

3 Incidence, prevalence and mortality of coronary heart disease

3.1 Introduction

CHD is a major cause of morbidity and is the most common cause of sudden death in Australia, accounting for 21% of all deaths in 2000. This chapter focuses on patterns and recent trends in CHD incidence, mortality, case-fatality and prevalence; and provides a context for the analysis presented in the following chapters which will examine risk factor levels, drug treatment and patterns in treatments, outcomes and costs for people hospitalised for a heart attack.

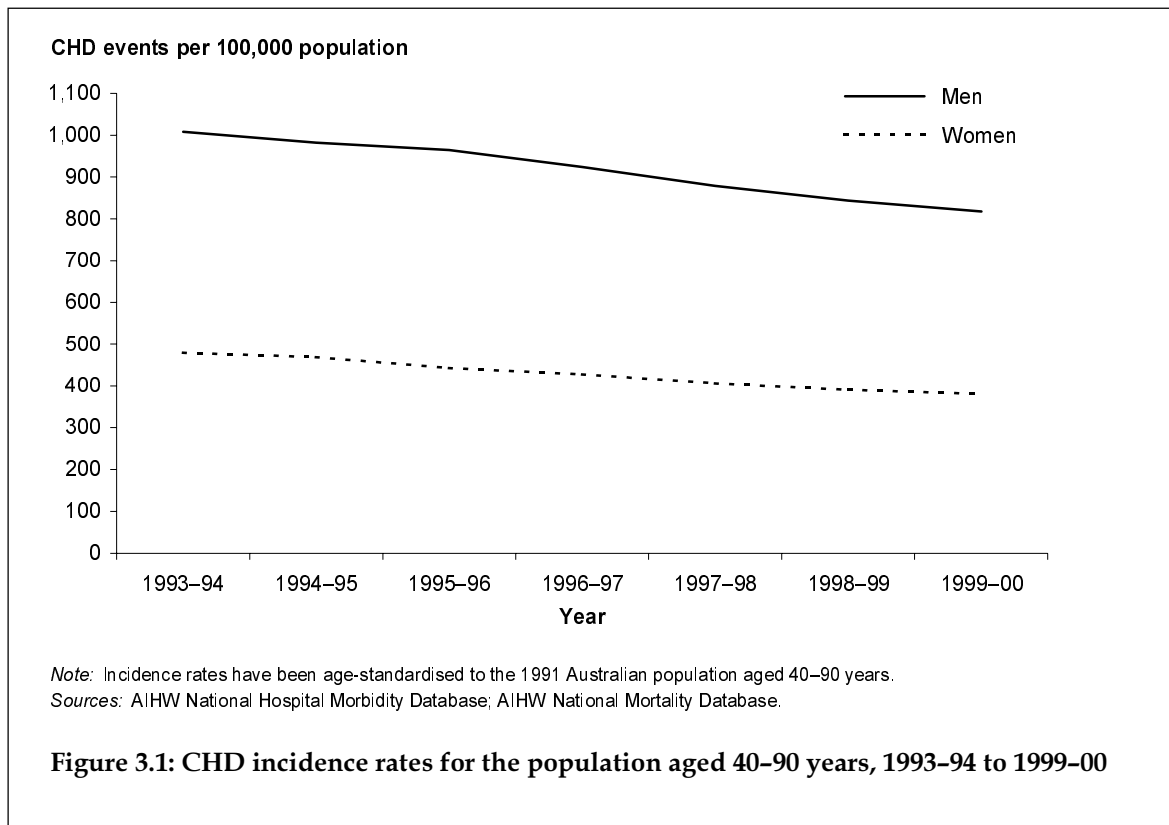
3.2 Incidence

Incidence data are an important indicator for understanding the impact of lifestyle changes and improvements in primary prevention. Since incidence data measure the rate of first occurrence of a disease in the population, they also reflect the influence or levels of factors that cause that disease. In the case of CHD, these influences are the coronary risk factors (see Section 4.2) with their well-known relationship to lifestyle, as well as the primary prevention efforts by individuals, healthcare providers, governments and other agencies.

In 1999–00, there were an estimated 48,313 CHD events in Australia among 40–90 year-olds (29,731 among men and 18,582 among women), equating to an incidence rate of 605 coronary events per 100,000 population aged 40–90 years. In this report, CHD events are defined as CHD deaths plus non-fatal hospital admissions for AMI (for further details see Chapter 2).

Recent trends

Incidence rates for CHD have been declining over the last decade, with rates falling around 20% (or 3% per year) among 40–90 year-olds between 1993–94 and 1999–00 (Figure 3.1). The actual number of CHD events among 40–90 year-olds has also been falling over this period, from 50,611 in 1993–94 to 48,313 in 1999–00. The declines occurred across and within all age groups for the population aged 40–90 years (Appendix Table A1).

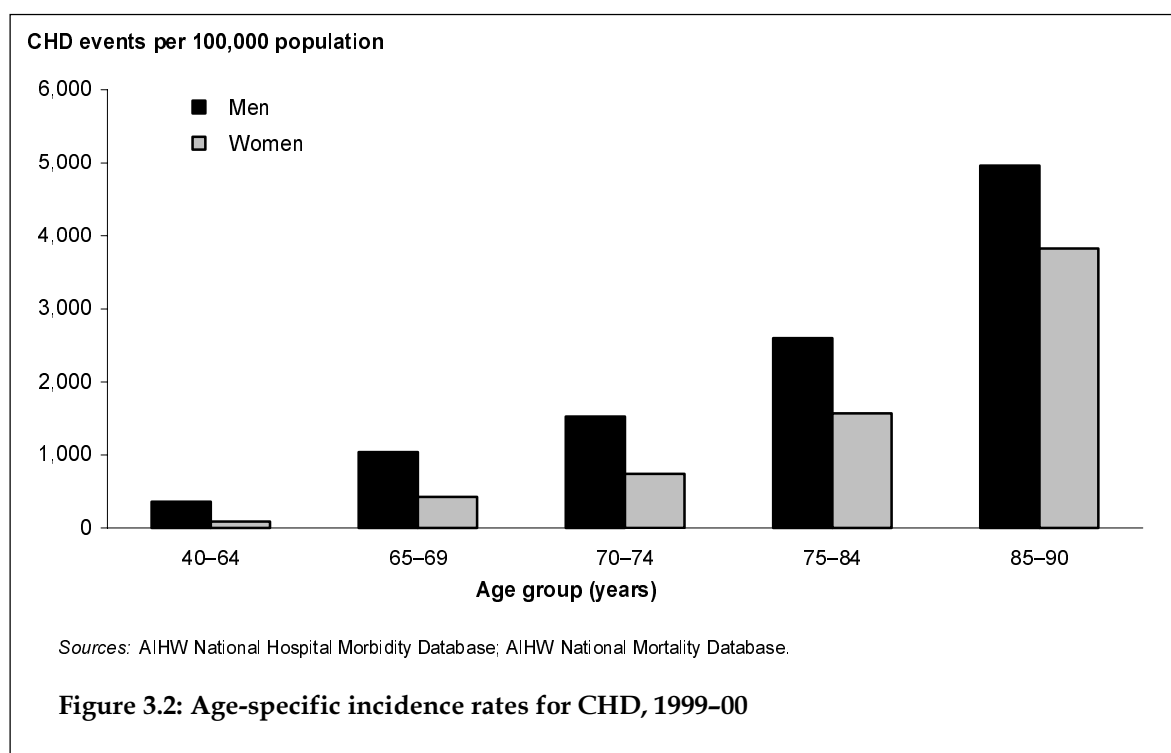


Sex and age

In 1999–00, men were twice as likely to have a coronary event as women, based on age-standardised rates. The crude incidence rate for men aged 40–90 years was 766 coronary events per 100,000 population compared with 453 coronary events per 100,000 population for women of the same age. Incidence rates were higher for men than women across all age groups (Figure 3.2).

CHD incidence rates increase dramatically with age, so that incidence rates among men aged 75–90 years in 1999–00 were eight times those of 40–64 year-olds (Figure 3.2). Among women the gap between these age groups was even greater. This pattern has remained consistent over time (Appendix Table A1).

The CHD incidence rate for women aged 75–84 years was comparable to men aged 70–74 years, indicating that men usually suffer from heart disease at a younger age than women (Figure 3.2).



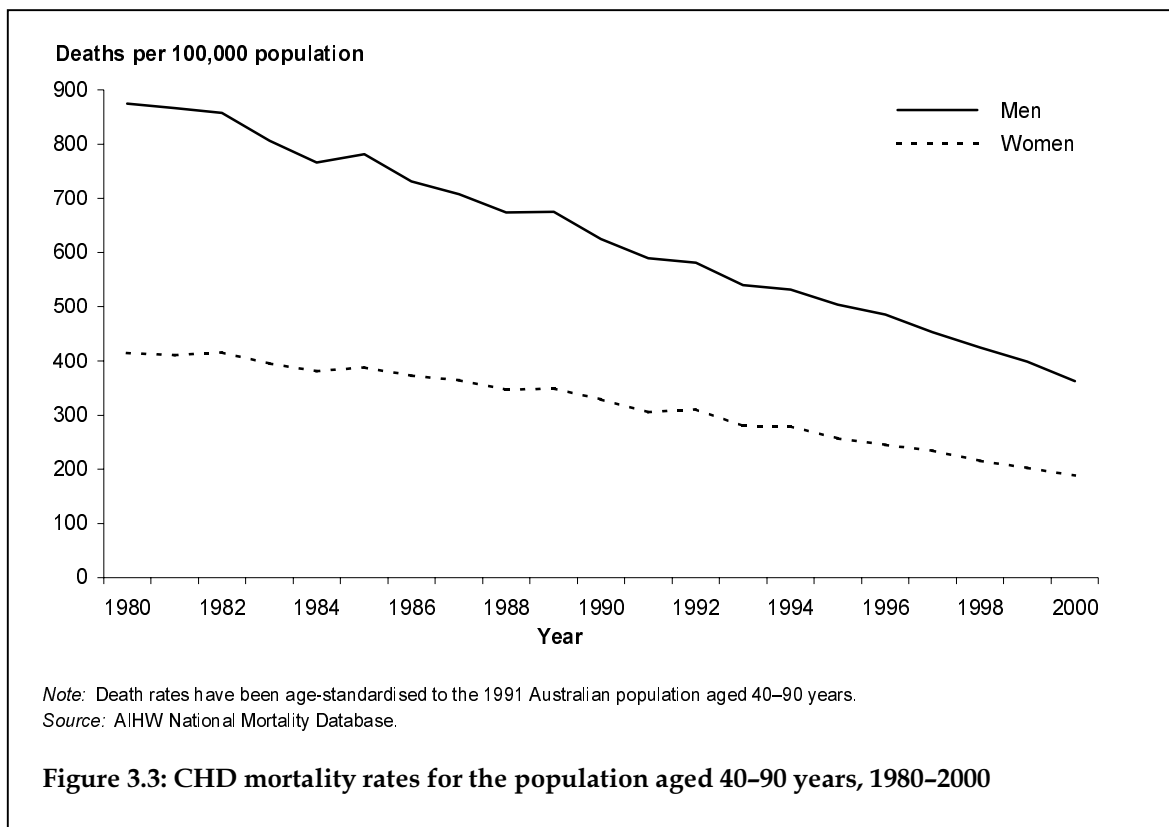
3.3 Mortality

In 2000, CHD was the largest single cause of death in Australia, accounting for 23,012 deaths, or 21% of all deaths, among 40-90 year-olds (13,034 among men and 9,978 among women). This equates to a mortality rate of 285 deaths per 100,000 population aged 40-90 years.

Trends

Over the last three decades CHD death rates have declined substantially, by over 60%. This compares with falls of around 20% in deaths from non-cardiovascular diseases. Between 1989 and 2000, death rates from CHD fell at a rate of 4.8% per year among males and 4.7% per year among females, representing a total decline of around 46% over this 12-year period (AIHW 2002a). A comparison of death rates (men and women combined) across OECD countries between 1987 and 1997 shows that Australia had one of the largest declines in CHD death rates (36% decline), together with Denmark (38%), Luxembourg (35%), New Zealand (36%) and Norway (34%). In the United States and Canada, death rates declined at a slower rate than in Australia (26% and 32% respectively) (OECD 2001).

Among the population aged 40-90 years, CHD death rates have fallen by 59% for men and 55% for women between 1980 and 2000 (Figure 3.3). The absolute number of CHD deaths among 40-90 year-olds also fell over this period from 29,510 in 1980 to 23,012 in 2000. The declines occurred across and within all age groups although the most rapid decline occurred among 40-64 year-olds, at around 71-73% over the 20-year period. The corresponding fall in death rates among 75-90 year-olds was considerably lower, at around 45-46% (Appendix Table A2).

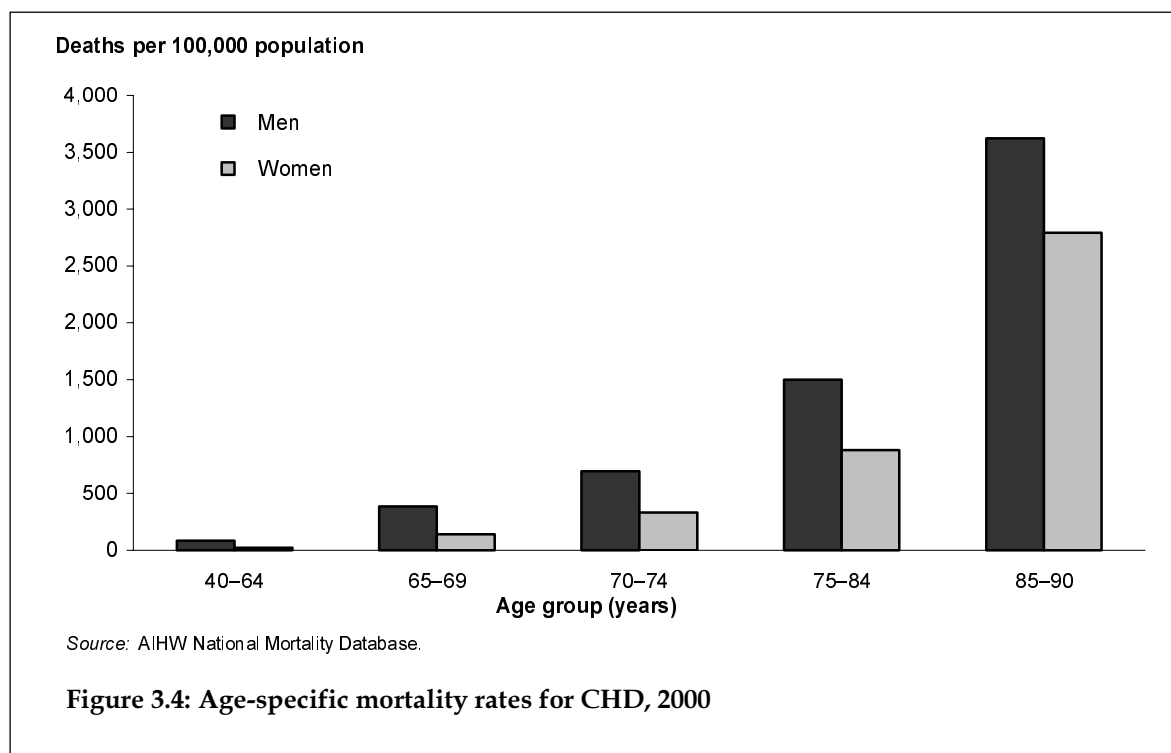


Sex and age

In 2000, CHD killed a greater number of men than women, and age-standardised death rates indicated that men aged 40–90 years were almost twice as likely to die from CHD as women of the same age. The crude mortality rate for men aged 40–90 years was 332 deaths per 100,000 population compared with 241 deaths per 100,000 population for women. The higher mortality rate among men than women has remained consistent over the last two decades (Figure 3.3 and Appendix Table A2).

Death rates for CHD increase markedly with age, with rates for 75–90 year-olds substantially higher than for 40–64 year-olds (Figure 3.4). The age gradient between the youngest and oldest age groups has become steeper over time, with the absolute difference in age-standardised death rates between the 40–64 years and 75–90 years age groups doubling over the last two decades (Appendix Table A2).

Consistent with the incidence data presented earlier, men tend to die from CHD at an earlier age than women, with death rates for men approximately the same as those for women who are five years older (Figure 3.4).



Higher burden among certain Australians

While there has been continuous decline in CHD mortality in Australia since the late 1960s, certain Australians continue to experience considerably higher death rates from CHD than other Australians, in particular Aboriginal and Torres Strait Islander peoples and people who are at a socioeconomic disadvantage. While population differentials are beyond the scope of this report, the considerably higher burden of ill health among certain groups deserves a brief mention. CHD death rates are considerably higher among Aboriginal and Torres Strait Islander peoples (6–8 times that of other Australians) and among people from lower socioeconomic groups (twice as high as those from the higher socioeconomic groups) (AIHW 2001). The lack of progress in reducing mortality among Aboriginal and Torres Strait Islander peoples and those from lower socioeconomic groups is of growing concern. *Australia's Health 2002* (AIHW 2002a) identified some of the underlying reasons for the higher burden of disease among these groups of Australians.

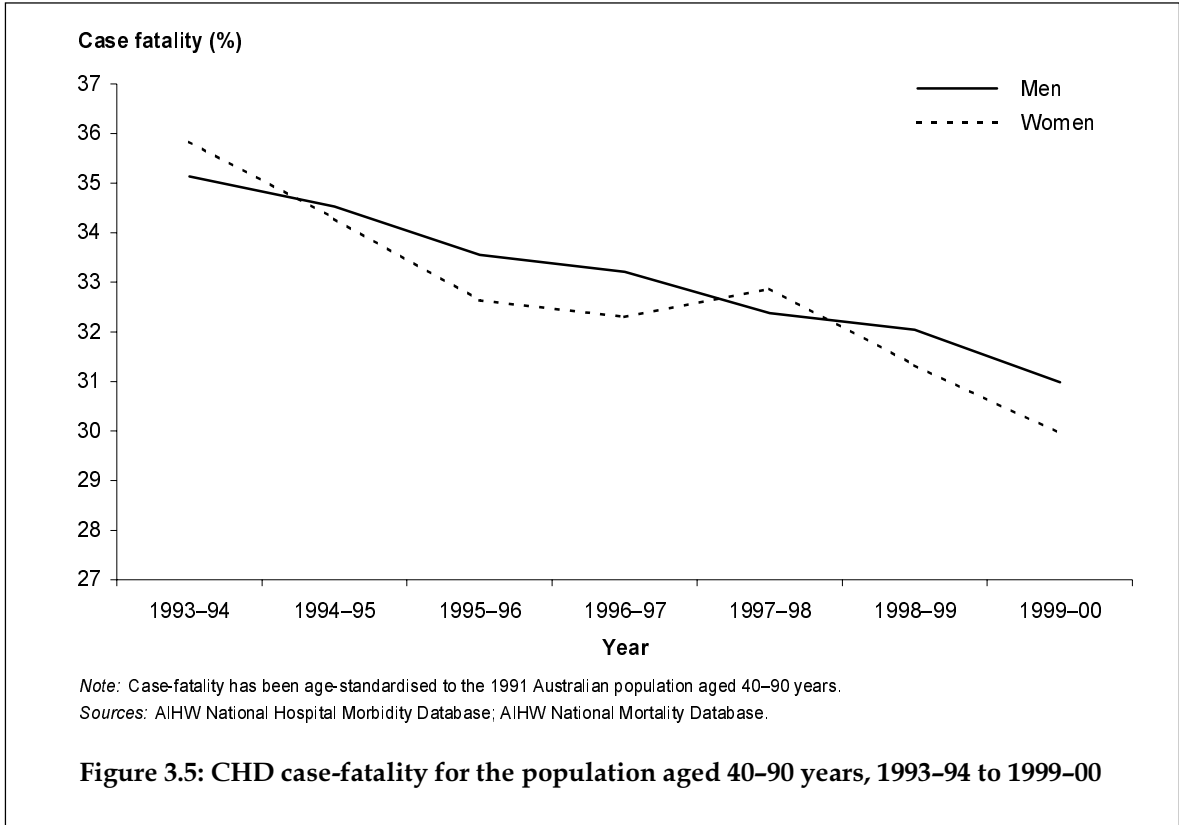
3.4 Case-fatality

This section draws together the analysis of the previous two sections by examining trends in survival after an acute event that involved an admission to hospital, and overall trends in mortality; that is, deaths that occurred in and out of hospital. The term 'case-fatality' refers to the proportion of cases that prove fatal. The definition of total case-fatality used in this report is the number of CHD deaths in the population divided by the sum of all CHD deaths and non-fatal hospital admissions for AMI.

In 1999–00, there were 48,313 CHD events in Australia among 40–90 year-olds, or 132 coronary events per day on average. Of these coronary events, almost half (23,633) were fatal and of these CHD deaths 87% occurred outside hospital. Evidence suggests that about one-quarter of those who have a heart attack die within an hour of their first-ever symptoms (AIHW 2001). Case-fatality for persons who reached hospital alive was around 15%, where case-fatality in this case is defined as number of CHD deaths occurring in hospital divided by the sum of CHD deaths in hospital and non-fatal hospital admissions for AMI.

Recent trends

Between 1993–94 and 1999–00 the age-adjusted total case-fatality rate declined significantly for men and women aged 40–90 years (decline of 12% for men and 16% for women) (Figure 3.5). The level of case-fatality for patients aged 40–90 years who reached hospital alive also fell over this period (19–20% decline in age-standardised rates). Most of the decline in total case-fatality among 40–90 year-olds was due to declines in coronary deaths, with age-standardised CHD death rates declining by 28–30% between 1993–94 and 1999–00. The rate of non-fatal AMIs declined by around 8% over this same period. Coronary deaths that occurred outside hospital were declining faster than deaths that occurred in hospital (30% decline compared with 25% decline between 1993–94 and 1999–00) (Appendix Table A3).



Sex and age

In 1999–00, case-fatality for CHD was similar for men and women aged 40–90 years, after adjusting for age. However, crude case-fatality rates were higher for women than for men (55% compared with 45%) (Table 3.1).

Case-fatality increased markedly with age, from 25% among 40–64 year-olds to 65% among 75–90 year-olds (Table 3.1). As is evident from Figure 3.6, the number of non-fatal AMIs as a proportion of CHD events decreases markedly with age.

For persons who reached hospital alive, case-fatality was higher for women than men (crude rate of 19% compared with 12%), even after adjusting for age. The age gradient between the youngest and oldest age group was even steeper than for total case-fatality with rates increasing from 5% among 40–64 year-olds to 24% among 75–90 year-olds (Table 3.1).

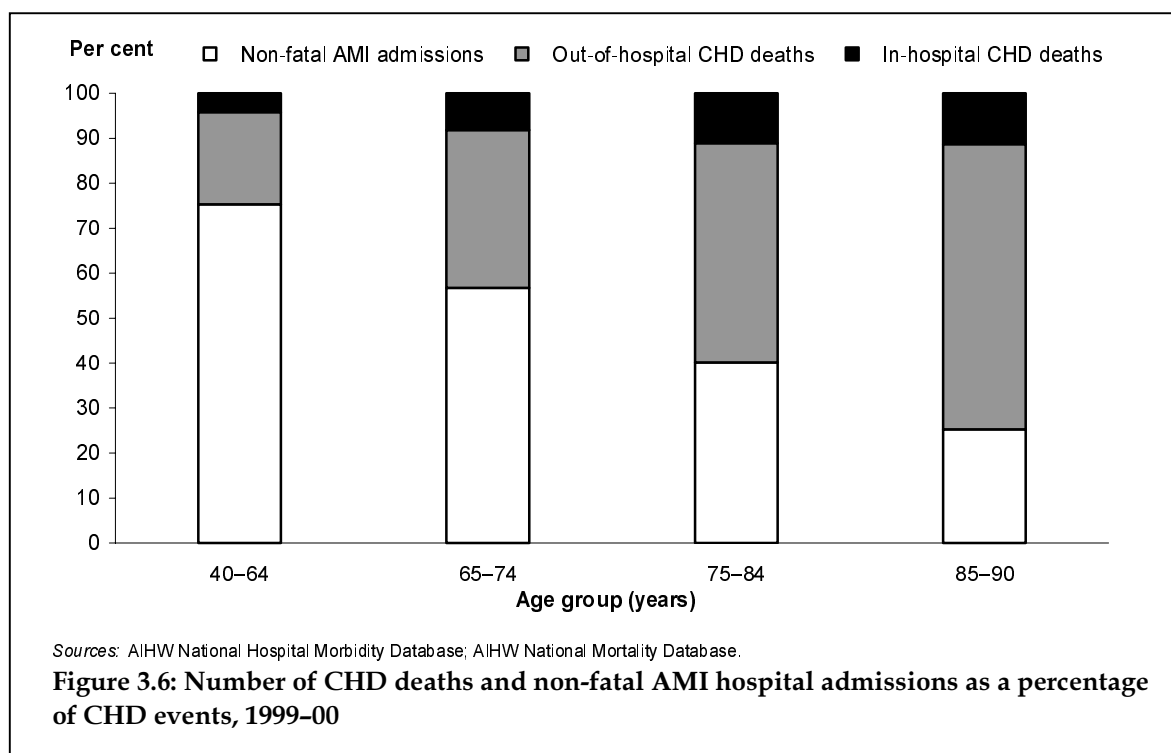
Table 3.1: CHD case-fatality by age and sex, 1999–00

| Case-fatality by age group | Men | Women | Persons |
|---|-------------|-------------|-------------|
| | Per cent | | |
| Total case-fatality | | | |
| 40–64 | 24.6 | 25.1 | 24.7 |
| 65–74 | 44.4 | 41.0 | 43.3 |
| 75–84 | 60.2 | 59.4 | 59.8 |
| 85–90 | 75.2 | 74.4 | 74.7 |
| 40–90 | 45.3 | 54.8 | 48.9 |
| Case-fatality for those admitted to hospital | | | |
| 40–64 | 4.8 | 7.3 | 5.3 |
| 65–74 | 11.5 | 14.6 | 12.6 |
| 75–84 | 21.1 | 22.4 | 21.7 |
| 85–90 | 32.8 | 29.9 | 31.0 |
| 40–90 | 12.1 | 18.7 | 14.5 |

Notes

1. Total case-fatality is defined as the number of CHD deaths in the population divided by the sum of all CHD deaths and non-fatal hospital admissions for AMI.
2. In-hospital case-fatality is defined as number of CHD deaths occurring in hospital divided by the sum of CHD deaths in hospital and non-fatal hospital admissions for AMI.

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



3.5 Prevalence

Prevalence data are of interest as they are an important indicator of the burden of the disease in the community. In the 1995 National Health Survey, 2.8% of respondents reported that they had heart disease, which would translate to 506,461 Australians.¹

Recent trends

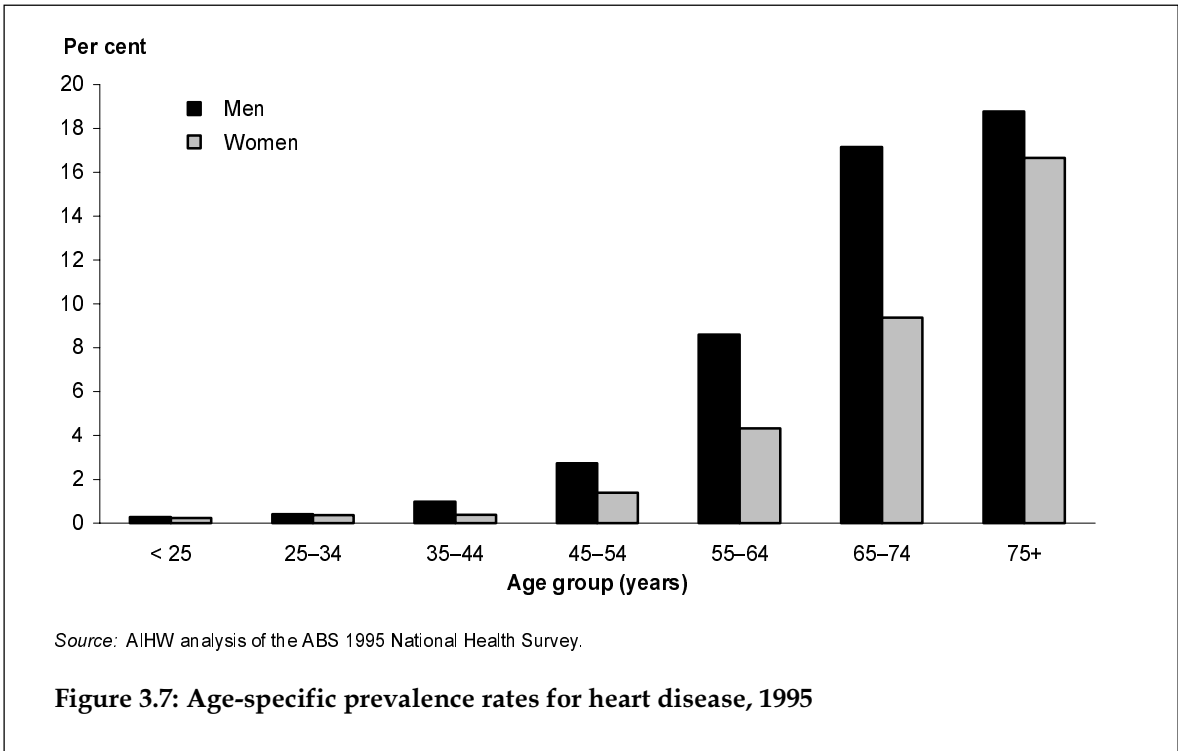
Between 1989-90 and 1995 there has been no significant change in the prevalence rate of self-reported heart disease in Australia, with age-standardised rates around 3.1-3.3% for males and 2.1-2.3% for females. Over this 6-year period, however, the estimated number of people with self-reported heart disease increased from 450,175 to 506,461, with this increase in heart disease faster than the population growth over this period (12% compared with 7%). However, great caution should be exercised when interpreting these results. Self-reported data on diseases may be subject to misinterpretation by survey respondents and influenced by changing perceptions of heart disease over time.

1. See Chapter 2 for the definition of heart disease used in the National Health Survey.

Sex and age

In 1995 more men than women reported that they had heart disease, with age-standardised rates suggesting that men were 1.6 times as likely to have heart disease as women (Figure 3.7).

The prevalence of self-reported heart disease increases rapidly with age, from less than 0.5% for people under 44 years of age to 6% for 55–64 year-olds and 17% for those aged 75 years and over (Figure 3.7). The positive age gradient and the sizeable difference between the youngest and oldest age group follow the same broad pattern as for CHD incidence and mortality.



3.6 Discussion

This chapter has highlighted the large declines in CHD incidence, mortality and case-fatality observed in Australia over the last decade. Incidence and mortality rates were also shown to be considerably higher among men than women and among older Australians.

Trends in incidence, mortality and case-fatality

Over the last decade age-adjusted incidence and mortality rates for CHD have been declining gradually each year, on average 3–5% per year among the population aged 40–90 years. Similar declines were also seen for case-fatality. There are a number of possible reasons for the declines in CHD incidence, mortality and case-fatality:

- reduced occurrence of heart attacks may be due to reduced overall levels of CHD risk factors, improved medical care for those at higher risk of heart attack, or both;
- reduced mortality from CHD may be due to the reduced occurrence of heart attacks, better survival of those who do have a heart attack, or both; and
- improved survival after a heart attack may be due to a change in the natural history of the disease, protective effects of drugs already being taken at the time of the event, better emergency care, better care after the emergency stage, or some combination of these factors.

The following chapters describe levels of risk factors and aspects of medical care. This may shed light on the possibilities suggested above. However, it should be noted that the decline in case-fatality indicates that better treatment and survival have contributed to the fall in mortality.

Sex and age

CHD incidence and mortality rates among Australians aged 40–90 years are twice as high among men as women. The prevalence of self-reported heart disease is also considerably higher among men than women. Studies in the United States have indicated that women have an average of 10–15 years more CHD-free life expectancy than men due to a later onset of disease (Mark 2000). The data presented in this chapter have also shown that men tend to die or have CHD at a younger age than women, although this gap does not appear to be as large as in the United States and tends to vary with age.

While total case-fatality for CHD was similar for men and women, of those admitted to hospital for a coronary event women were more likely to die in hospital than men. This may be due to their condition being more severe on admission to hospital, resulting from their older age, or perhaps women tend to delay more in getting to hospital, which predisposes them to a fatal event. In addition, several studies have suggested that women have a higher risk of adverse outcomes than men after coronary interventions (Mehilli et al. 2000; Maynard et al. 1992).

Heart disease prevalence, and CHD incidence and mortality rates, are substantially higher among older Australians. Given the growing number of elderly Australians, this burden may become more acute over the next few decades. The age gradient in incidence rates between 40–64 year-olds and older Australians has remained consistent since 1993–94; however, for mortality the age gradient has become steeper since 1980. This can be attributed to the substantially larger falls in death rates among 40–64 year-olds compared with those aged 75 years and over.