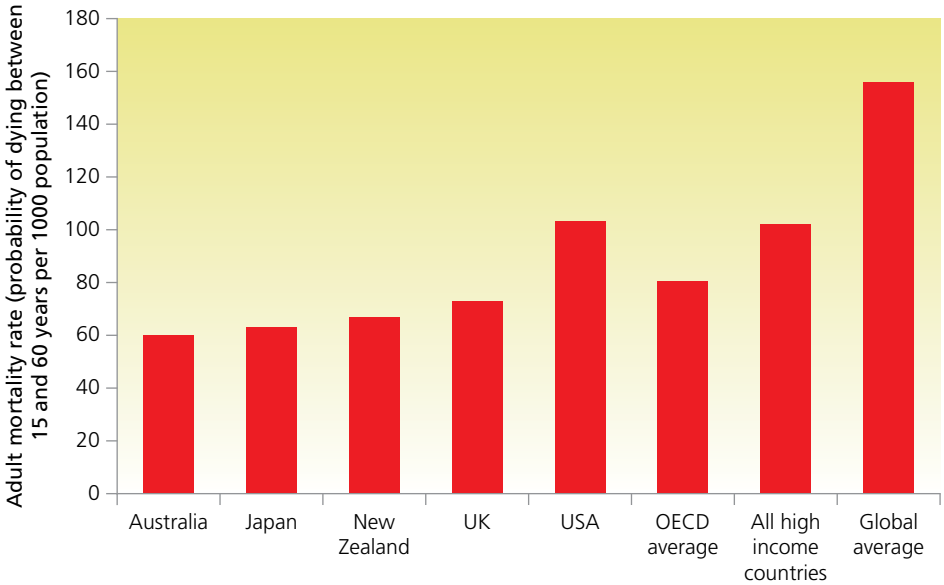

FIGURE 1.24 Adult mortality rate (probability of dying between 15 and 60 years per 1000 population), 2012

Source: WHO, *World Health Statistics, 2014*.

The U5MR rates are low in Australia compared to average figures, but not as low as in some other developed countries such as Japan, indicating there is still some room for improvement.

OECD and 'high income' countries

The Organisation for Economic Co-operation and Development (OECD) is an organisation currently comprising 32 developed countries around the globe. The five focus countries for this section are all OECD members, but average OECD figures provide data reflecting a wider range of developed countries.

All the world's countries are classified based on income in a World Health Organization classification system. Countries are classified as low income, lower-middle income, upper-middle income or high income. 'High income' countries include the wealthiest 49 countries in the world. Although income alone does not determine whether a country is considered developed or not, it does reflect the level of economic development experienced.

studyon
Unit 3 AOS 1 Topic 3 Concept 1
Comparing health status across countries
Concept summary

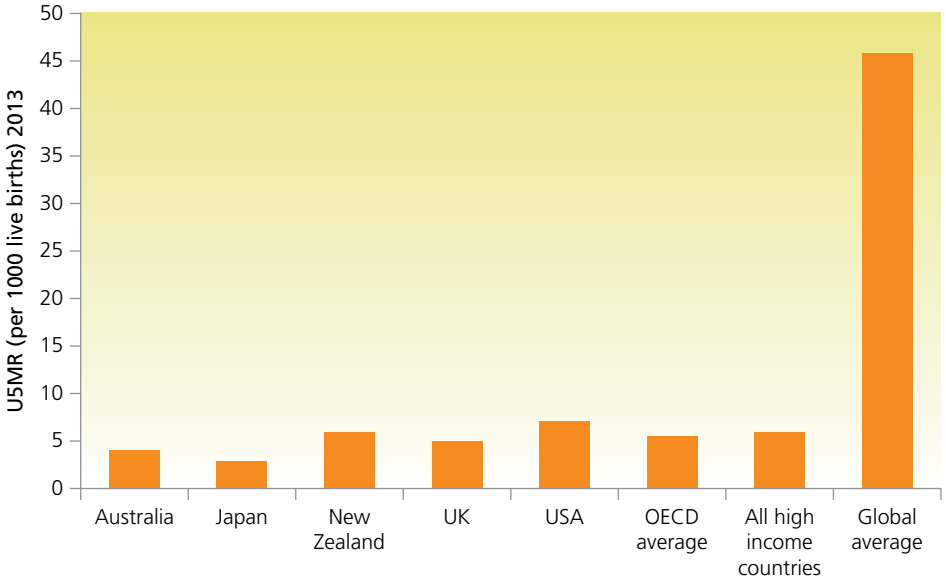

FIGURE 1.25 U5MR in Australia is among the lowest in the world (2013).

Source: WHO, *World Health Statistics 2014*.

Non-communicable diseases are sometimes referred to as 'non-infectious' or 'lifestyle' diseases and are responsible for the majority of deaths in Australia and other developed countries. Communicable diseases (also referred to as infectious diseases) have significantly lower impacts in developed countries when compared to global averages (see figure 1.26).

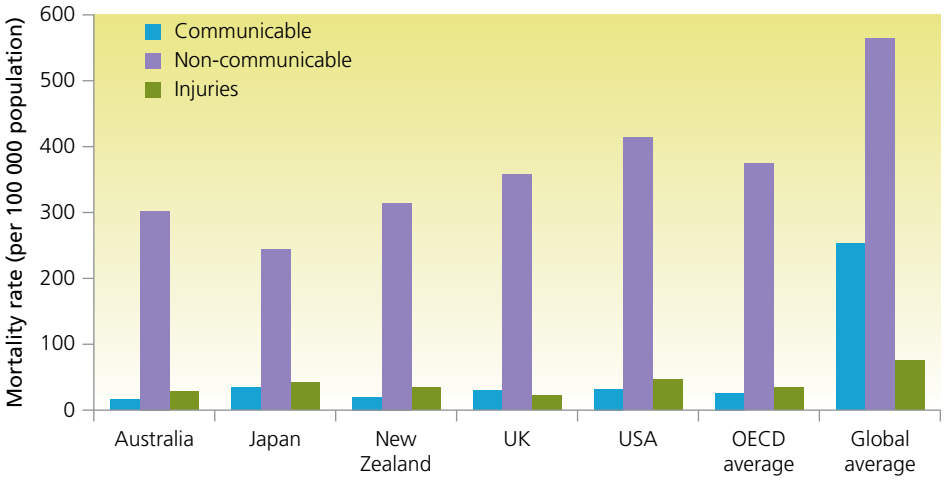

FIGURE 1.26 Non-communicable diseases account for a greater proportion of deaths in Australia and other developed countries when compared to global averages.

Source: Adapted from WHO, *World Health Statistics, 2014*.

Non-communicable deaths include conditions such as cancer, cardiovascular disease, diabetes and respiratory diseases. These conditions are leading causes of death in Australia and other developed countries (see figure 1.27).

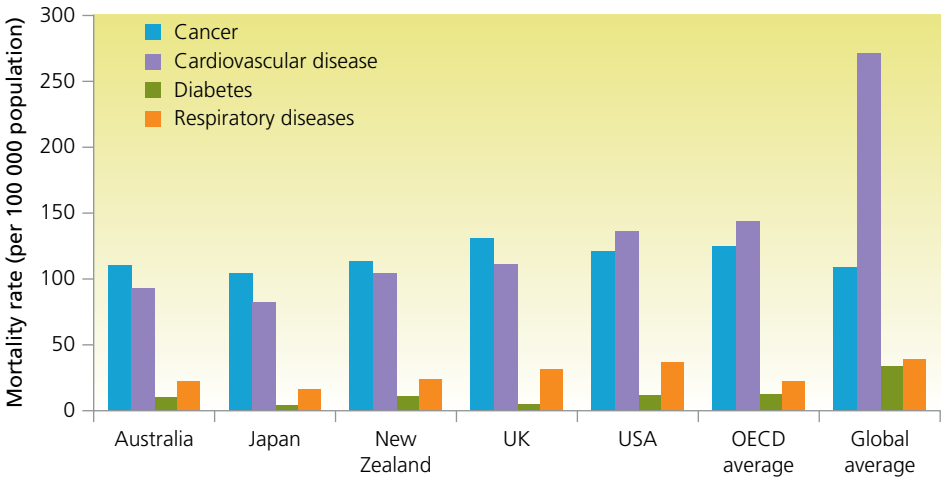

FIGURE 1.27 Mortality rates per 100 000 for cancer, cardiovascular disease, diabetes and respiratory diseases in selected countries, 2012

Source: Adapted from WHO, *World Health Statistics, 2014*.

Figure 1.28 compares Australia with the OECD average in relation to a range of mortality statistics. Improvements were made with respect to many of these indicators between 1990 and 2009.

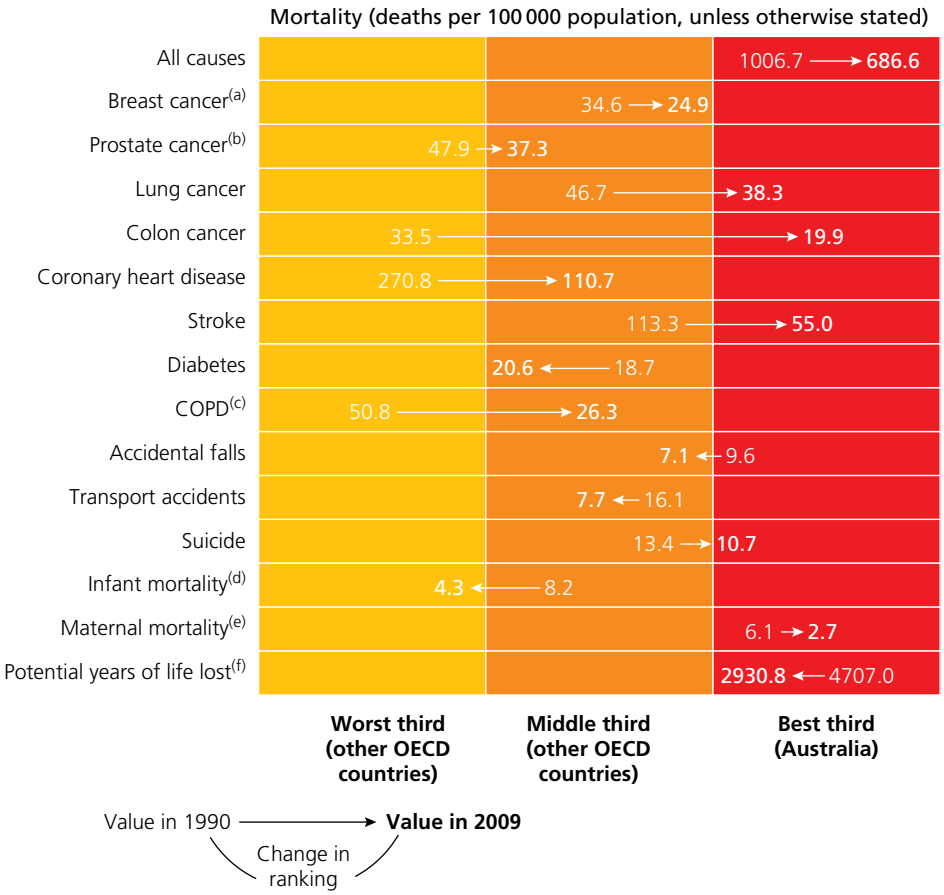

FIGURE 1.28 Australia compared with the OECD average in relation to a range of mortality statistics

Source: AIHW, *Australia's Health 2014*.

The position of the arrowhead indicates where Australia was ranked in relation to the other OECD countries for each indicator in 2009. The length of the arrow indicates the amount of change in ranking compared to other OECD countries between 1990 and 2009. The direction of the arrowhead indicates if the change in rank has been positive or negative; a right-pointing arrowhead indicates improvement in relation to ranking and a left-pointing arrowhead indicates a decline in the ranking of Australia compared to other OECD countries. The values next to the arrows represent the values in Australia for each statistic in both 1990 and 2009.

(a) Breast cancer refers to deaths per 100 000 females.
(b) Prostate cancer refers to deaths per 100 000 males.
(c) Chronic obstructive pulmonary disease (here includes bronchitis, asthma and emphysema).
(d) Infant mortality refers to deaths per 1000 live births.
(e) Maternal mortality refers to deaths per 100 000 live births.
(f) Potential years of life lost refers to years lost per 100 000 population aged 0–69.

Note: Data for Australia reflect those in the OECD database and may differ to data presented elsewhere in this report. All mortality data have been standardised to the 2010 OECD population.
Source: AIHW analysis of OECD. StatExtracts (OECD 2013a).

studyon
Unit 3 AOS 1 Topic 3 Concept 2
Health status of Australians compared to other developed countries
Concept summary

Morbidity

The causes of morbidity in Australia are similar to those in other developed countries. As life expectancy is higher in these countries than many others in the world, lifestyle diseases tend to dominate morbidity data (as compared to communicable diseases in developing countries).

Obesity rates in Australia have increased significantly over the past 20 years, as they have in many other countries. Figure 1.29 shows the estimated overweight and obesity prevalence in Australia compared to other countries.

Australians are currently one of the most overweight/obese populations in the world. The USA has higher rates of obesity and Japan has significantly lower rates than the other four countries.

Depression and other mental illness are also significant causes of morbidity in many developed countries:

- Japan has one of the highest suicide rates in the world. Japanese people take more anti-anxiety medication per person than any other people in the world.
- The USA has the highest rate of mental illness in the world according to a 2004 WHO study.
- Depression and anxiety contribute most to YLD in Australia.

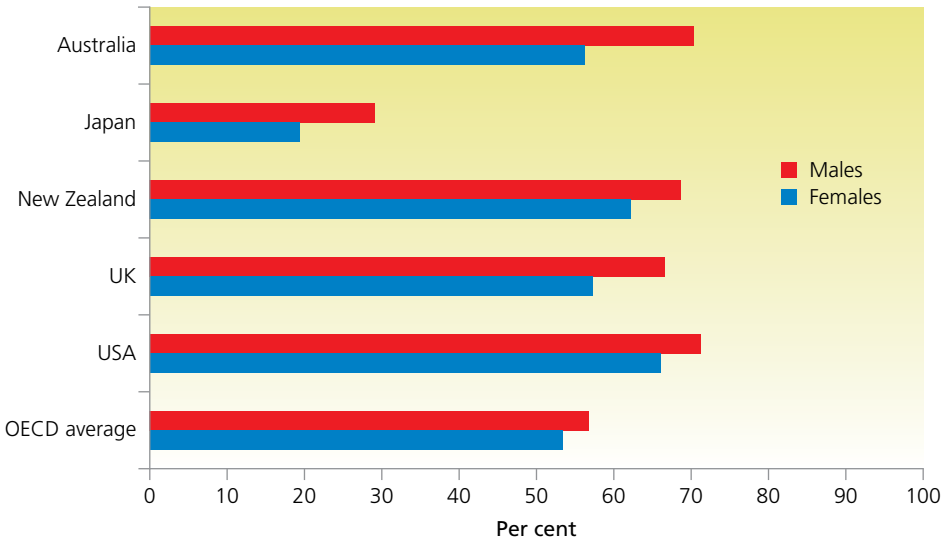

FIGURE 1.29 Estimated overweight and obesity prevalence in selected developed countries, 2012

Source: Adapted from *OECD (2014), Overweight or obese population (indicator).*

Burden of disease

The overall burden of disease in Australia was about 17 500 DALYs per 100 000 people in 2012. This figure reflects the average DALYs per person experienced by the other developed countries. Japan experienced fewer DALYs per person compared to Australia, New Zealand, the UK and the USA (see figure 1.30).

FIGURE 1.30 Estimated DALYs per 100 000 (age standardised) in selected developed countries, 2012

Source: Adapted from *http://apps.who.int/gho/data/view.main.GHEASDALYRTCTRY.*

In Australia, like in many developed countries, the rates of communicable disease are fairly low. The USA has a higher burden of disease associated with communicable diseases compared with other countries. Non-communicable diseases account for the majority of the burden of disease in each of the five countries, although rates are still lower in Australia, Japan and New Zealand when compared to the OECD average. The USA experiences a greater burden associated with non-communicable diseases, with Japan experiencing the least. The USA also experiences more DALYs attributable to injuries. Australia has the third highest amount when compared to the other countries, with the UK experiencing the least (see figure 1.31).

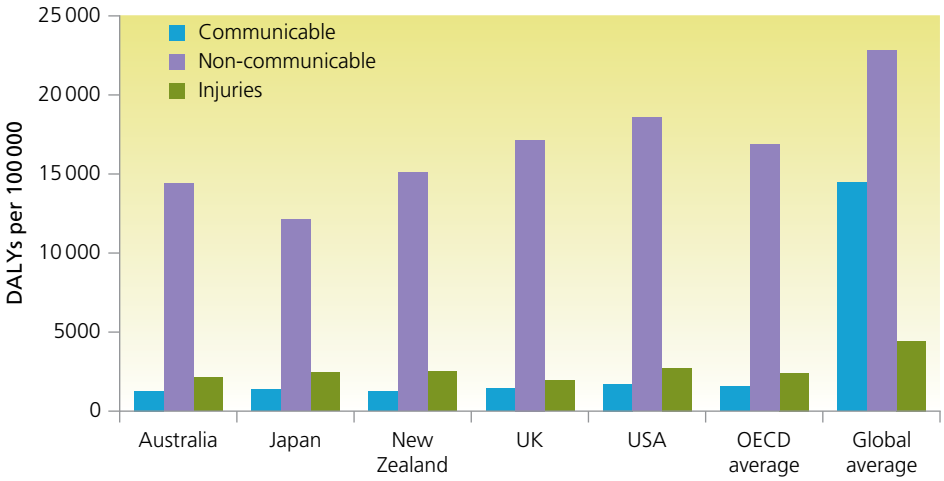

FIGURE 1.31 Estimated DALYs for disease and injuries (per 100 000) in selected developed countries, 2012

Source: Adapted from *http://apps.who.int/gho/data/view.main.GHEASDALYRTCTRY.*

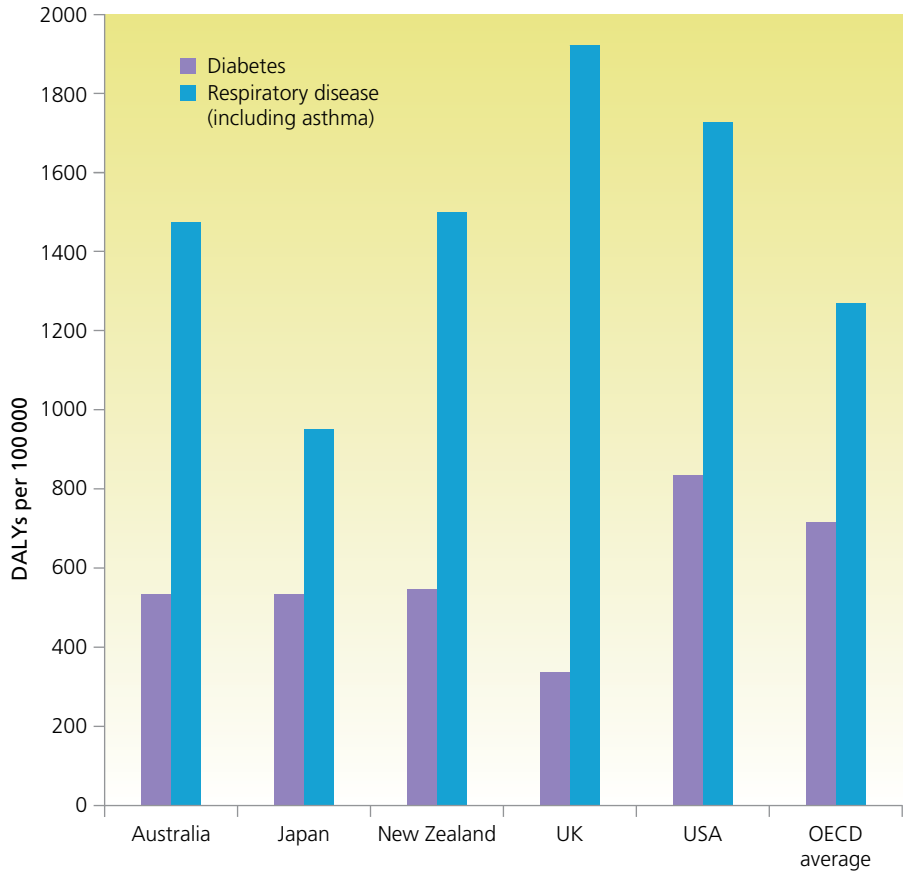

FIGURE 1.32 Estimated DALYs for diabetes and respiratory disease (per 100 000) in selected developed countries, 2010

Source: WHO; www.healthdata.org/gbd/data.

Except for the UK and the USA, the burden associated with diabetes in Australia is comparable with the other countries. Australia has a relatively high burden for respiratory conditions when compared with the OECD average, which is largely due to the high rates of asthma. The UK experiences the greatest burden of disease due to respiratory diseases due to high rates of asthma and chronic obstructive pulmonary diseases.

TEST your knowledge

1 Which developed country has the highest:
   (a) life expectancy
   (b) HALE?
2 Using examples, discuss the benefits of using age-standardised data instead of raw data.
3 Identify the group (males at birth/females at birth/males at 65/females at 65) that experienced the greatest increase in life expectancy between 1990 and 2009 according to figure 1.23.
4 Compare adult mortality rates in Australia with those in other developed countries.
5 Outline one similarity and one difference between Australia and another developed country in relation to mortality rates due to cancer.
6 (a) For which mortality indicator did Australia have the lowest ranking in relation to other OECD countries in 2009 according to figure 1.28?
   (b) For which mortality indicator did Australia have the highest ranking in relation to other OECD countries in 2009 according to figure 1.28?
   (c) For which indicator did Australia show the greatest improvement in ranking between 1990 and 2009 according to figure 1.28?
   (d) Identify two indicators for which Australia did not improve in ranking between 1990 and 2009 according to figure 1.28.

APPLY your knowledge

7 (a) Explain the difference between communicable and non-communicable diseases.
   (b) Which are most common in developed countries?
   (c) Suggest reasons that may account for these conditions being the leading causes of death in developed countries.
8 Using the data presented in this section, answer the following questions.
   (a) Identify two areas of Australia's health status where there is room for improvement. Suggest one way that each of these areas could be improved.
   (b) Identify the country that has the highest burden of disease attributable to communicable diseases. Suggest reasons that may account for the rate being higher in this country.
   (c) Identify the country that has the lowest burden of disease attributable to injuries. Suggest reasons that may account for the rate being lower in this country.
9 Suggest reasons why the mortality rates for cancer and cardiovascular disease are similar for the five selected developed countries.
10 (a) Identify one similarity and one difference between Australia and another developed country shown in figure 1.31.
   (b) Discuss possible reasons for the similarity and difference you identified.
11 Using the data presented in this section, write a report that compares the health status of Australians with that of people in New Zealand, Japan, the UK and the USA.

KEY SKILL Define key health terms

The ability to define key health terms and explain the difference between two terms is an essential skill. When defining key health terms it is important to include all the crucial aspects of the definition. Frequent use of these terms is a good way to gain an understanding of what they mean and when they should be used. When defining a key term, try to avoid a definition that is too narrow. For example, a definition of life expectancy requires two components to make it complete.

Life expectancy: [1] an indication of how long a person can expect to live; it is the number of years of life remaining to a person at a particular age [2] if death rates do not change.

A knowledge of the range of definitions for a particular topic is essential. It is also useful to revisit the key knowledge and key skills (listed at the start of each chapter) to identify which key terms are specified.

PRACTISE the key skills

1 Define disability adjusted life years (DALYs).
2 Explain the difference between life expectancy and healthy life expectancy.

KEY SKILL Use and interpret data to compare the health status of Australia's population with that of other developed countries

The use and interpretation of data is a skill that is required throughout this course and will be revisited at various times throughout the key skill spreads.

Health and human development data can help to identify trends over time, or compare countries or population groups. Effective interpretation of this data is important for improving the health and human development of the individuals or groups in question. Data in the form of tables, graphs and charts are useful for comparing the health status experienced in different countries or between different groups.

To become proficient at interpreting data, it is important to be able to read and interpret a range of graphs and tables. Take time to work out exactly what the graph is about and what information needs to be extracted from it.

The following steps provide a systematic way of reading graphs and tables.

1. Read the *title* of the graph. The title usually gives an indication of the kind of information presented in the graph. It may be located at the top of the graph or next to the figure number.
2. Read the *horizontal* and *vertical axes* (of a bar graph, for instance) and look at the units; for instance, the units might represent a percentage, year, number, rate, proportion or dollars. Use the correct unit when referring to data (see also step 6 below)
3. Look at the key if there is one. This helps identify various elements of the data.
4. Read any *notes that relate to the data*. There may be additional written information at the bottom of the graph explaining various elements of the graph. An element of the data that may not make sense may become clear after reading these notes.
5. Look for trends, *similarities and differences between the data*. This will enable a better understanding of the data that the graph is actually presenting.
6. When commenting on data, try to avoid making general statements such as 'more' and instead try to use data from the graph to support your statement; for

TABLE 1.10 Mortality rates for diabetes (per 100 000), males and females, 2012

Country	Males	Females
Australia	11.6	7.7
Japan	5.4	2.5
New Zealand	13.4	8.3
UK	5.0	3.5
USA	16.3	10.9
OECD Average	14.3	10.5

instance, use 'twice as much' or '75 deaths per 100 000 compared to 150 deaths per 100 000', making sure to refer to the correct unit of measurement.

Table 1.10 on page 35 contains data that can be used to identify differences in mortality rates due to diabetes in Australia and two other developed countries. Note that 'OECD Average' should not be selected as it is not a developed country but rather represents a range of countries.

Australia experienced higher mortality rates due to diabetes than Japan.[1] Males in Australia had a mortality rate of 11.6 per 100 000 people compared with 5.4 per 100 000 for males in Japan. Females in Australia experienced 7.7 deaths per 100 000 compared with 2.5 per 100 000 for females in Japan.[2] Australia had lower mortality rates due to diabetes than the United States.[3] Males in Australia experienced 11.6 deaths per 100 000 compared with 16.3 per 100 000 in the United States, and females in Australia experienced 7.7 deaths per 100 000 compared with 10.9 deaths per 100 000 in the United States.[4]

1. A general statement comparing Australia with another developed country is made.
2. Data from the table is used to support the initial statement.
3. A second country is selected from the table and compared with Australia.
4. Data from the table is used for the second comparison.

PRACTISE the key skills

3 Figure 1.33 outlines some of the key health indicators for Australia and other selected developed countries. Figure 1.34 provides data on maternal mortality. Using data from both figures, identify two similarities and two differences between Australia and other developed countries.

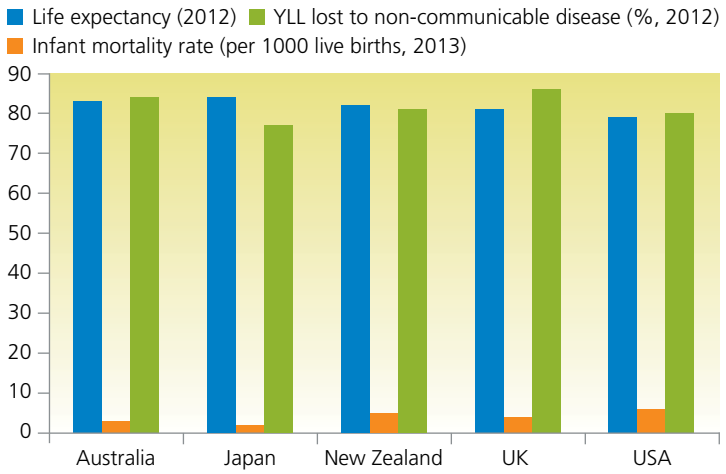

FIGURE 1.33 Selected health indicators for selected developed countries

Source: World Health Statistics 2014, WHO, Global Health Observatory (GHO).

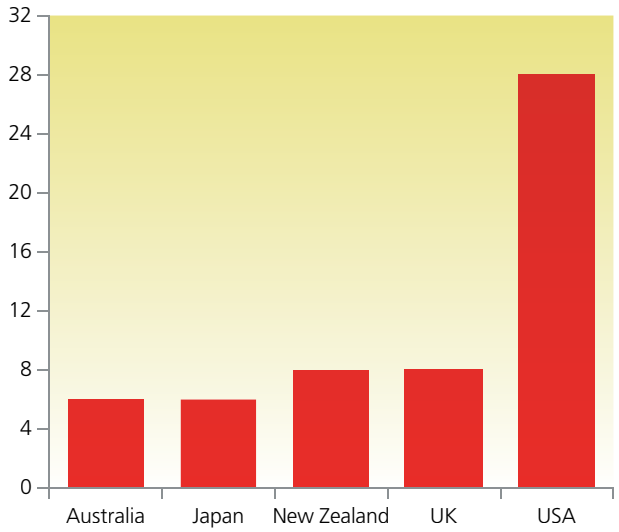

FIGURE 1.34 Maternal mortality ratio per 100 000 live births, 2013

Source: WHO, GHO.

Key skills exam practice

4 Table 1.11 outlines some of the key health indicators for Australia and other selected developed countries. Using data from this table to support your answer, discuss the health status of Australia compared to other developed countries. **5 marks**

TABLE 1.11 Selected health indicators for selected developed countries, selected years

Country	Health adjusted life expectancy (HALE) 2012	Adult mortality rate (probability of dying between the ages of 15 and 60 per 1000 population) 2012	Under-five mortality rate (U5MR) 2013
Australia	73	60	4
Japan	75	63	3
New Zealand	72	67	6
UK	71	73	5
USA	70	103	7

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Chapter 1 definitions
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Chapter 1 concepts

Chapter summary

- Health is defined as 'a state of complete physical, mental and social wellbeing and not merely the absence of disease or infirmity' (WHO, 1946).
- Physical health relates to the efficient functioning of the body and its systems, and includes the physical capacity to perform tasks and physical fitness.
- Social health is defined as 'being able to interact with others and participate in the community in both an independent and a cooperative way'.
- Mental health relates to 'a state of wellbeing in which the individual realises his or her own abilities, can cope with the normal stresses of life, can work productively and fruitfully, and is able to make a contribution to his or her community'.
- The three dimensions of health are interrelated. Finding a balance is the key to optimal health.
- Physical health tends to be the major focus of health data. Even though only relatively small amounts of data are available for the social and mental dimensions of health, they are just as important as the physical dimension.
- Health status refers to the level of health being experienced by individuals, groups or whole populations. For the individual, health status can change quickly. The health status of groups and populations is based on average figures and therefore changes more slowly.
- Health status can be measured using a number of health indicators, including life expectancy, health adjusted life expectancy, mortality, morbidity and burden of disease. The statistics relate to averages so their use is limited when predicting the health of an individual.
- The health status of Australians is excellent overall and is constantly improving. Australia has one of the highest life expectancy rates and one of the lowest mortality rates in the world. However, Australia could improve, most notably in the rates of obesity, injuries and diabetes.
- Life expectancy in Australia is about 80.1 for men and 84.3 for women.
- Cardiovascular disease and cancer are the leading causes of mortality in Australia. Many of the causes of these conditions are preventable.
- An overall decrease in mortality rates has resulted in an increase in morbidity rates for many conditions.
- Obesity is emerging as a major health concern in Australia, as are other lifestyle conditions.
- Burden of disease is measured in DALYs where one DALY equals one year of healthy life lost to premature death or time lived with illness or disability. DALYs are calculated by adding YLL and YLD.
- Cancer contributes most to the YLL and DALYs overall.
- Mental disorders contribute most to the YLD.
- Health status in Australia is comparable to other developed countries. The rate of communicable diseases is low and the rate of non-communicable diseases is high. Australia has relatively high rates of obesity and respiratory diseases.

TEST your knowledge

1 Discuss the advantages of using burden of disease data compared to other health indicators.
2 Define the following terms:
(a) burden of disease
(b) health adjusted life expectancy
(c) life expectancy
(d) U5MR
(e) mortality
(f) morbidity
(g) incidence
(h) prevalence.
3 What do health statistics say about the health of an individual?

APPLY your knowledge

4 Sally, a 16-year-old student, was hit by a car and sustained numerous injuries. She will be hospitalised for four weeks and will then undergo extensive rehabilitation. Discuss the ways that Sally's physical, social and mental health may be affected.
5 Suggest ways that:
(a) social health could affect physical health
(b) social health could affect mental health
(c) mental health could affect physical health
(d) mental health could affect social health.
6 Discuss the advantages of using a range of health indicators to make judgements about the health status of groups or populations.
7 Respond to the following statement: 'When we look at health status, we are really looking at ill health status'. Why is the focus on ill health rather than health?
8 Why might U5MR be a good indicator of the overall health of a country?
9 Suggest reasons why Australia's health status is similar to that of other developed countries.

Exam preparation

QUESTION 1

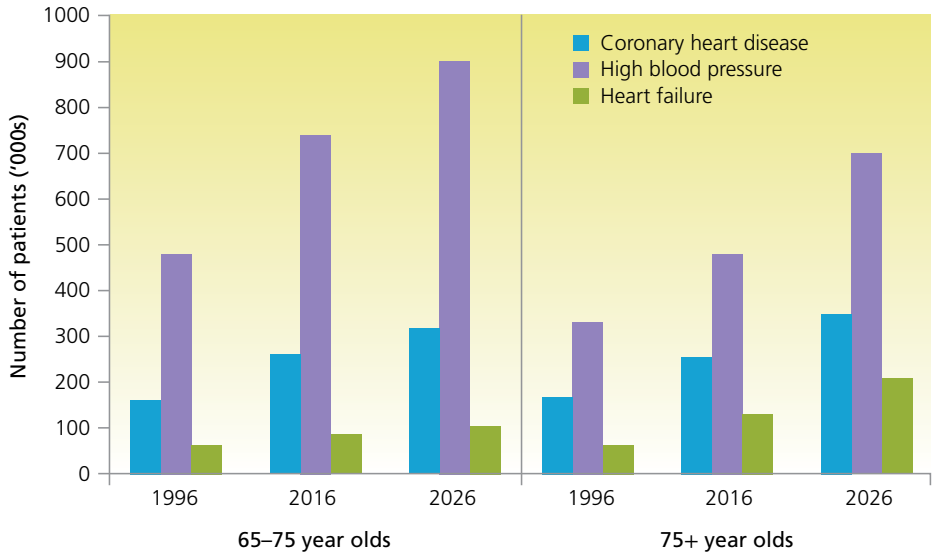

FIGURE 1.35 Projected numbers of older patients with certain heart, stroke and vascular conditions, Australia

Identify two trends in the rates of cardiovascular disease shown in figure 1.35. **2 marks**

QUESTION 2 (© VCAA 2010, from the written exam paper, 2010, Q. 2)
Briefly outline two indicators that are used to measure the health status of populations. **4 marks**

QUESTION 3 (© VCAA 2010, from the written exam paper, 2010, Q. 5)
Identify and then explain one dimension of health. **2 marks**

QUESTION 4 (© VCAA 2005, from the written exam paper, 2005, Q. 1)
Cancer is one of the National Health Priority Areas (NHPA) in Australia.

Table 1.12 shows the contribution of cancer and other NHPAs to the burden of disease.

TABLE 1.12 Indicators of the impact of NHPA diseases and conditions (various years)

	Prevalence	Disability	Deaths	Burden of disease
NHPA	**% of population**	**% with disability**	**% all deaths**	**% total DALY**
Cardiovascular problems	16.8	8.6	37.6	21.9
Cancers	1.4	1.7	28.1	19.1
Mental disorders	9.6	14.7	2.4	13.3
Injury and poisoning	11.9	6.8	5.8	8.4
Diabetes	2.9	1.8	2.5	4.9
Asthma	11.6	4.7	0.3	2.6
Arthritis	32.0	34.4	0.8	3.6

Adapted from: Australian Institute of Health and Welfare 2004. *Australia's health 2004*. Canberra: AIHW. p. 389.

(a) Define disability adjusted life years (DALYs). **2 marks**
(b) Describe two differences in the way cancer and arthritis contribute to the burden of disease shown in table 1.12. **2 marks**