4 Risks to health in Australia

4.1 Overview

This chapter discusses the contribution of a number of health risks to the burden of disease and injury in Australia for 2003. The analyses are not meant to be comprehensive since choices had to be made about which risks to include on the basis of the availability of the following:

1. Good evidence of a causal association between the exposure to the risk and the health outcomes
2. Current estimates from reputable epidemiological studies of the relative risk involved
3. Reliable estimates of exposure in the Australian population to the health risk.

The outcome of these considerations was a set of 14 selected health risks as outlined in Table 4.1. Several important dietary factors were considered for inclusion (for example sodium and saturated fat) as part of these deliberations, but were ultimately excluded due to inadequate data on exposure. With the exception of low fruit and vegetable consumption, therefore, the impact of 'poor diet' is measured indirectly through the assessments for high body mass, blood cholesterol and blood pressure. Similarly, lack of data on prevalence and outcome prevented estimation of the burden of intimate partner violence in males.

Table 4.1: Fourteen selected risks to health discussed in this report

Lifestyle behaviours	Physiological states	Social and environmental factors
1. Tobacco	7. High body mass	11. Urban air pollution
2. Alcohol	8. High blood pressure	12. Intimate partner violence
3. Physical inactivity	9. High blood cholesterol	13. Child sexual abuse
4. Illicit drugs	10. Osteoporosis	14. Occupational exposures & hazards
5. Low fruit and vegetable consumption		
6. Unsafe sex		

It is important to remember several points when interpreting the results in the following sections.

Firstly, health risks tend to cluster around 'high risk' individuals who experience more than one exposure (for example smokers tend to be drinkers). This combination of exposures may produce higher or lower levels of overall risk as a result of complex interaction effects. The analyses presented in this chapter do not explicitly account for these interactions, except to the extent to which confounding was controlled for in the studies from which the exposure–outcome relationships were derived.

Secondly, the causal paths between a number of related health risks and their eventual health outcomes can be complicated. For example, physical inactivity can lead to obesity, which can cause hypertension or high blood cholesterol, which can ultimately lead to cardiovascular disease. Most of the analyses presented in this chapter only measure the effect of a risk independent of the other exposures and irrespective of the risk's place in a causal

path. The important implication here is that such analyses are not additive. Using the example above, the burden attributable to physical inactivity is estimated to be 23.7% of total cardiovascular disease burden, while that for high body mass, high blood cholesterol and high blood pressure was 19.5%, 34.5% and 42.1% of cardiovascular disease, respectively (Table 4.2). The burden attributable to these health risks in combination, however, is not the sum of burden from each risk (that is, the combined burden is not 119.9%). This is because the combined effect of these risks has to be expressly calculated rather than derived from the addition of their individual effects. Ignoring shared causal paths in this example leads to obvious over-estimation of the combined effect.

To illustrate the total 'explanatory' power of the 14 risk factors, the chapter begins with an analysis that accounts for many of the overlaps between risks that share causal paths. This is done using the 'joint effects' method developed for the WHO Comparative Risk Assessment project (Ezzati et al. 2004b). Sensitivity analyses indicate that overall results based on this approach are relatively robust to the underlying assumptions; apportioning the combined overall risk back to each contributing risk factor is more difficult, however, and is much more sensitive to assumptions. Therefore, only the former analyses are presented in this report. Further details on the methods used for estimating joint effects are provided in Chapter 2.

4.2 Combined effect of 14 selected risks to health

The 14 selected risk factors presented in this chapter together explained 32.2% of the total burden of disease and injury in Australia in 2003 (Table 4.2). These risk factors explained 35.1% and 29.1% of the total burden in males and females respectively (Table 4.3). This indicates that there is considerable potential to further reduce burden in Australia through interventions that target these health risks, each of which contribute to more than one health outcome. Additional evidence on the (cost-) effectiveness of such interventions may guide the setting of health service priorities to meet this objective.

Key findings about broad cause groups were:

- Ten of the risks were associated with cancer and together explained 32.9% of the total burden from this cause. The majority was explained by tobacco. The contributions of the other risk factors (physical inactivity, high body mass, alcohol, occupational exposure, low fruit and vegetable consumption, air pollution and unsafe sex (through the link between the human papilloma virus and cancer of the cervix)) were comparatively much smaller.
- Twelve of the risks were associated with cardiovascular disease and together explained 69.3% of the burden from this group of causes; for ischaemic heart disease, this figure was 85.2%. High blood pressure and high blood cholesterol were the largest contributors, followed by physical inactivity, high body mass, tobacco, and low fruit and vegetable consumption. The very low prevalence of smoking in elderly Australians, who are most affected by cardiovascular disease, explains the relatively small contribution of tobacco to this disease.
- Four of the risks were associated with mental disorders and together explained 26.9% of the burden from this cause. Alcohol and illicit drugs contributed in roughly equal proportions. Intimate partner violence and child sexual abuse contributed less but were the only risks implicated in the large burden from anxiety and depression.

- Three of the risks were associated with neurological and sense disorders, and together explained only 0.2% of the burden from these disorders. This reflects lack of knowledge about causation in this group. Ultraviolet light, causing cataract, is probably the most obvious omitted risk factor in this disease category but the burden of cataract is small because surgical treatment is widely available.
- Seven of the risks were associated with injury and together explained 31.7% of the burden from this cause. Alcohol was by far the largest contributor, followed by occupational exposures and hazards, illicit drugs, intimate partner violence, osteoporosis, child sexual abuse, and tobacco.
- Two of the risks were associated with Type 2 diabetes (including the proportion of cardiovascular disease caused by diabetes) and together explained 60.1% of the burden from this cause. High body mass was by far the largest contributor to this disease.

Table 4.2: Individual and joint burden (DALYs) attributable to 14 selected risk factors by broad cause group, Australia, 2003

	Broad cause group							
	Cancer	CVD	Mental	Neuro-logical	Injury	Diabetes	Other	All causes
Total burden ('000)	499.4	473.8	350.5	312.8	185.1	143.8	667.4	2,632.8
Attributable burden (%)[(a)]								
Tobacco	20.1	9.7	—	–0.6	0.5	—	8.9	7.8
High blood pressure	—	42.1	—	—	—	—	—	7.6
High body mass	3.9	19.5	—	—	—	54.7	1.1	7.5
Physical inactivity	5.6	23.7	—	—	—	23.7	>–0.1	6.6
High blood cholesterol	—	34.5	—	—	—	—	—	6.2
Alcohol								
Harmful effects	3.1	0.9	9.7	—	18.1	—	<0.1	3.3
Beneficial effects	—	–5.6	—	—	—	—	>–0.1	–1.0
Net effects	3.1	–4.7	9.7	—	18.1	—	<0.1	2.3
Low fruit & vegetable consumption	2.0	9.6	—	—	—	—	>–0.1	2.1
Illicit drugs	—	<0.1	8.0	—	3.6	—	2.5	2.0
Occupational exposures & hazards	3.1	0.4	—	0.8	4.7	—	3.4	2.0
Intimate partner violence	0.5	0.3	5.5	0.1	2.5	—	0.2	1.1
Child sexual abuse	<0.1	<0.1	5.8	—	1.4	—	<0.1	0.9
Urban air pollution	0.8	2.7	—	—	—	—	0.4	0.7
Unsafe sex	1.0	—	—	—	—	—	1.4	0.6
Osteoporosis	—	—	—	—	2.4	—	—	0.2
Joint effect[(b)]	32.9	69.3	26.9	0.2	31.7	60.1	17.2	32.2

(a) Attributable burden within each column is expressed as a percentage of total burden for that column.

(b) Figures for joint effects are not column totals. See Section 4.1 for further details.

The 14 selected risk factors presented in this chapter had a differential impact on health in terms of both sex and age (Table 4.3). In the 0–44 year-old age group, alcohol and illicit drugs

were the leading causes of burden in males, mental disorders (alcohol abuse, and heroin and polydrug abuse) and injuries (suicide and self-inflicted injuries, and road traffic accidents) being the predominant health outcomes from these risks. In this age group, 23.6% of total male burden and 17.9% of total female burden was explained by the 14 risks in combination. In females, intimate partner violence and child sexual abuse were the leading causes in this age group, anxiety and depression and suicide and self-inflicted injuries being the predominant health outcomes from these risks.

In the 45–64 year-old age group, high body mass and tobacco were the leading causes in both sexes, Type 2 diabetes, ischaemic heart disease, stroke, lung cancer and chronic obstructive pulmonary disease (COPD) being the predominant health outcomes from these risks. The proportion of total burden in this age group that is explained by the 14 risks in combination was 43.8% in males and 33.6% in females.

In the 65 years and over age group, high blood pressure was the leading cause in both sexes, followed by tobacco in males and high blood cholesterol in females. The predominant health outcomes from both high blood pressure and high blood cholesterol are ischaemic heart disease and stroke. For tobacco, the predominant health outcomes are lung cancer and COPD. The proportion of total burden in this age group that is explained by the 14 risks in combination was 38.4% and 34.8% in males and females, respectively.

Table 4.3: Individual and joint burden (DALYs) attributable to 14 selected risk factors by sex and age group, Australia, 2003

	Males				Females			
	0–44	45–64	65+	All ages	0–44	45–64	65+	All ages
Total burden ('000)	448.8	382.5	533.4	1,364.6	406.0	299.1	563.0	1,268.2
Attributable burden (%)[(a)]								
Tobacco	1.9	14.7	12.5	9.6	1.1	8.7	7.6	5.8
High blood pressure	0.8	7.8	13.8	7.8	<0.1	4.0	14.2	7.3
High body mass	3.3	13.3	7.5	7.7	2.6	12.1	8.1	7.3
Physical inactivity	1.8	9.0	8.5	6.4	1.9	8.4	9.6	6.8
High blood cholesterol	1.9	9.6	8.3	6.6	0.7	5.1	9.9	5.8
Alcohol								
Harmful effects	8.1	5.5	1.8	4.9	2.2	2.4	0.8	1.6
Beneficial effects	–0.3	–1.5	–1.5	–1.1	–0.2	–0.9	–1.5	–0.9
Net effects	7.8	4.0	0.3	3.8	2.0	1.4	–0.6	0.7
Low fruit & vegetable consumption	0.8	4.1	3.3	2.7	0.3	1.7	2.2	1.5
Illicit drugs	5.7	1.9	0.6	2.7	2.4	1.1	0.4	1.2
Occupational exposures & hazards	2.7	4.2	1.4	2.6	1.6	2.4	0.4	1.3
Intimate partner violence	—	—	—	—	4.8	2.8	0.3	2.3
Child sexual abuse	0.6	0.3	<0.1	0.3	3.4	1.7	<0.1	1.5
Urban air pollution	0.2	0.9	1.2	0.8	0.1	0.6	1.2	0.7
Unsafe sex	0.8	0.4	0.2	0.5	1.0	0.9	0.4	0.7
Osteoporosis	—	<0.1	0.2	<0.1	—	<0.1	0.6	0.3
Joint effect[(b)]	23.6	43.8	38.4	35.1	17.9	33.6	34.8	29.1

(a) Attributable burden within each column is expressed as a percentage of total burden for that column.

(b) Figures for joint effects are not column totals. See Section 4.1 for further details.

4.3 Individual contribution of 14 selected risks to health

Tobacco

Tobacco was responsible for 7.8% of the total burden of disease and injury in Australia in 2003 (Table 4.4), with lung cancer, COPD and ischaemic heart disease accounting for more than three-quarters of this burden (Figure 4.1). Of the 14 risk factors examined, tobacco was responsible for the largest amount of burden across all ages in males (Table 4.3). Almost two-thirds of the burden from tobacco was experienced by males due to the higher prevalence 20 to 30 years ago of smoking in males compared with females. More than three-quarters of the burden from tobacco was due to mortality (Figure 4.1). Because of the long lag time between smoking and many of its ill effects on health, the health benefits of recent favourable trends in smoking prevalence will not be fully realised until many years in the future.

The rate of burden from tobacco per head of population increased with age until 75 and the absolute burden was concentrated between the ages of 55 and 75. The contribution from lung cancer dominated at most ages but was overtaken by contributions from COPD and ischaemic heart disease in the elderly (Figure 4.2).

Table 4.4: Deaths and burden (DALYs) attributable to tobacco by specific cause, Australia, 2003

	Deaths		DALYs	
Specific cause	**Number**	**Per cent of total**	**Number**	**Per cent of total**
Lung cancer	6,309	4.8	72,213	2.7
COPD	4,175	3.2	54,492	2.1
Ischaemic heart disease	1,962	1.5	31,435	1.2
Stroke	577	0.4	11,812	0.4
Oesophagus cancer	572	0.4	6,248	0.2
Other	1,916	1.4	28,588	1.1
Total attributable	**15,511**	**11.7**	**204,788**	**7.8**

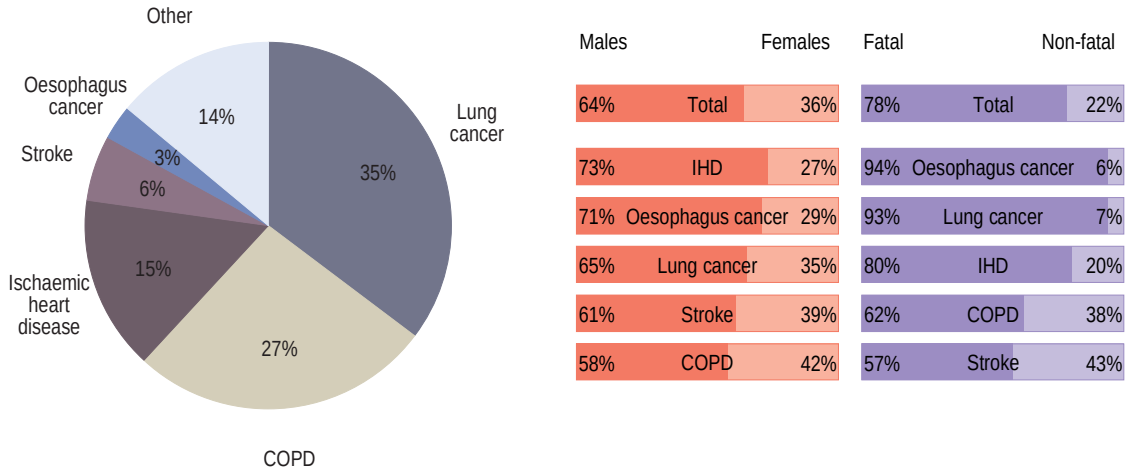

Figure 4.1: Burden (DALYs) attributable to tobacco by specific cause expressed as: (a) proportions of total, (b) proportions by sex, and (c) proportions due to fatal and non-fatal outcomes, Australia, 2003

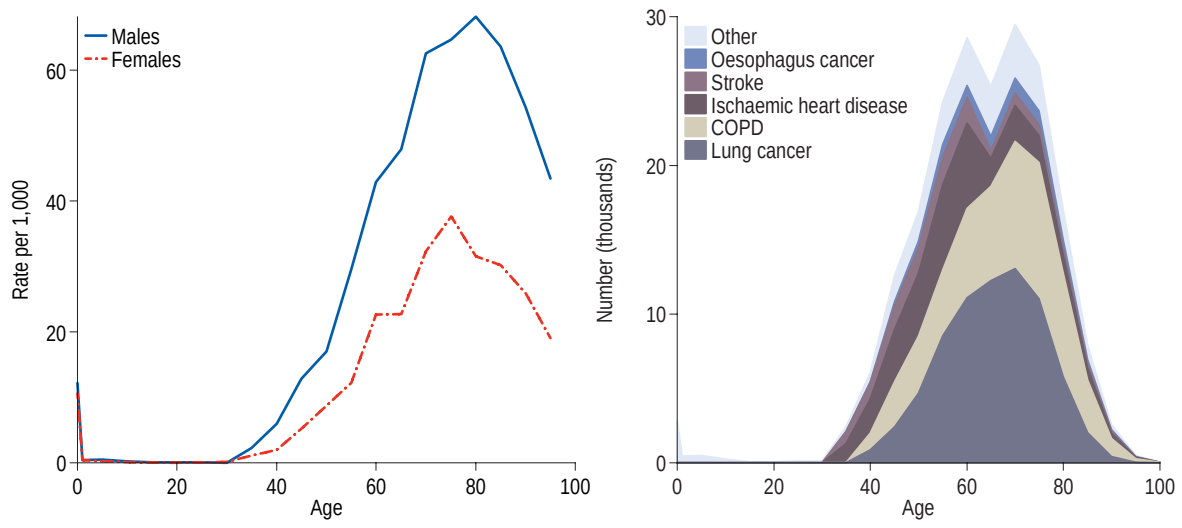

Figure 4.2: Burden (DALYs) attributable to tobacco by age expressed as: (a) rates by sex, and (b) numbers by specific cause, Australia, 2003

High blood pressure

High blood pressure was responsible for 7.6% of the total burden of disease and injury in Australia in 2003 (Table 4.5), with ischaemic heart disease and stroke accounting for 93% of

this burden (Figure 4.3). Of the 14 risk factors examined, high blood pressure was responsible for the greatest amount of burden in the 65 years or over age group in both sexes (Table 4.3). Overall, the burden from high blood pressure was somewhat greater in males and 81% was due to mortality.

The rate of burden from high blood pressure per head of population increased with age and the absolute burden was concentrated around old age (Figure 4.4). The contributions from ischaemic heart disease and stroke dominated across all ages.

Table 4.5: Deaths and burden (DALYs) attributable to high blood pressure by specific cause, Australia, 2003

	Deaths		DALYs	
Specific cause	**Number**	**Per cent of total**	**Number**	**Per cent of total**
Ischaemic heart disease	14,089	10.7	125,461	4.8
Stroke	6,603	5.0	59,962	2.3
Other	1,812	1.4	13,893	0.5
Total attributable	**22,504**	**17.0**	**199,315**	**7.6**

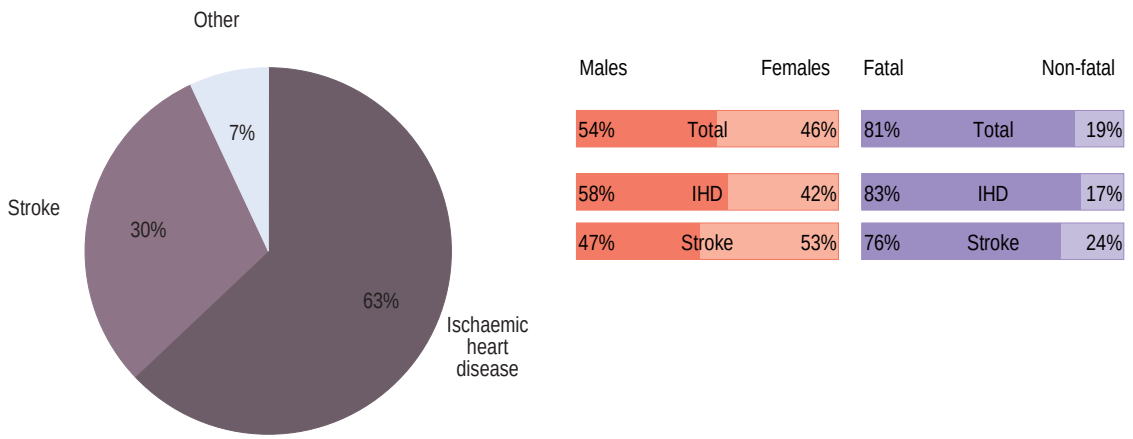

Figure 4.3: Burden (DALYs) attributable to high blood pressure by specific cause expressed as: (a) proportions of total, (b) proportions by sex, and (c) proportions due to fatal and non-fatal outcomes, Australia, 2003

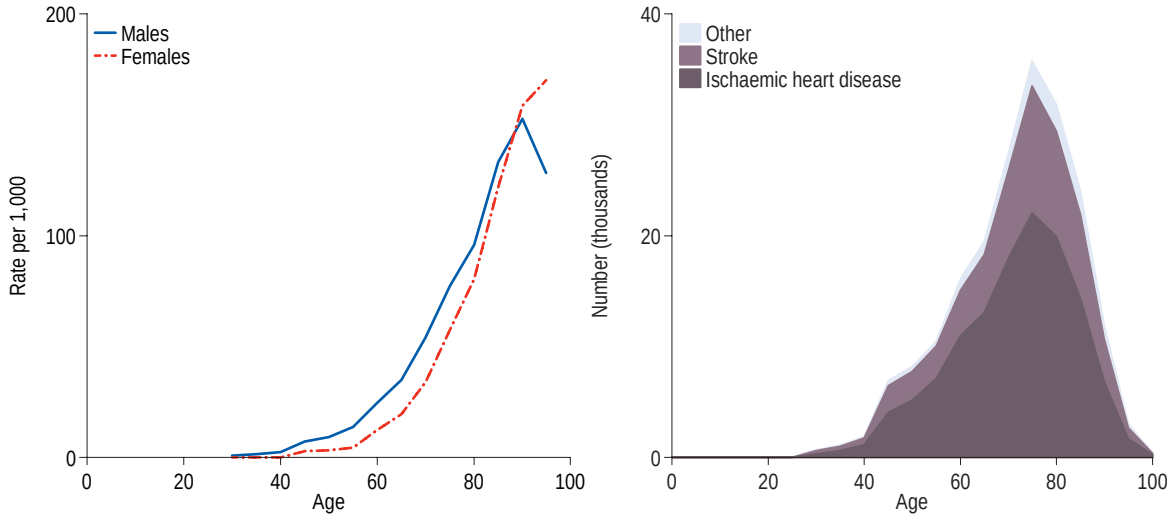

Figure 4.4: Burden (DALYs) attributable to high blood pressure by age expressed as: (a) rates by sex, and (b) numbers by specific cause, Australia, 2003

High body mass

The body mass index (BMI) is a measure of weight in kilograms over height in metres squared and is typically categorised into under weight (BMI<20), normal weight (20≤BMI<25), over weight (25≤BMI<30) and obese (BMI≥30). Rather than use these categories, the health effects of 'high body mass' in the following analyses were estimated using new methods in which BMI is measured on a continuous scale and risk is assessed against a minimum counterfactual distribution with a mean of 21 and a SD of 1 (see Appendix 2). This means that risk is attributed to all people in the population with a BMI of greater than 21, with the degree of risk increasing exponentially above this value. The consequence of this approach is that some of the attributable risk from high body mass comes from the large proportion of the population that is not over weight or obese in the conventional sense, but whose risk of disease is elevated, at least to some degree.

High body mass was responsible for 7.5%of the total burden of disease and injury in Australia in 2003 (Table 4.6), with Type 2 diabetes and ischaemic heart disease (IHD) accounting for almost three-quarters of this burden (Figure 4.5). Of the 14 risk factors examined, high body mass accounted for the greatest amount of burden in the 45–64 year age group in females (Table 4.3). The burden from high body mass was greater in males due to the higher incidence of Type 2 diabetes itself and the associated cardiovascular complications. Half of the burden from high body mass was due to mortality (Figure 4.5).

The rate of burden from high body mass per head of population increased with age; the absolute burden was concentrated between the ages of 55 and 75. The contributions from Type 2 diabetes and ischaemic heart disease dominate across all ages (Figure 4.6).

Table 4.6: Deaths and burden (DALYs) attributable to high body mass by specific cause, Australia, 2003

	Deaths		DALYs	
Specific cause	**Number**	**Per cent of total**	**Number**	**Per cent of total**
Type 2 diabetes	1,381	1.0	78,688	3.0
Ischaemic heart disease	4,914	3.7	66,533	2.5
Stroke	1,528	1.2	22,218	0.8
Colorectal cancer	721	0.5	9,920	0.4
Breast cancer	379	0.3	7,125	0.3
Other	602	0.5	13,148	0.5
Total attributable	**9,525**	**7.2**	**197,632**	**7.5**

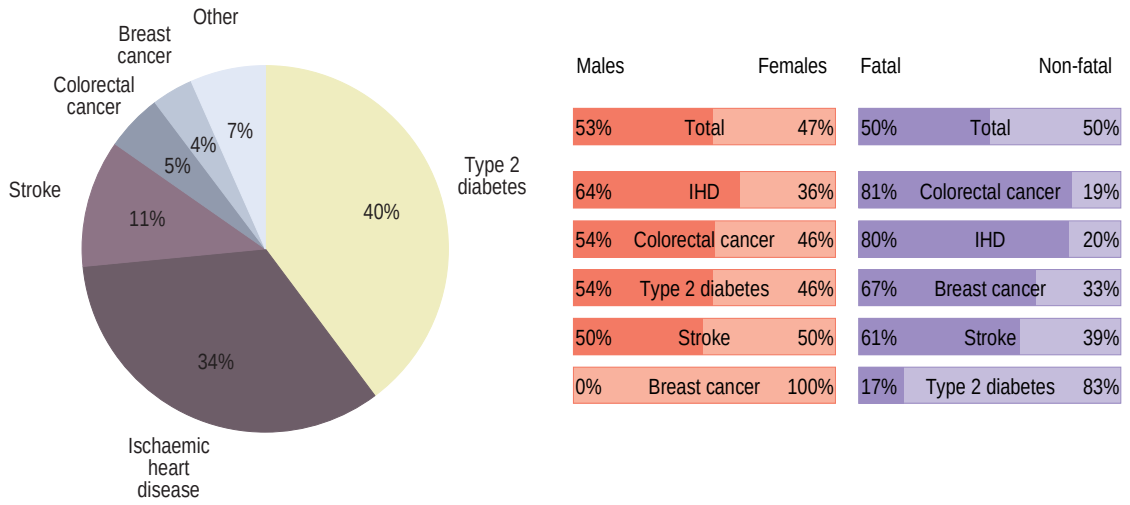

Figure 4.5: Burden (DALYs) attributable to high body mass by specific cause expressed as: (a) proportions of total, (b) proportions by sex, and (c) proportions due to fatal and non-fatal outcomes, Australia, 2003

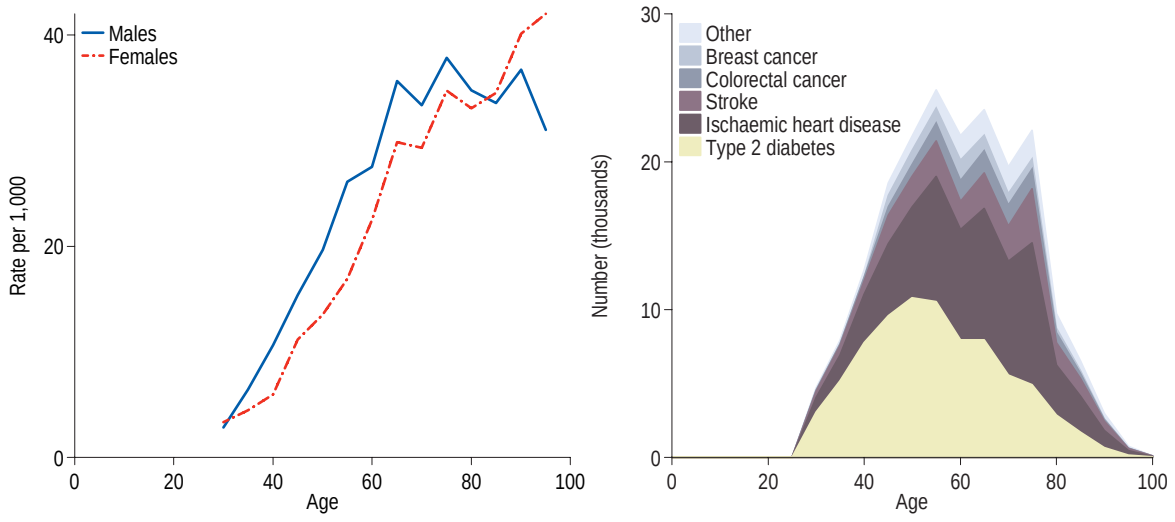

Figure 4.6: Burden (DALYs) attributable to high body mass by age expressed as: (a) rates by sex, and (b) numbers by specific cause, Australia, 2003

Physical inactivity

Physical inactivity was responsible for 6.6% of the total burden of disease and injury in Australia in 2003 (Table 4.7), with ischaemic heart disease, Type 2 diabetes and stroke accounting for more than four-fifths of this burden. Overall, the burden from physical inactivity was shared equally between the sexes. With the exception of diabetes, most of the conditions attributable to physical inactivity were associated with high mortality (Figure 4.7).

The rate of burden from physical inactivity per head of population increased with age and the absolute burden was concentrated around old age. The contributions from ischaemic heart disease and Type 2 diabetes dominated across all ages (Figure 4.8).

Table 4.7: Deaths and burden (DALYs) attributable to physical inactivity by specific cause, Australia, 2003

	Deaths		DALYs	
Specific cause	**Number**	**Per cent of total**	**Number**	**Per cent of total**
Ischaemic heart disease	8,739	6.6	88,617	3.4
Type 2 diabetes	704	0.5	34,132	1.3
Stroke	2,390	1.8	23,742	0.9
Colorectal cancer	1,074	0.8	14,978	0.6
Breast cancer	584	0.4	12,962	0.5
Total attributable	**13,491**	**10.2**	**174,431**	**6.6**

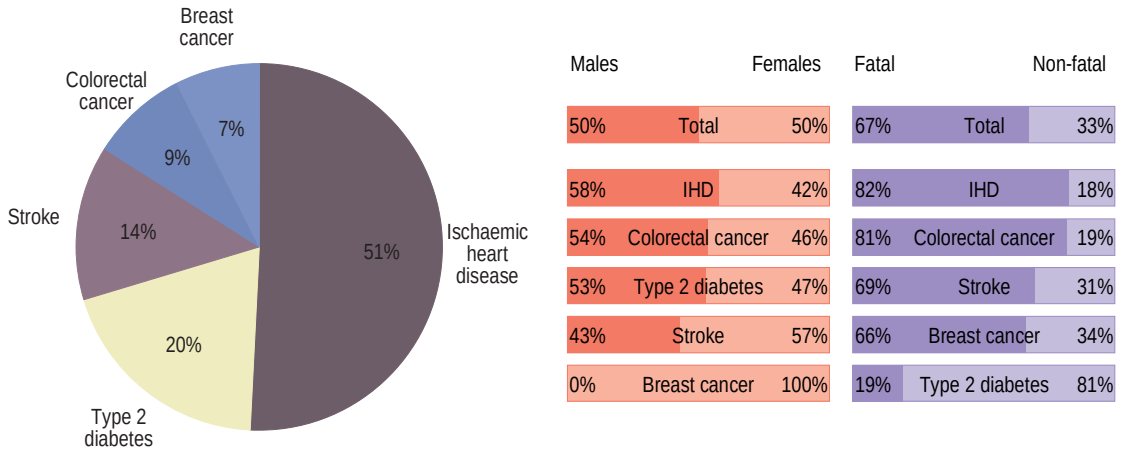

Figure 4.7: Burden (DALYs) attributable to physical inactivity by specific cause expressed as: (a) proportions of total, (b) proportions by sex, and (c) proportions due to fatal and non-fatal outcomes, Australia, 2003

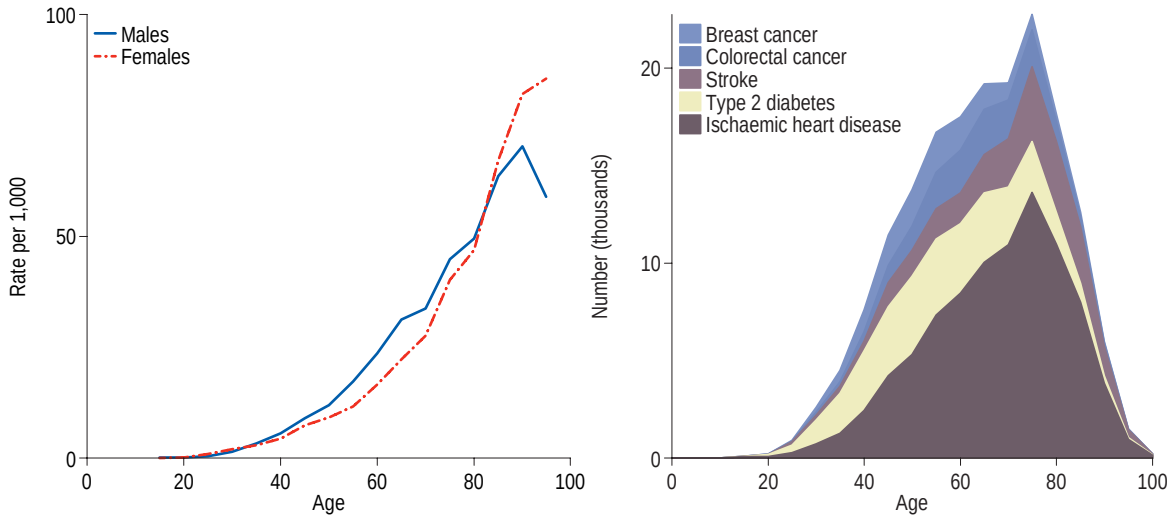

Figure 4.8: Burden (DALYs) attributable to physical inactivity by age expressed as: (a) rates by sex, and (b) numbers by specific cause, Australia, 2003

High blood cholesterol

High blood cholesterol was responsible for 6.2% the total burden of disease and injury in Australia in 2003 (Table 4.8), with ischaemic heart disease and stroke accounting for this entire burden. Both ischaemic heart disease and stroke were associated with high mortality. Overall, males experienced a slightly higher burden from high blood cholesterol than females (Figure 4.9).

The rate of burden from high blood cholesterol per head of population increased with age and the absolute burden was concentrated around old age. The contribution from ischaemic heart disease dominated across all ages (Figure 4.10).

Table 4.8: Deaths and burden (DALYs) attributable to high blood cholesterol by specific cause, Australia, 2003

	Deaths		DALYs	
Specific cause	**Number**	**Per cent of total**	**Number**	**Per cent of total**
Ischaemic heart disease	13,371	10.1	138,605	5.3
Stroke	1,980	1.5	24,986	0.9
Total attributable	**15,351**	**11.6**	**163,591**	**6.2**

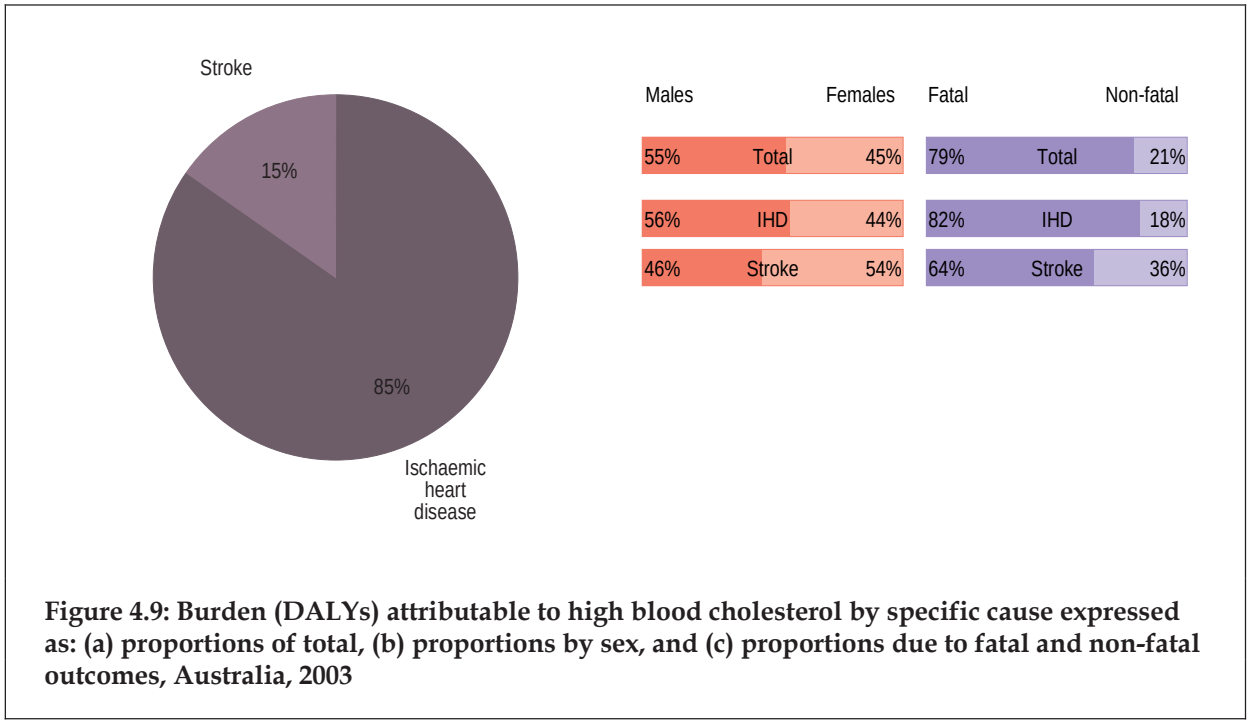

Figure 4.9: Burden (DALYs) attributable to high blood cholesterol by specific cause expressed as: (a) proportions of total, (b) proportions by sex, and (c) proportions due to fatal and non-fatal outcomes, Australia, 2003

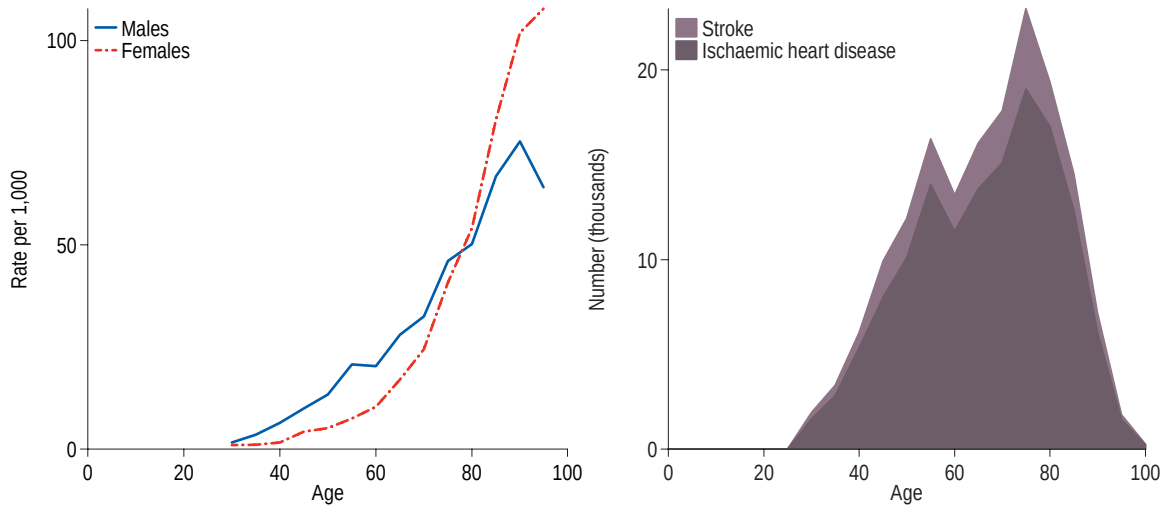

Figure 4.10: Burden (DALYs) attributable to high blood cholesterol by age expressed as: (a) rates by sex, and (b) numbers by specific cause, Australia, 2003

Alcohol

Alcohol has both hazardous and protective effects on health, and the age and sex distribution of these effects varies in important ways. Of the 14 risk factors examined, alcohol was responsible for the greatest amount of burden in males under the age of 45 (Table 4.3).

Alcohol harm was responsible for 3.2% of the total burden of disease and injury in Australia in 2003. Alcohol also prevented 0.9% per cent of the total burden in 2003 (Table 4.9). The benefits of alcohol consumption outweigh its harmful effects only in females over the age of 65. Given that the net impact of alcohol was to contribute to 2.3% of total burden, it is important to understand that, even though moderate intake of alcohol may have beneficial effects at middle and older ages, alcohol is harmful when taken in excess at all ages.

Alcohol abuse, road traffic accidents and suicide contributed two-thirds of the harm attributed to alcohol (Figure 4.11).

This study reports a substantially lower health benefit due to alcohol compared to the previous Australian burden study (AIHW: Mathers et al. 1999, AIHW: Ridolfo & Stevenson 2001) with only an estimated 2,346 deaths being prevented in 2003 compared to 7,157 deaths in 1996. This is due to the previous study underestimating the number of people who abstain from alcohol or drink less than 0.25 drinks per day.

Table 4.9: Deaths and burden (DALYs) attributable to alcohol by specific cause, Australia, 2003

	Deaths		DALYs	
Specific cause	**Number**	**Per cent of total**	**Number**	**Per cent of total**
Harm				
Alcohol abuse	918	0.7	34,116	1.3
Suicide & self-inflicted injuries	553	0.4	12,245	0.5
Road traffic accidents	396	0.3	11,121	0.4
Oesophagus cancer	368	0.3	4,594	0.2
Breast cancer	184	0.1	4,152	0.2
Other	1,012	0.8	19,207	0.7
Total attributable harm	*3,430*	*2.6*	*85,435*	*3.2*
Benefit				
Ischaemic heart disease	–1,950	–1.5	–20,659	–0.8
Stroke	–380	–0.3	–3,451	–0.1
Other	–16	0.0	–233	0.0
Total attributable benefit	*–2,346*	*–1.8*	*–24,343*	*–0.9*
Total attributable	**1,084**	**0.8**	**61,091**	**2.3**

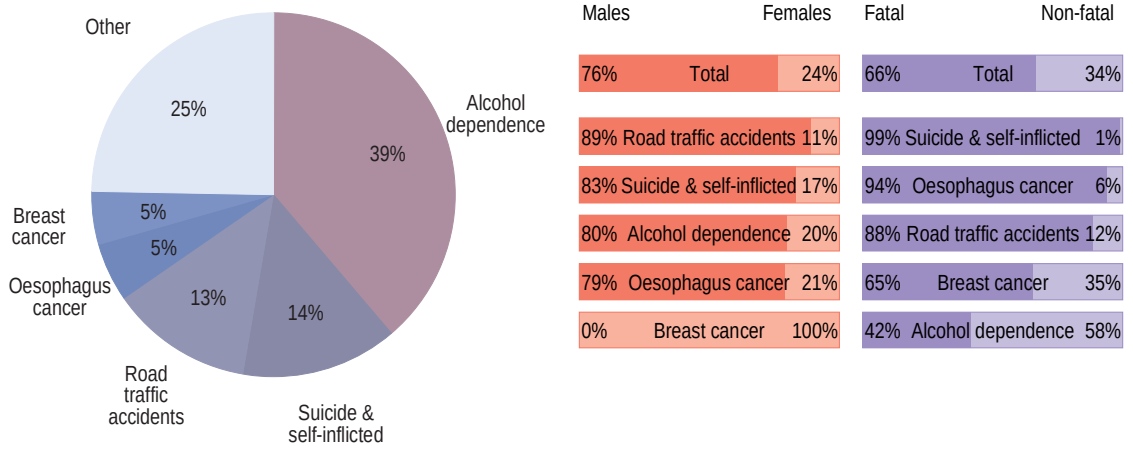

Figure 4.11: Burden (DALYs) attributable to alcohol (alcohol harm) by specific cause expressed as: (a) proportions of total, (b) proportions by sex, and (c) proportions due to fatal and non-fatal outcomes, Australia, 2003

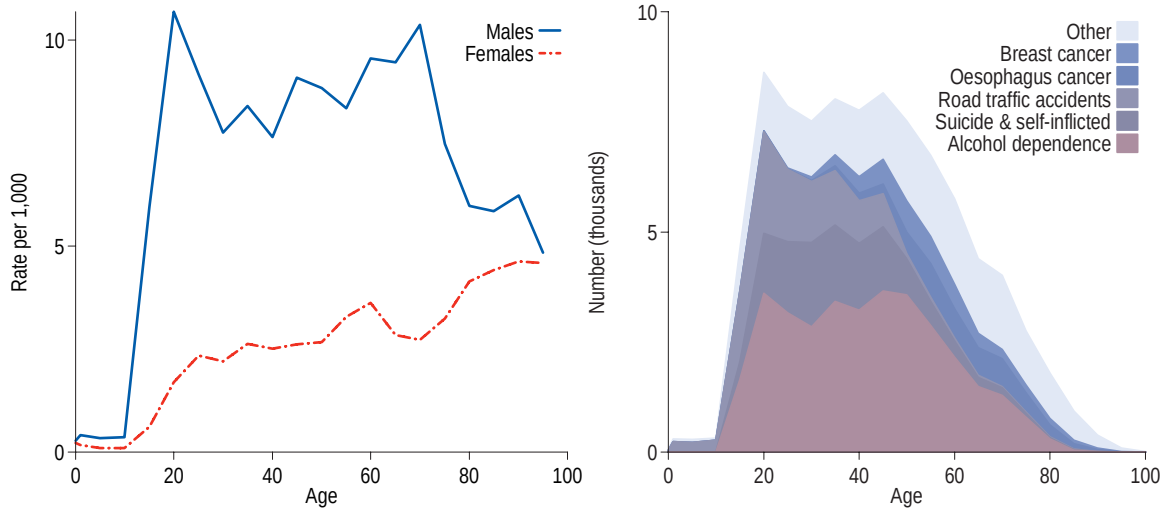

Figure 4.12: Burden (DALYs) attributable to alcohol (alcohol harm) by age expressed as: (a) rates by sex, and (b) numbers by specific cause, Australia, 2003

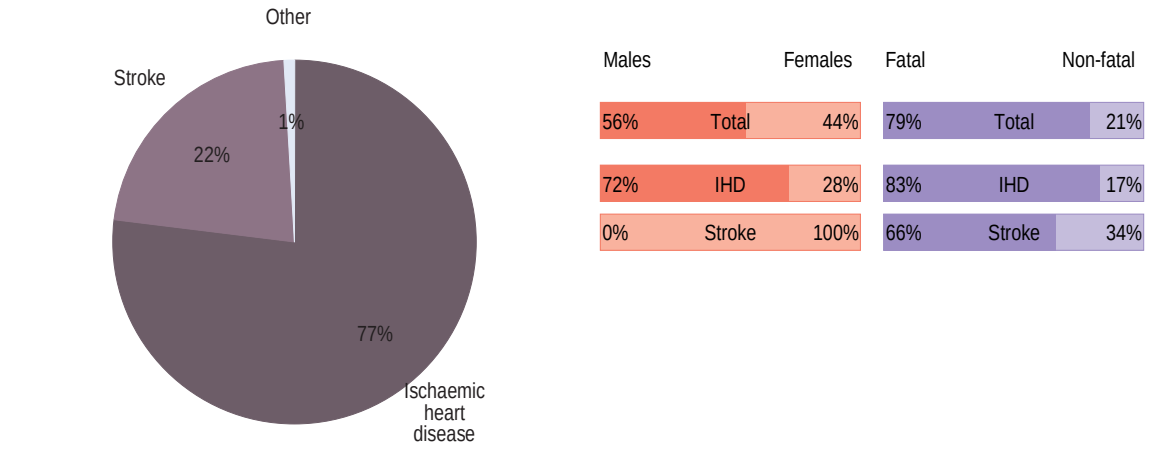

Figure 4.13: Burden (DALYs) prevented due to alcohol (alcohol benefit) by specific cause expressed as: (a) proportions of total, (b) proportions by sex, and (c) proportions due to fatal and non-fatal outcomes, Australia, 2003

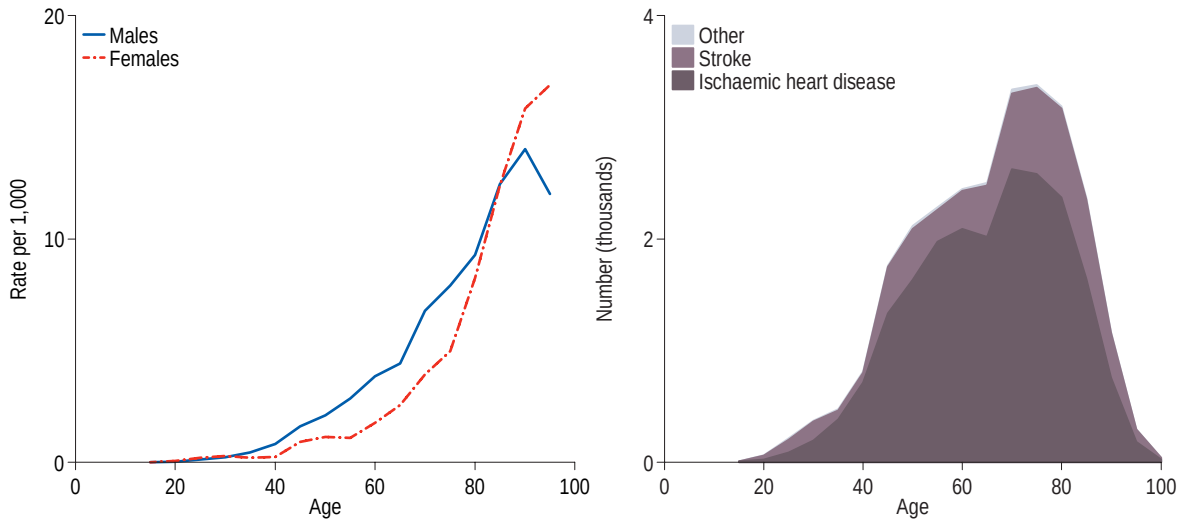

Figure 4.14: Burden (DALYs) attributable to alcohol (alcohol benefit) by age expressed as: (a) rates by sex, and (b) numbers by specific cause, Australia, 2003

Low fruit and vegetable consumption

Low fruit and vegetable consumption was responsible for 2.1% of the total burden of disease and injury in Australia in 2003 (Table 4.10). Eating enough fruit and vegetables helps to prevent cancers, ischaemic heart disease and, to a lesser extent, stroke. Sixty-nine per cent of the burden from low fruit and vegetable consumption was due to ischaemic heart disease and two-thirds was experienced by males, partly because males tend to eat less fruit and vegetables than females, but also because males have a higher burden from ischaemic heart disease than females. Overall, 81%of the burden from low fruit and vegetable consumption was due to mortality.

The absolute burden from low fruit and vegetable consumption peaked between the age of 60 and 80 while the rate per head of population continued to increase until old age. The contribution from ischaemic heart disease dominated at all ages (Figure 4.16).

Table 4.10: Deaths and burden (DALYs) attributable to low fruit and vegetable consumption by specific cause, Australia, 2003

	Deaths		DALYs	
Specific cause	**Number**	**Per cent of total**	**Number**	**Per cent of total**
Ischaemic heart disease	3,219	2.4	37,981	1.4
Stroke	605	0.5	7,346	0.3
Lung cancer	463	0.3	5,956	0.2
Other	281	0.2	3,977	0.2
Total attributable	**4,568**	**3.5**	**55,259**	**2.1**

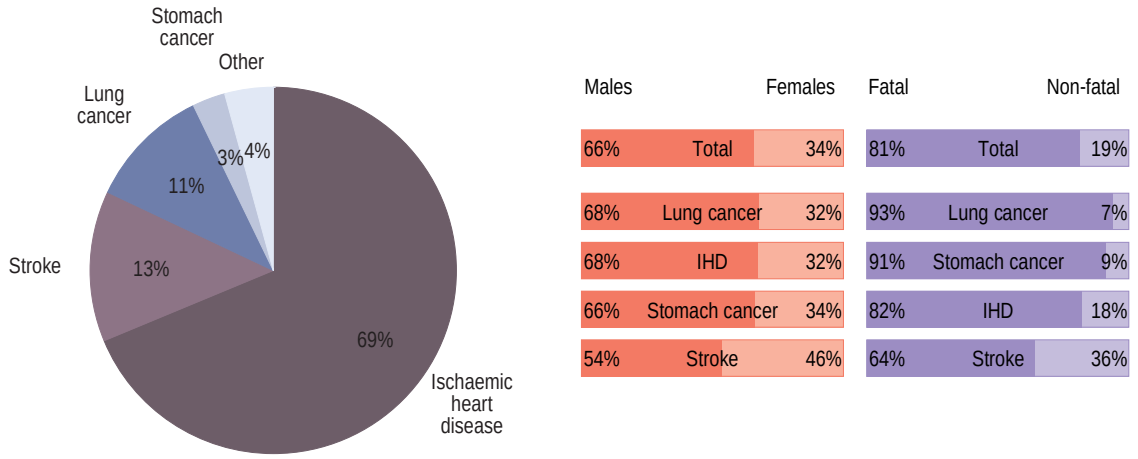

Figure 4.15: Burden (DALYs) attributable to low fruit and vegetable consumption by specific cause expressed as: (a) proportions of total, (b) proportions by sex, and (c) proportions due to fatal and non-fatal outcomes, Australia, 2003

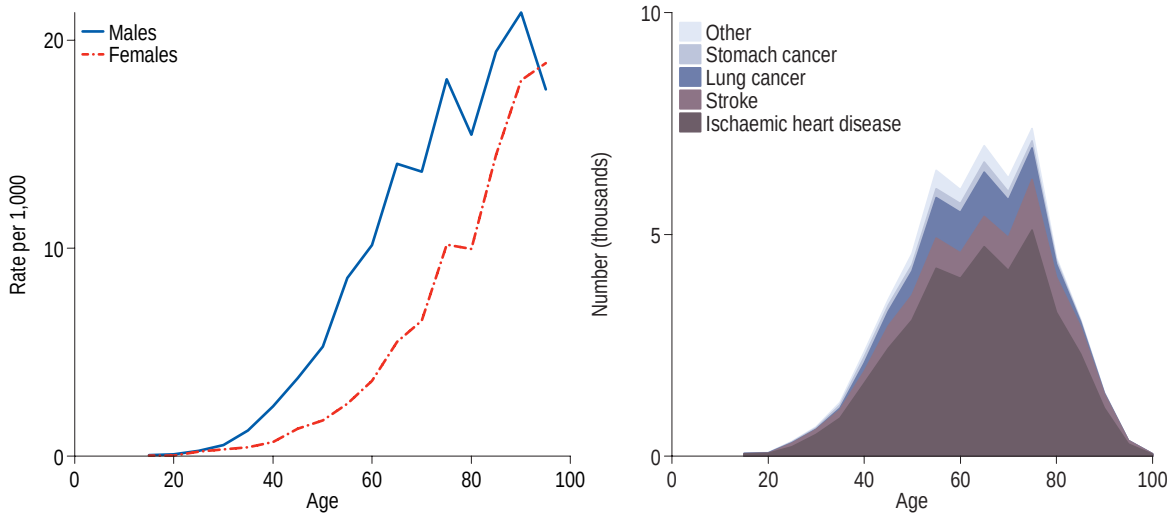

Figure 4.16: Burden (DALYs) attributable to low fruit and vegetable consumption by age expressed as: (a) rates by sex , and (b) numbers by specific cause, Australia, 2003

Illicit drugs

Illicit drugs were responsible for 2.0% of the total burden of disease and injury in Australia in 2003 (Table 4.11). Illicit drugs are a direct cause of death and disability as well as being

risk factors for conditions such as HIV/AIDS, hepatitis, low birth weight, inflammatory heart disease, poisoning, and suicide and self-inflicted injuries. Almost three-quarters of the burden from illicit drugs was experienced by males because males are more likely to both use illicit drugs and adopt drug habits that put them at risk of dying. Overall, fifty-seven per cent of the burden from illicit drugs was due to mortality (Figure 4.17).

The burden from illicit drugs, both in terms of rate per head of population and in absolute terms, peaked in early adulthood when drug addiction usually begins. The contribution from heroin dominated at this age but was overtaken by contributions from hepatitis B and C with increasing age as the long-term effects of drug use begin to manifest (Figure 4.18).

Table 4.11: Deaths and burden (DALYs) attributable to illicit drugs by specific cause, Australia, 2003

	Deaths		DALYs	
Specific cause	**Number**	**Per cent of total**	**Number**	**Per cent of total**
Heroin & polydrug abuse	263	0.2	16,758	0.6
Hepatitis C	759	0.6	11,709	0.4
Cannabis abuse	0	0.0	5,206	0.2
Suicide & self-inflicted injuries	204	0.2	4,458	0.2
Hepatitis B	329	0.2	3,637	0.1
Benzodiazepine abuse	1	0.0	2,656	0.1
Other	149	0.1	7,040	0.3
Total attributable	**1,705**	**1.3**	**51,463**	**2.0**

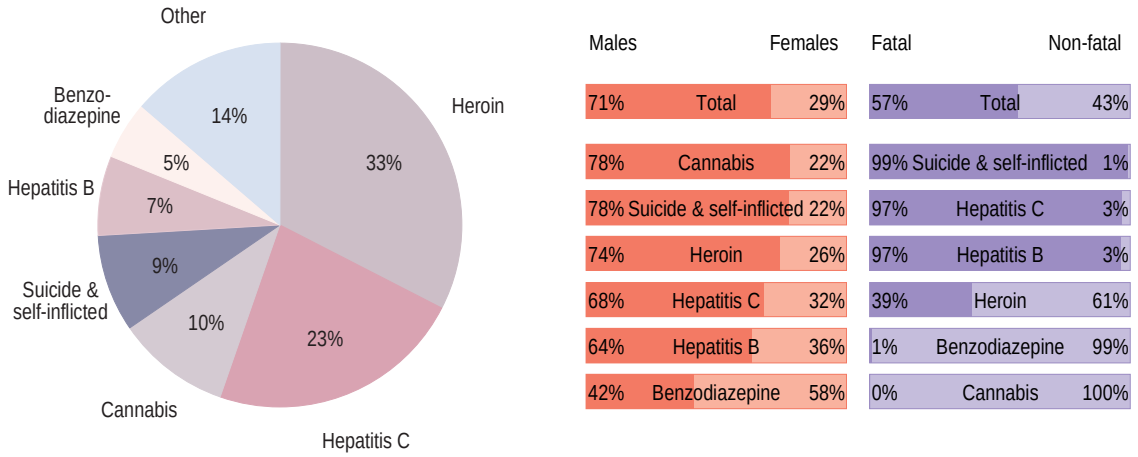

Figure 4.17: Burden (DALYs) attributable to illicit drugs by specific cause expressed as: (a) proportions of total, (b) proportions by sex, and (c) proportions due to fatal and non-fatal outcomes, Australia, 2003

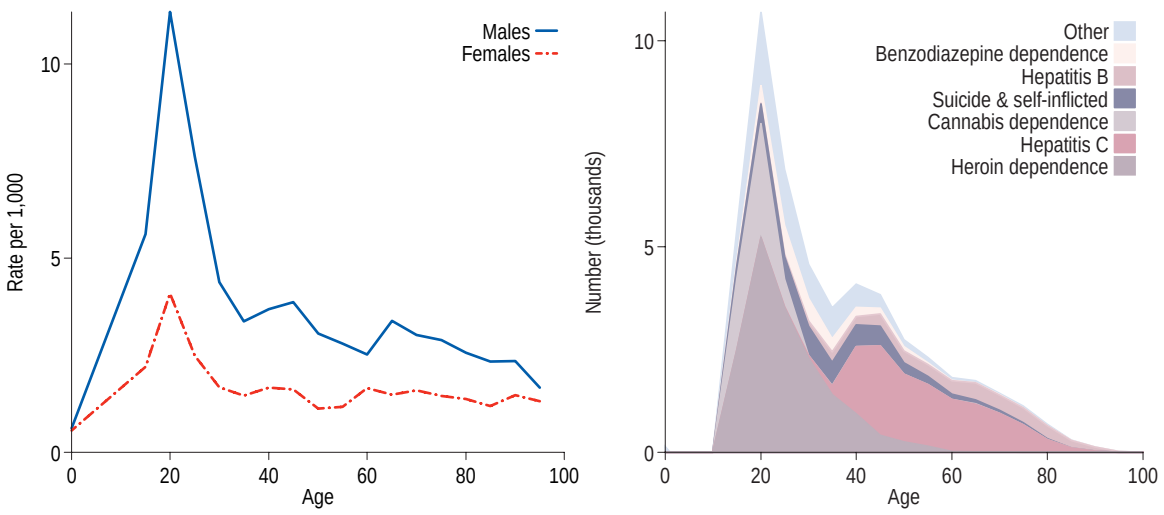

Figure 4.18: Burden (DALYs) attributable to illicit drugs by age expressed as: (a) rates by sex, and (b) numbers by specific cause, Australia, 2003

Occupational exposures and hazards

Occupational exposures and hazards were responsible for 2.0% of the total burden of disease and injury in Australia in 2003 (Table 4.12). More than two-thirds of this burden was experienced by males, mostly because occupational exposures and hazards occur in industries dominated by male employment. Females, however, experienced 86% of the burden from occupational overuse syndrome (OOS). Overall, 43% of the burden from occupational exposures and hazards was due to mortality (Figure 4.19).

The burden from occupational exposures and hazards was concentrated in the working ages and peaked in middle age, both in terms of rate per head of population and in absolute terms (Figure 4.20).

Table 4.12: Deaths and burden (DALYs) attributable to occupational exposures and hazards by specific cause, Australia, 2003

	Deaths		DALYs	
Specific cause	**Number**	**Per cent of total**	**Number**	**Per cent of total**
Cancer	1,154	0.9	15,559	0.6
Back pain	1	0.0	7,806	0.3
Occupational overuse syndrome	—	—	4,944	0.2
COPD	111	0.1	4,563	0.2
Road traffic accidents	124	0.1	2,975	0.1
Other	264	0.2	15,515	0.6
Total attributable	**1,654**	**1.3**	**51,362**	**2.0**

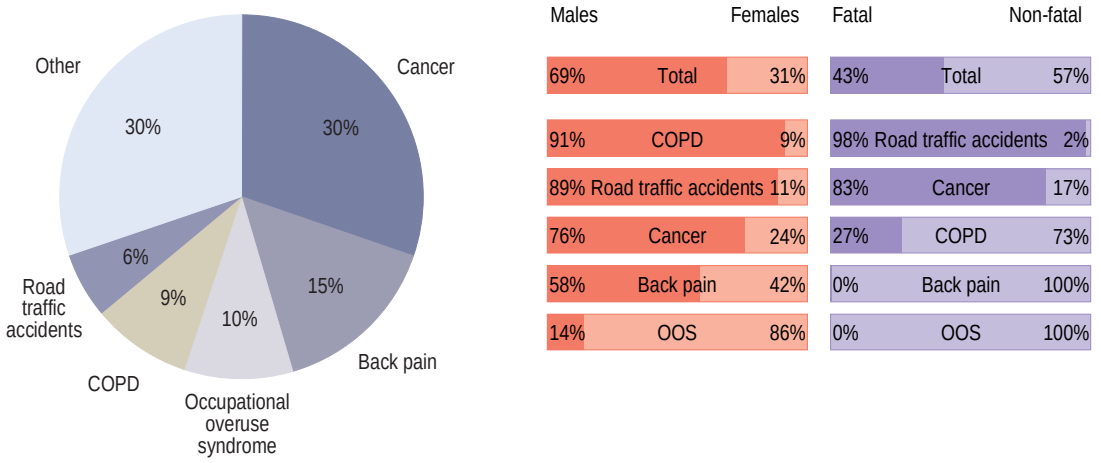

Figure 4.19: Burden (DALYs) attributable to occupational exposures and hazards by specific cause expressed as: (a) proportions of total, (b) proportions by sex, and (c) proportions due to fatal and non-fatal outcomes, Australia, 2003

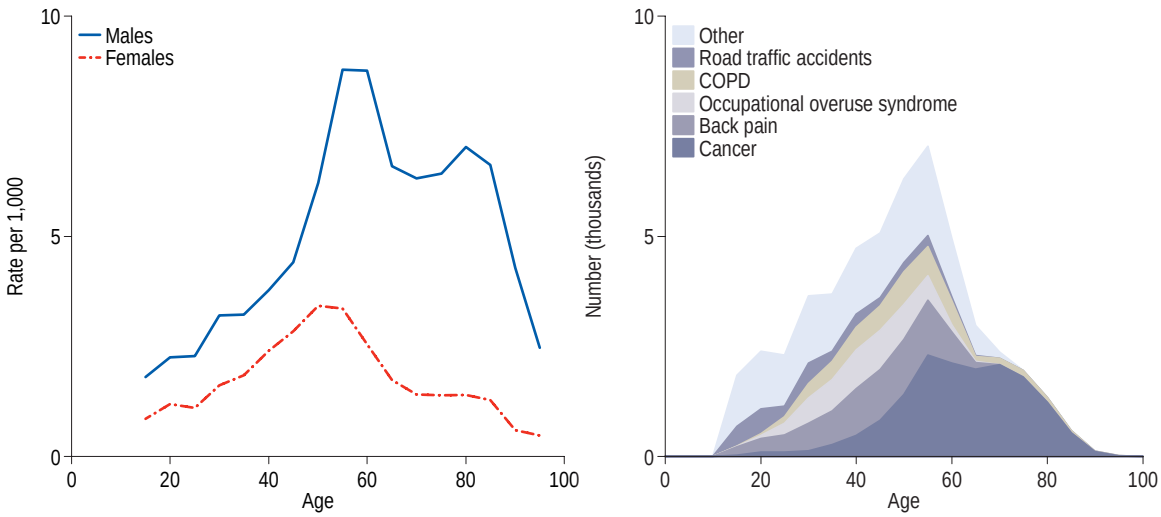

Figure 4.20: Burden (DALYs) attributable to occupational exposures and hazards by age expressed as: (a) rates by sex, and (b) numbers by specific cause, Australia, 2003

Intimate partner violence

The attribution of burden to intimate partner violence was attempted only for females due to insufficient evidence on prevalence and risk among males. While this risk is unlikely to be zero, it is probably small in comparison with the risk experienced by females. Intimate partner violence was responsible for 1.1% of the total burden of disease and injury in Australia in 2003 (Table 4.13). Of the 14 risk factors examined, intimate partner violence contributed most to the burden in females under the age of 45 (Table 4.3). Most of the burden from intimate partner violence was due to anxiety and depression, and conditions arising due to the associated increased use of tobacco, alcohol and illicit substances (Figure 4.21).

The burden from intimate partner violence, both in terms of rate per head of population and in absolute terms, peaked at around age 30 then declined with age (Figure 4.22). The contribution from anxiety and depression dominated throughout adulthood but was overtaken by contributions from tobacco-related disease with increasing age as the effects of higher smoking rates begin to manifest.

Table 4.13: Deaths and burden (DALYs) for females attributable to intimate partner violence by specific cause, Australia, 2003

	Deaths		DALYs	
Specific cause	**Number**	**Per cent of total**	**Number**	**Per cent of total**
Anxiety & depression	3	0.0	18,358	0.7
Suicide & self-inflicted injuries	131	0.1	3,099	0.1
Lung cancer	89	0.1	1,477	0.1
Homicide & violence	35	0.0	1,260	0.0
COPD	49	0.0	1,114	0.0
Other	128	0.1	4,051	0.2
Total attributable	**435**	**0.3**	**29,360**	**1.1**

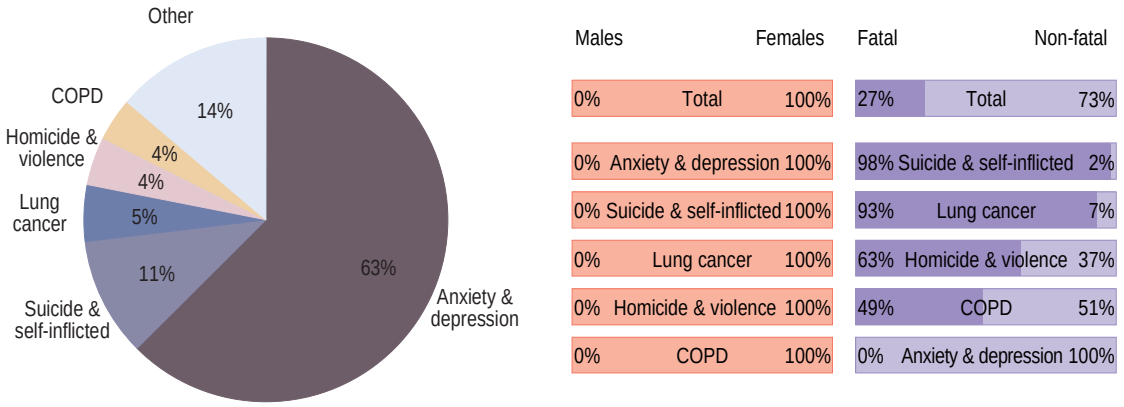

Figure 4.21: Burden (DALYs) attributable to intimate partner violence by specific cause expressed as: (a) proportions of total, (b) proportions by sex, and (c) proportions due to fatal and non-fatal outcomes, Australia, 2003

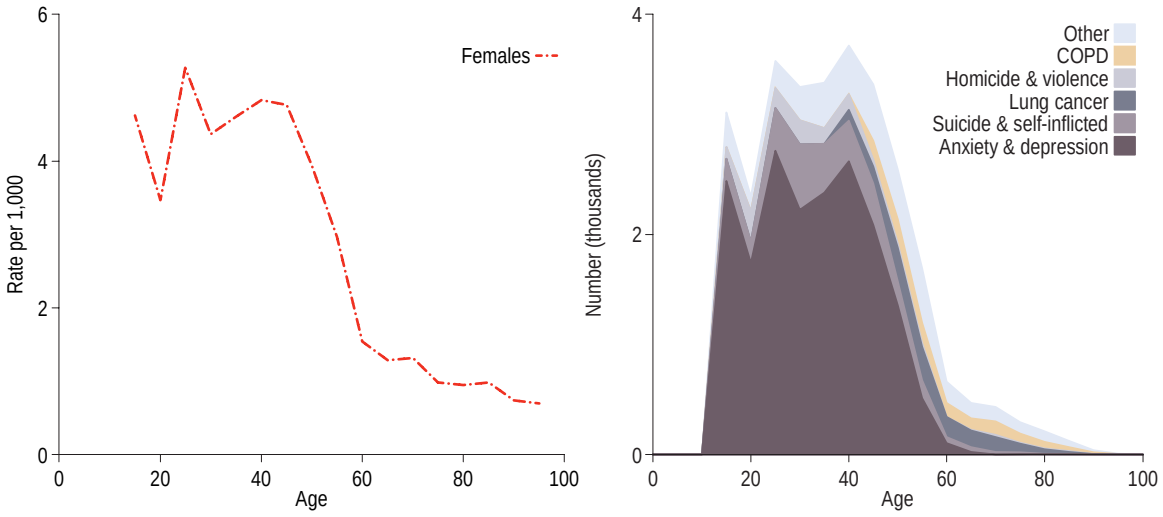

Figure 4.22: Burden (DALYs) attributable to intimate partner violence by age expressed as: (a) rates by sex, and (b) numbers by specific cause, Australia, 2003

Child sexual abuse

Child sexual abuse was responsible for 0.9% of the total burden of disease and injury in Australia in 2003 (Table 4.14). Ninety-four per cent of this burden was due to anxiety and

depression, suicide and self-inflicted injuries, and alcohol abuse. Of the 14 risk factors examined, child sexual abuse was the second leading cause of burden in females under the age of 45 (Table 4.3). Just over four-fifths of the burden from child sexual abuse was experienced by females and 14% was due to mortality (Figure 4.23).

The burden from child sexual abuse, both in terms of rate per head of population and in absolute terms, peaked at around 40 years-old then declined with age. The contribution from anxiety and depression dominated at this age after which contributions from suicide and self-inflicted injuries and alcohol abuse became increasingly important (Figure 4.24).

Table 4.14: Deaths and burden (DALYs) attributable to child sexual abuse by specific cause, Australia, 2003

	Deaths		DALYs	
Specific cause	**Number**	**Per cent of total**	**Number**	**Per cent of total**
Anxiety and depression	7	0.0	19,133	0.7
Suicide & self-inflicted injuries	103	0.1	2,258	0.1
Alcohol abuse	24	0.0	730	0.0
Other	62	0.0	1,392	0.1
Total attributable	**196**	**0.1**	**23,513**	**0.9**

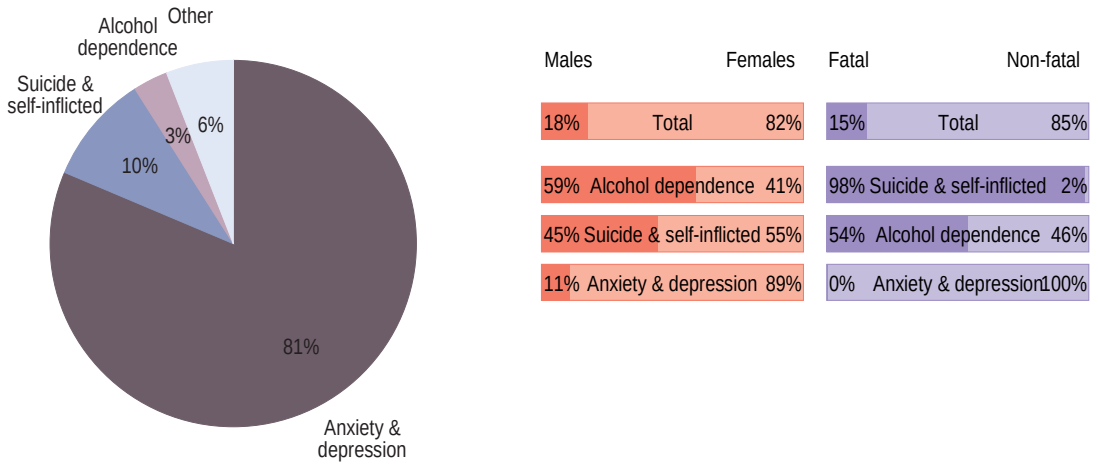

Figure 4.23: Burden (DALYs) attributable to child sexual abuse by specific cause expressed as: (a) proportions of total, (b) proportions by sex, and (c) proportions due to fatal and non-fatal outcomes, Australia, 2003

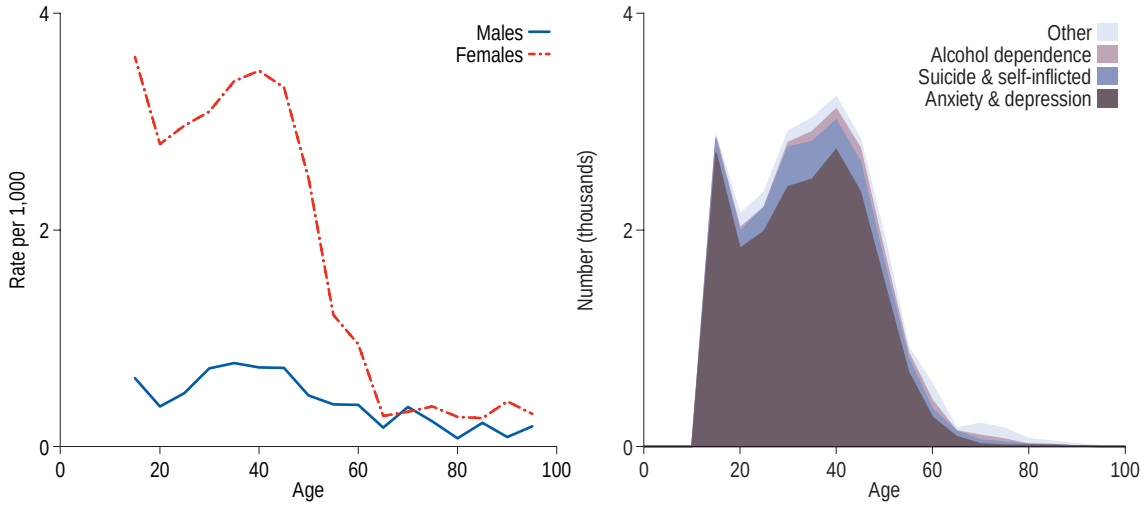

Figure 4.24: Burden (DALYs) attributable to child sexual abuse by age expressed as: (a) rates by sex, and (b) numbers by specific cause, Australia, 2003

Urban air pollution

The health effects of urban air pollution are largely chronic conditions (such as ischaemic heart disease, lung cancer and stroke) resulting from long-term exposure to this risk. There may also be an additional burden from short-term exposure to abnormally high levels of urban air pollution, although this risk is more controversial. Table 4.15 provides estimates for both long-term and short-term effects; all other figures in this section reflect the long-term effects only. Urban air pollution was responsible for 1.0% of the total burden of disease and injury in Australia in 2003 (Table 4.15). Sixty-two per cent of the burden from urban air pollution was due to cardiovascular disease (ischaemic heart disease and stroke) and 53% of the burden from urban air pollution was experienced by males. Overall, 80% of the burden from urban air pollution was due to mortality (Figure 4.25).

The absolute burden from urban air pollution peaked at age 80 while the rate per head of population continued to increase until old age. The contribution from cardiovascular disease dominated at all ages (Figure 4.26).

Table 4.15: Deaths and burden (DALYs) attributable to urban air pollution by specific cause, Australia, 2003

	Deaths		DALYs	
Specific cause	**Number**	**Per cent of total**	**Number**	**Per cent of total**
Long-term				
Ischaemic heart disease	959	0.7	8,483	0.3
Lung cancer	351	0.3	4,115	0.2
Stroke	432	0.3	3,738	0.1
COPD	184	0.1	2,654	0.1
Other	83	0.1	748	0.0
Total attributable to long-term exposure	*2,009*	*1.5*	*19,738*	*0.7*
Short-term				
Total attributable to short-term exposure	*1,046*	*0.8*	*7,781*	*0.3*
Total attributable	**3,056**	**2.3**	**27,519**	**1.0**

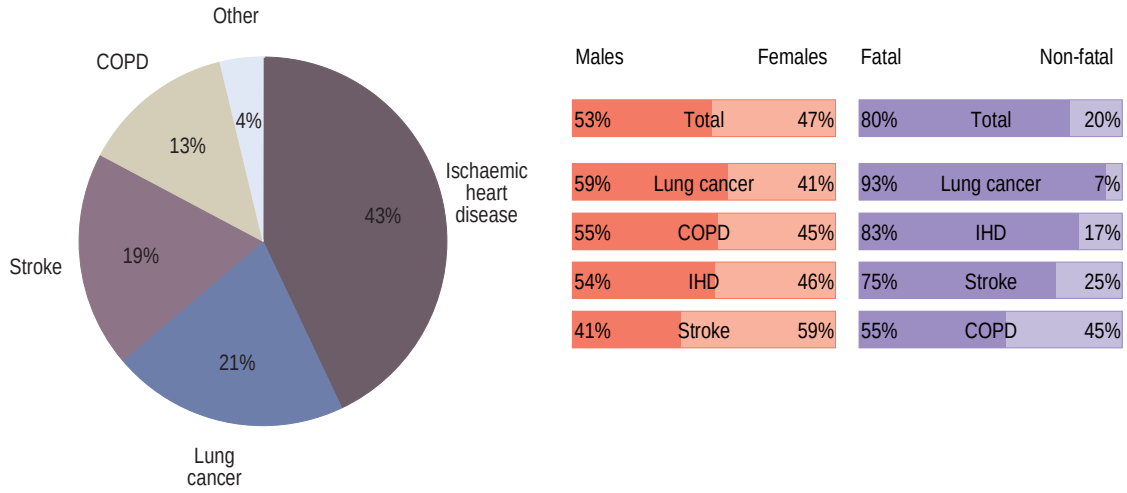

Figure 4.25: Burden (DALYs) attributable to urban air pollution (long-term effects) by specific cause expressed as: (a) proportions of total, (b) proportions by sex, and (c) proportions due to fatal and non-fatal outcomes, Australia, 2003

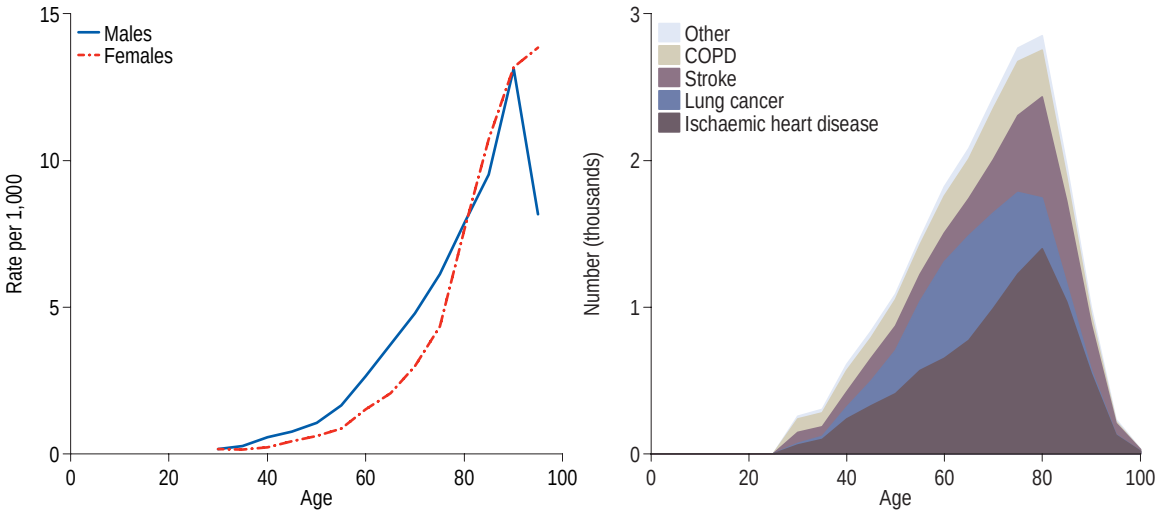

Figure 4.26: Burden (DALYs) attributable to urban air pollution (long-term effects) by age expressed as: (a) rates by sex, and (b) numbers by specific cause, Australia, 2003

Unsafe sex

Unsafe sex was responsible for 0.6% of the total burden of disease and injury in Australia in 2003 (Table 4.16). Over two-thirds of this burden was due to cervix cancer and HIV/AIDS. Sixty-three per cent of the burden from unsafe sex was due to mortality (Figure 4.27).

The burden from unsafe sex in males peaked in early adulthood due to the impact of HIV infection, after which it declined and the long-term effects of hepatitis B infection began to manifest. In females, the rate per head of population continued to increase with age and the absolute burden was concentrated around middle age when the contribution from cervix cancer dominated (Figure 4.28).

Table 4.16: Deaths and burden (DALYs) attributable to unsafe sex by specific cause, Australia, 2003

	Deaths		DALYs	
Specific cause	**Number**	**Per cent of total**	**Number**	**Per cent of total**
Cervix cancer	298	0.2	5,231	0.2
HIV/AIDS	105	0.1	4,873	0.2
Hepatitis B	225	0.2	2,499	0.1
Other	26	0.0	2,293	0.1
Total attributable	**655**	**0.5**	**14,897**	**0.6**

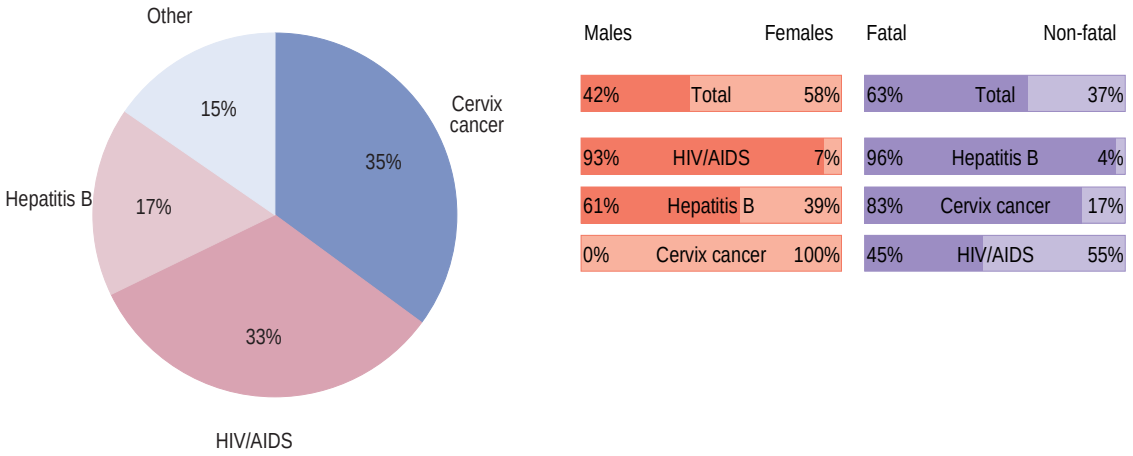

Figure 4.27: Burden (DALYs) attributable to unsafe sex by specific cause expressed as: (a) proportions of total, (b) proportions by sex, and (c) proportions due to fatal and non-fatal outcomes, Australia, 2003

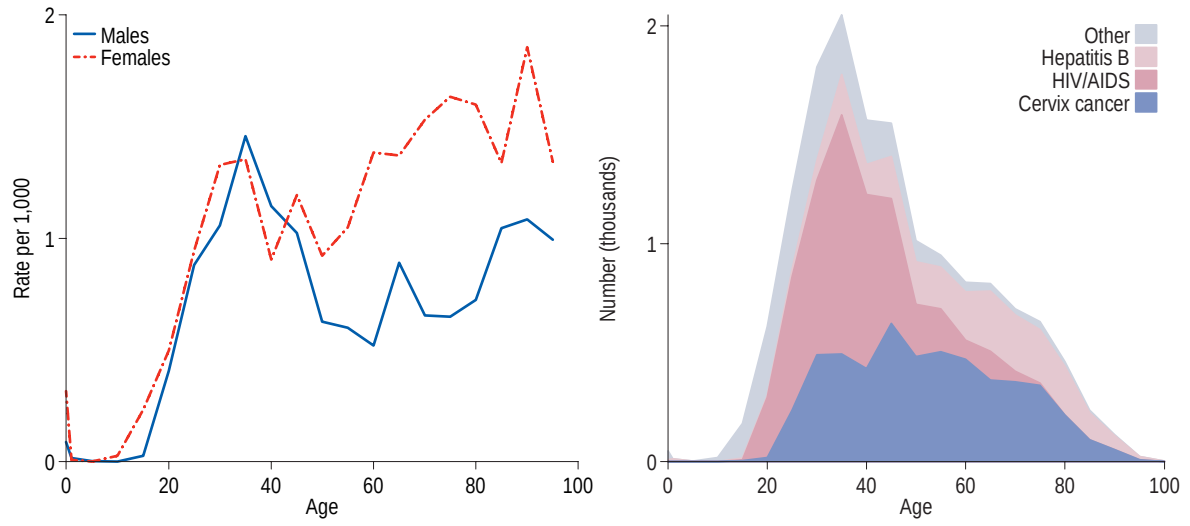

Figure 4.28: Burden (DALYs) attributable to unsafe sex by age expressed as: (a) rates by sex, and (b) numbers by specific cause, Australia, 2003

Osteoporosis

Osteoporosis was responsible for 0.2% of the total burden of disease and injury in Australia in 2003 (Table 4.17). Almost all of this burden was due to falls and more than three-quarters was experienced by females. More than half of the burden from osteoporosis was due to mortality (Figure 4.29).

The burden from osteoporosis was experienced from age 60 onwards. The contribution from falls dominated at all ages (Figure 4.30).

Table 4.17: Deaths and burden (DALYs) attributable to osteoporosis by specific cause, Australia, 2003

	Deaths		DALYs	
Specific cause	**Number**	**Per cent of total**	**Number**	**Per cent of total**
Falls	534	0.4	4,329	0.2
Other	10	0.0	58	0.0
Total attributable	**545**	**0.4**	**4,386**	**0.2**

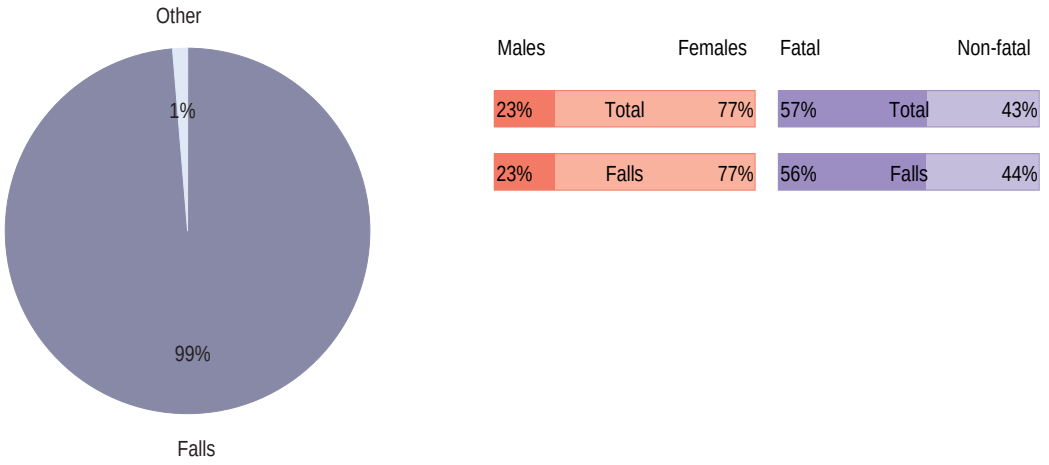

Figure 4.29: Burden (DALYs) attributable to osteoporosis by specific cause expressed as: (a) proportions of total, (b) proportions by sex, and (c) proportions due to fatal and non-fatal outcomes, Australia, 2003

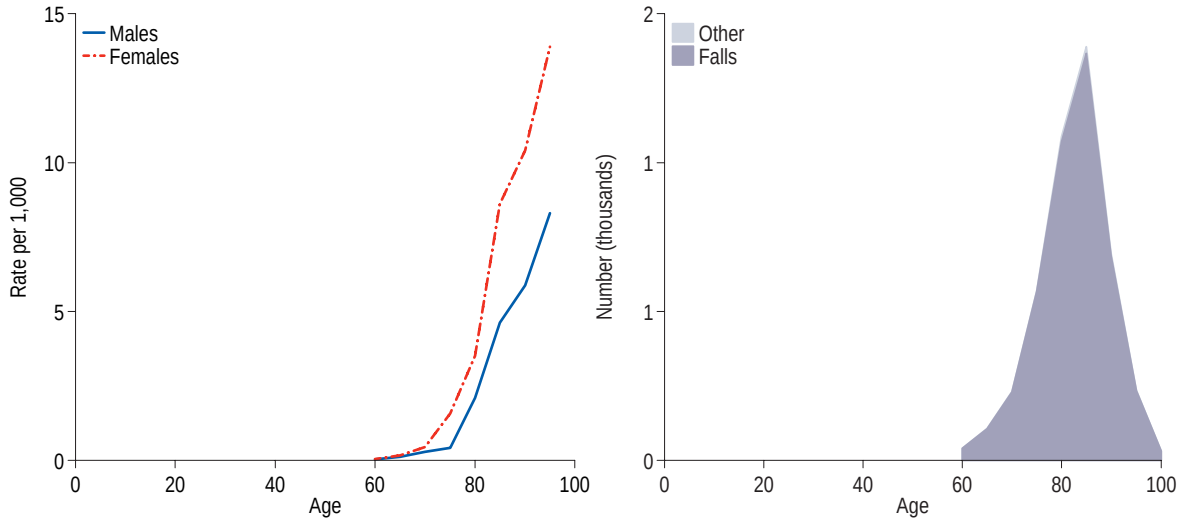

Figure 4.30: Burden (DALYs) attributable to osteoporosis by age expressed as: (a) rates by sex, and (b) numbers by specific cause, Australia, 2003