

Key points

- Estimates of the prevalence of current asthma among adults, based on self-report, range from 10% to 12%.
- Estimates of the prevalence of current asthma in children range from 14% to 16%, based on self-report.
- The prevalence of asthma increased during the 1980s and early-to-mid 1990s. However, in recent years there is some evidence that this trend has plateaued and may even have reversed in children.
- The prevalence of asthma in Australia is high by international standards.
- Among children, boys have a higher rate of asthma than girls. However, after teenage years, asthma is more common in women than in men.
- The prevalence of asthma is higher among Aboriginal and Torres Strait Islander women than among other Australian women. The difference is particularly apparent among women aged 35 years and over.
- Those living in the most socioeconomically disadvantaged localities do not have a substantially different prevalence of asthma compared with those in the most advantaged areas.
- Overall, the prevalence of asthma does not differ substantially among the states or territories or between major cities, inner regional areas and outer regional and remote areas.
- People from non-English-speaking backgrounds have a lower prevalence of asthma than those from English-speaking backgrounds.

Introduction

Estimating the number of people in the community who have asthma is fundamentally important in assessing the impact of asthma at a population level. It is relevant to estimating resource needs and priorities both now and in the future. Examining differences among population subgroups in the prevalence of asthma provides insights into possible causative factors and also assists in targeting resources to areas of need. Finally, examination of changes over time in the number of people who have asthma contributes to the evaluation of population-based efforts to prevent the disease and, if a rising trend is observed, may stimulate the search for an environmental or lifestyle-related cause for that rise.

In this chapter we present data on the prevalence of asthma in Australia gathered from a wide range of sources. Data on time trends, differences among population groups, and international comparisons are reported.

In interpreting the information presented in this chapter, it is important to be aware of difficulties in measuring asthma and reporting its prevalence. There is no universally applied definition for asthma. The prevalence of asthma has been estimated using a wide range of subjective, or self-reported, and objective measures, alone or in combination, in both clinical and population-based settings. Self-reported measures include doctor diagnosis of asthma—self or parent-reported (Robertson

et al. 1991; Ruffin et al. 2001); symptoms, such as wheeze (Grant et al. 1999; ISAAC 1995; Robertson et al. 1991), shortness of breath (particularly at night) (Burney et al. 1996; Woods et al. 2001), cough at night (Grant et al. 2000), and wheezing with exercise (Grant et al. 2000; Jones 1994; Ponsonby et al. 1996); and taking treatment for asthma (Burney et al. 1996).

Objective measures include measuring the twitchiness of the airways in response to inhaled stimuli (known as 'bronchial provocation challenge test') or measuring the extent to which airway narrowing can be reversed by inhaled medication (known as 'bronchodilator reversibility test') (Toelle et al. 2004); and measurement of day-to-day variability in airway narrowing ('peak flow variability') (Parameswaran et al. 1999).

This broad range of measures, all of which are relevant to asthma, has led to considerable controversy about exactly how best to identify this disease in population studies and, hence, how best to quantify the prevalence of the disease. As will be seen in this chapter, the observed variation in the prevalence of asthma owes more to the differences in definitions, than to real variation.

Over the last decade the prevalence of asthma in Australia has been measured in a range of population health surveys, including the Australian Bureau of Statistics' (ABS) National Health Survey and state and territory health surveillance programs. However, there are limited time series data available from these survey programs. Many surveys have been conducted only once, or, where there are repeated measures, the definition used to identify people with asthma has changed. There are some international studies involving Australia (Abramson et al. 1996; ISAAC 1998; Robertson et al. 1998), and there are results from studies of local populations (Haby et al. 2001; Peat et al. 1994; Toelle et al. 2004).

3.1 Prevalence of asthma

It has been estimated that 3,864,987 Australians have ever been diagnosed with asthma by a doctor (ABS 2002a). Of these, 2,199,411, or 11.6% of the population, stated that they still had asthma in 2001 (i.e. had current asthma). These estimates are based on data from the National Health Survey 2001, which is the only nationally representative, household survey in which the prevalence of asthma has been measured. In this survey 13.8% of children aged 0 to 17 years and 10.8% of adults aged 18 years and over reported current asthma.

In addition to the nationwide National Health Survey, a number of state, territory and locally-based surveys of the prevalence of asthma have been conducted (Tables 3.1, 3.2 and 3.3). There is some variation in the survey methods used, the age ranges surveyed, the sample sizes, and, most importantly, the way in which asthma was measured (see Appendix 1, Section A1.2, for a further description of asthma prevalence questions used in Australian health surveys). Hence, the data from these surveys cannot be used to compare prevalence rates among states or other population subgroups. Nevertheless, an examination of the range of values obtained in these surveys gives an idea of likely true prevalence of asthma in the population.

Among adults, the prevalence of reporting ever having been diagnosed with asthma ranges from 17% to 25%, with most estimates between 19% and 21% (Table 3.1; see also Appendix 2, Table A2.5). The prevalence of current asthma among adults has ranged from 9% to 15%, with most estimates falling between 10% and 12% (Table 3.2; see also Appendix 2, Table A2.6).

In four surveys conducted among children, estimates of the number who had ever been diagnosed with asthma ranged from 20% to 26%. Most estimates of the proportion of children with current asthma ranged between 14% and 16%, based on self-report (Table 3.3). Additional studies providing estimates of the prevalence of asthma among children have been included in Table 2.1 and Table 2.2 in Chapter 2.

Table 3.1**Prevalence of asthma ever being diagnosed by a doctor, adults, most recent health survey results, Australia, 1998–2004**

Location	Survey	Year	Age range	Rates	95% CI
Australia	(1)	2001	18 years and over	19.0%	18.3–19.6%
NSW	(2)	2004	16 years and over	20.4%	19.1–21.6%
NT	(3)	2000	18 years and over	16.8%	15.4–18.4%
Qld	(4)	2004	18 years and over	24.5%	22.7–26.3%
SA	(5)	2003–04	16 years and over	20.1%	19.1–21.2%
SA	(3)	2000	18 years and over	18.1%	16.6–19.6%
Vic	(6)	2003	18 years and over	20.4%	19.5–21.3%
Melbourne, Vic	(7)	1998	20 to 44 years	18%	17–20%
WA	(8)	2004	16 years and over	18.1%	16.9–19.4%
WA	(3)	2000	18 years and over	17.6%	16.2–19.1%

Note: Only most recent estimates were included in this table from surveys periodically repeated in the same population using the same methods (e.g. repeat state CATI health surveys).

Sources: These estimates were obtained from the following surveys and studies: (1) ABS National Health Survey 2001 (CURF); (2) NSW Adult Health Survey 2004, Centre for Epidemiology and Research, NSW Department of Health (unpublished data) 2005; (3) WANTS Health and Well-Being Survey (D'Espaignet et al. 2002; Taylor et al. 2002); (4) 2004 Queensland Omnibus Survey, Health Information Branch, Queensland Health (unpublished data) 2005; (5) South Australian Monitoring and Surveillance System, Population Research and Outcome Studies Unit, SA Department of Human Services (unpublished data), 2005; (6) Victorian Population Health Survey 2003, Victorian Department of Human Services, unpublished data, 2005; (7) ECRHS methodology (Woods et al. 2001); (8) Health and Wellbeing Surveillance System, Health Information Centre, WA Department of Health (unpublished data) 2005.

Table 3.2**Prevalence of current asthma in adults, most recent health survey results, Australia, 1998–2004**

Location	Survey	Year	Age range	Rates	95% CI
Ever doctor-diagnosed asthma AND symptoms of asthma or taken treatment for asthma in last 12 months					
NSW	(2)	2004	16 years and over	10.4%	9.5–11.4%
Qld	(4)	2004	18 years and over	15.1%	13.6–16.5%
SA	(5)	2003–04	16 years and over	14.1%	13.2–15.0%
WA	(7)	2004	16 years and over	11.0%	9.9–12.0%
Ever doctor-diagnosed asthma AND symptoms in the last 12 months					
Vic	(6)	2003	18 years and over	11.7%	10.7–12.7%
Ever doctor-diagnosed asthma plus 'Yes' to 'Do you still have/get asthma'?					
Australia	(1)	2001	18 years and over	10.8%	10.3–11.4%
SA	(8)	2001	18 years and over	8.9%	7.9–10.0%
WA	(3)	2000	18 years and over	10.8%	9.6–12.0%
SA	(3)	2000	18 years and over	12.7%	11.4–14.0%
NT	(3)	2000	18 years and over	9.8%	8.7–11.1%
SA	(9)	2001	15 years and over	12.8%	11.6–14.1%
Ever doctor-diagnosed asthma and nocturnal dyspnoea or current asthma or use of asthma medication					
NW Adelaide, SA	(10)	2000	18 years and over	11.6%	10.4–12.9%
Ever doctor-diagnosed asthma AND 'Yes' to 'Have you had asthma in the last 12 months'?					
Tas	(11)	1998	18 to 74 years	9.6%	9.2–10.0%

Note: Only most recent estimates were included in this table from surveys periodically repeated in the same population using the same methods (e.g. repeat state CATI health surveys).

Sources: These estimates were obtained from the following surveys and studies: (1) ABS National Health Survey 2001 (CURF); (2) NSW Adult Health Survey 2004, Centre for Epidemiology and Research, NSW Department of Health (unpublished data) 2005; (3) WANTS Health and Well-Being Survey (D'Espaignet et al. 2002; Taylor et al. 2002); (4) 2004 Queensland Omnibus Survey, Health Information Branch, Queensland Health (unpublished data) 2005; (5) South Australian Monitoring and Surveillance System, Population Research and Outcome Studies Unit, SA Department of Human Services (unpublished data), 2005; (6) Victorian Population Health Survey 2003, Victorian Department of Human Services, unpublished data 2005; (7) Health and Wellbeing Surveillance System, Health Information Centre, WA Department of Health (unpublished data) 2005. (8) Social, Environmental and Risk Context Information System (Gill et al. 2001); (9) South Australian Omnibus study (Wilson et al. 2003); (10) North West Adelaide Health Survey, SA Department of Human Services, 2002; (11) Healthy Communities Survey, Health and Wellbeing Outcomes Unit, Tasmanian Department of Health, 1999.

Table 3.3
Prevalence of asthma in children, most recent health survey results, Australia, 2001–2004

Location	Survey	Year	Age range	Rates	95% CI
Ever doctor-diagnosed asthma					
Australia	(1)	2001	0 to 17 years	24.8%	23.7–25.9%
NSW	(2)	2001	2 to 12 years	26.4%	25.4–27.4%
SA	(3)	2003–04	2 to 15 years	25.0%	22.6–27.4%
WA	(4)	2004	0 to 15 years	20.2%	17.2–20.8%
Ever doctor-diagnosed asthma AND symptoms of asthma or taken treatment for asthma in last 12 months					
NSW	(2)	2001	2 to 12 years	15.7%	14.7–16.8%
SA	(3)	2003–04	2 to 15 years	18.4%	16.3–20.7%
WA	(4)	2004	0 to 15 years	14.6%	12.1–17.2%
Ever doctor-diagnosed asthma AND 'Yes' to 'Do you still get asthma'?					
Australia	(1)	2001	0 to 17 years	13.8%	12.9–14.7%

Notes

1. Only most recent estimates were included in this table from surveys periodically repeated in the same population using the same methods (e.g. repeat state CATI health surveys)
2. Data from earlier surveys and other studies of asthma prevalence among children are provided in Chapter 2.

Sources: These estimates were obtained from the following surveys and studies: (1) ABS National Health Survey 2001 (CURF); (2) NSW Child Health Survey 2001, (Centre for Epidemiology and Research (NSW Department of Health) 2002); (3) South Australian Monitoring and Surveillance System, Population Research and Outcome Studies Unit, SA Department of Human Services (unpublished data) 2005; (4) Health and Wellbeing Surveillance System, Health Information Centre, WA Department of Health (unpublished data) 2005.

Time trends in the prevalence of current asthma

There are widespread reports that asthma has become more common in the last 20 years, particularly in Western nations (Burney 2002; Peat et al. 1994; Robertson et al. 1991). Some recent studies, however, suggest this trend may be levelling or decreasing (Anderson et al. 2004; Braun-Fahrlander et al. 2004; Devenny et al. 2004; Mommers et al. 2005; Robertson et al. 2004; Wong et al. 2004). However, the interpretation of these reports is complex since small differences in study methodology and definitions may confound comparisons between surveys. Furthermore, most surveys are based on self-reports of diagnosed asthma and these may be subject to changes in the tendency of doctors to apply the diagnostic label 'asthma'. Confident conclusions about time trends in the prevalence of asthma can only be made if the following criteria are met:

- Two or more studies of sufficient size have used the same survey methods and definitions for asthma, in the same survey populations separated by a period of several years.
- The observed trends are consistent across several different measures of asthma (preferably including an objective measure).
- The trends are consistent across a broad geographic region.

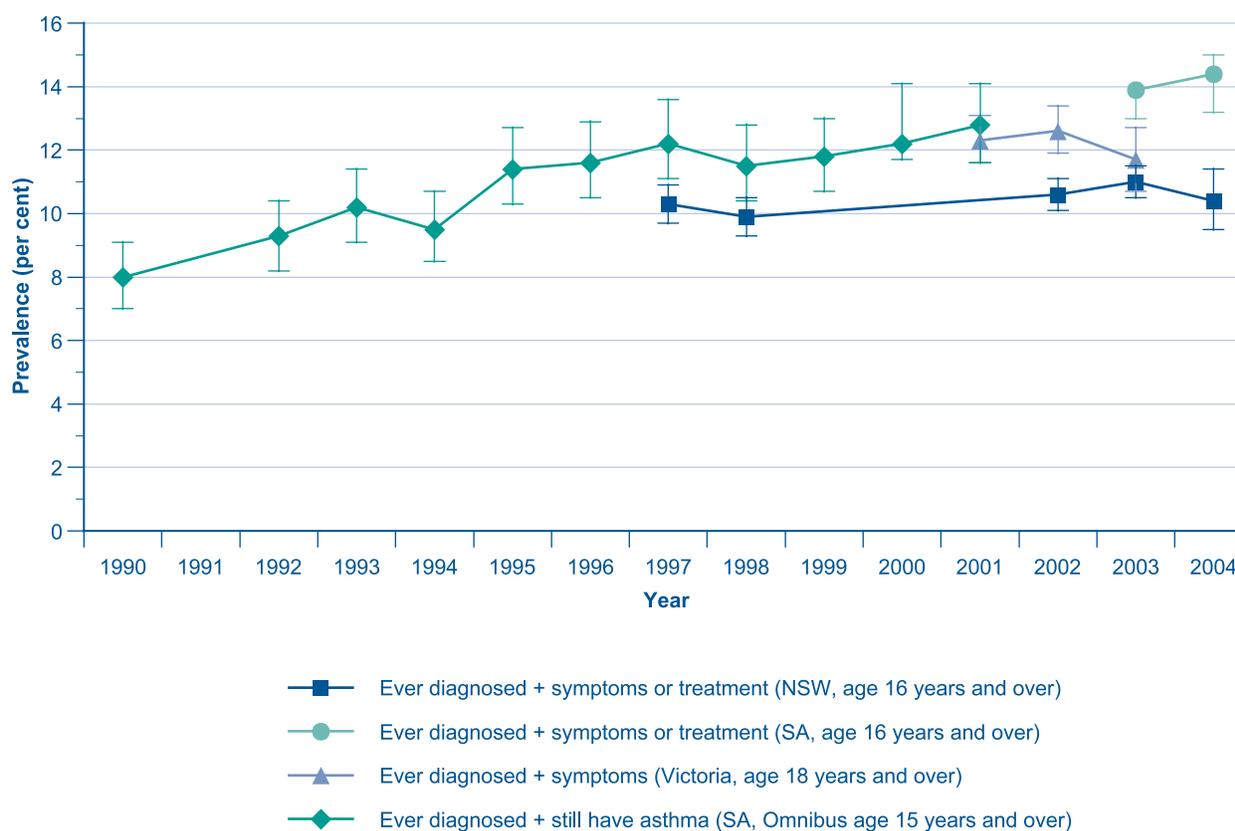
The finding of a consistent trend in one age group, for example children, does not necessarily imply that the same trend exists in other age groups.

There are some surveys that have been conducted using the same methodology in the same populations, although few have used a broad range measures of asthma and even fewer have used objective measures.

The available data on trends in the prevalence of asthma in Australia are shown in Figure 3.1 for adults and Figure 3.2 for children. In these figures, each line represents a series of surveys conducted in a single population using the same methodology, including the same measure of asthma. In some instances two measures of asthma from the same series of surveys are presented, each represented by a different line. It is important to point out that these lines should be interpreted as independent trends. The relation between the positions of these lines is difficult to interpret because it reflects methodological differences between the surveys, including the way in which asthma was measured.

There is evidence of a rising trend in the prevalence of asthma among adults since the early 1990s (Figure 3.1). This is most evident in the long series of surveys conducted in South Australia (Wilson et al. 2002). Over the more recent period, since the late 1990s, when several series are available, the prevalence of asthma appears to be stable in adults. There is also consistent evidence of a rise in the prevalence of asthma among children during the 1980s and into the early 1990s (Figure 3.2). More recent data suggest that this rising trend may have peaked.

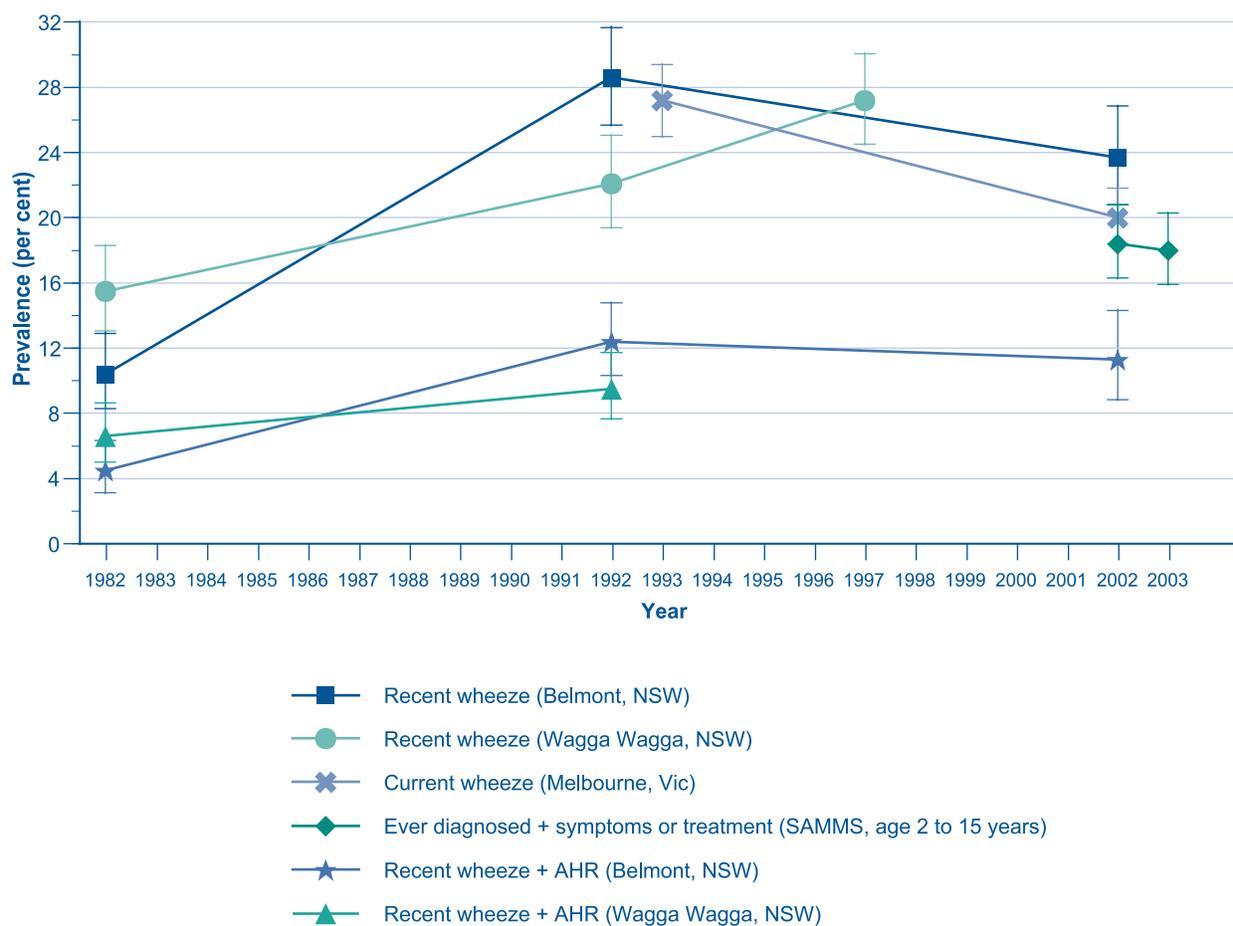
Figure 3.1
Prevalence of current asthma, adults, Australia, 1990–2004



Note: Different definitions of asthma are used. NSW: Asthma = Ever diagnosed with asthma by a doctor plus asthma symptoms or treatment in the last 12 months; SA: Asthma = Ever diagnosed with asthma by a doctor plus symptoms when didn't have a respiratory infection or treatment in the last 12 months; Victoria: Asthma = Ever diagnosed with asthma by a doctor plus asthma symptoms in the last 12 months; SA Omnibus: Asthma = ever diagnosed with asthma by a doctor plus 'Yes' to 'Do you still have asthma?'.

Sources: Victorian Department of Human Services, Population Research and Outcome Studies Unit; SA Department of Human Services; Centre for Epidemiology and Research, NSW Department of Health; Wilson et al. 2002, 2003.

Figure 3.2
Prevalence of current asthma, children aged 15 years and under, Australia, 1982–2003



Note: Different definitions are used. Recent wheeze = wheeze in the last 12 months. Recent wheeze + AHR = wheeze in the last 12 months plus airway hyperresponsiveness. Ever diagnosed + symptoms or treatment = Ever diagnosed with asthma by a doctor plus symptoms when didn't have a respiratory infection or treatment in the last 12 months.

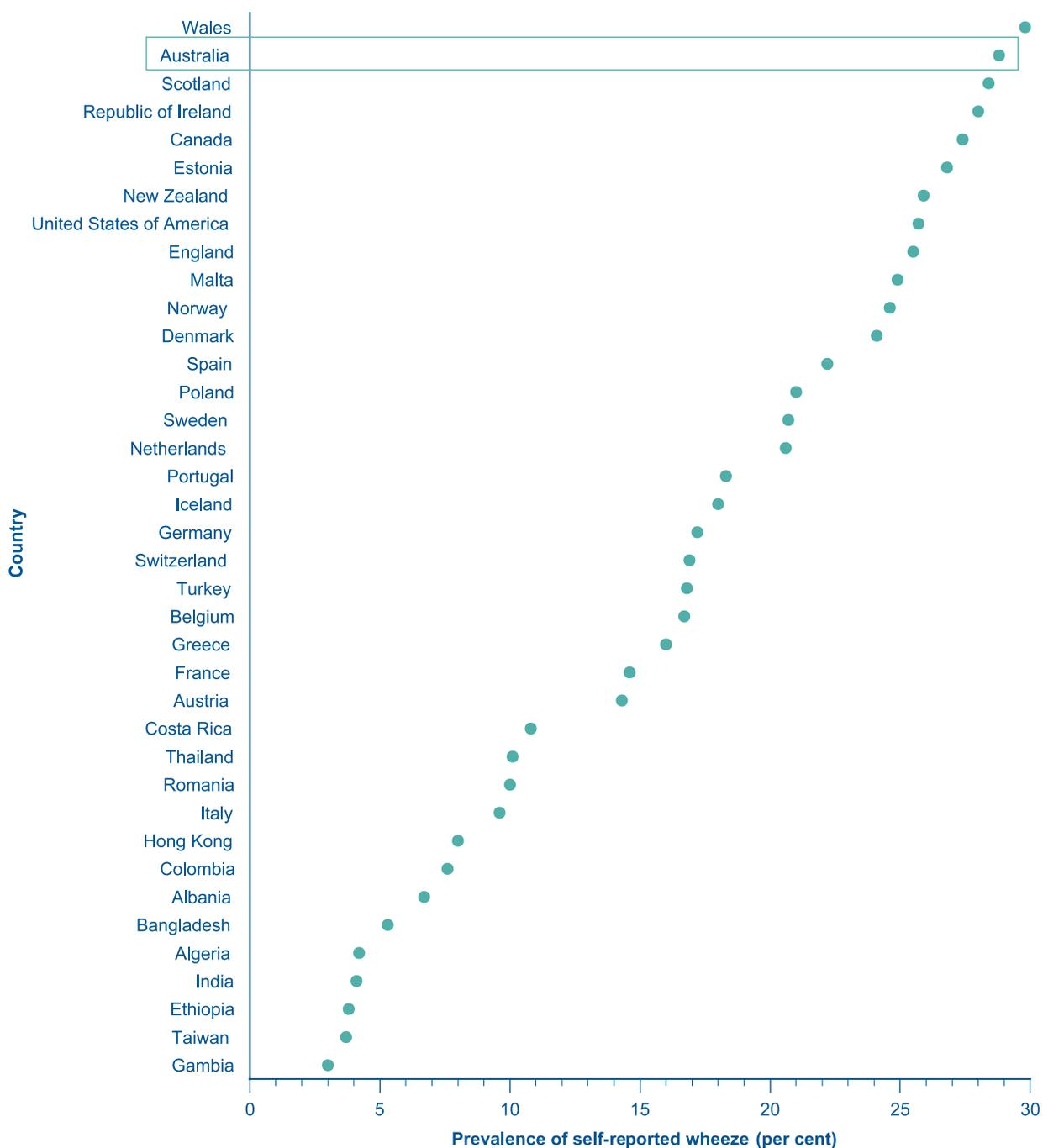
Sources: Comino et al. 1996; Downs et al. 2001; Peat et al. 1994; Toelle et al. 2004; Population Research and Outcome Studies Unit, SA Department of Human Services.

International comparisons

In assessing the burden of asthma in Australia it is useful to be able to place the prevalence of the disease in this country in an international context. The difficulties in comparing local data derived using various methods, definitions and settings are magnified substantially when attempting to make international comparisons of the prevalence of asthma. Fortunately, two large international studies, one conducted in adults (Burney 2002) and the other in children (ISAAC 1995), have applied standardised methods and definitions in an attempt to overcome these problems.

The European Community Respiratory Health Survey (ECRHS) was conducted among adults aged 20 to 44 years in 35 centres in 16 countries (Chinn et al. 1997). Melbourne was the Australian centre in this study (Abramson et al. 1996). Figure 3.3 shows the prevalence of self-reported wheeze among adults using data from the ECRHS and other comparable studies from countries not participating in ECRHS. The diagram shows that Australia had one of the highest prevalence rates of reported wheeze in the last 12 months among the 41 countries studied. The prevalence of self-reported wheeze among 13 to 14 year old children was also high in Australia compared with most other countries participating in ISAAC (see Figure 2.1).

Figure 3.3
World ranking for the percentage of adults with self-reported wheeze in previous 12 months, people aged 20 to 44 years



Source: GINA 2004. Copyright Global Initiative for Asthma (GINA). Reproduced with permission.

Differentials in the prevalence of current asthma

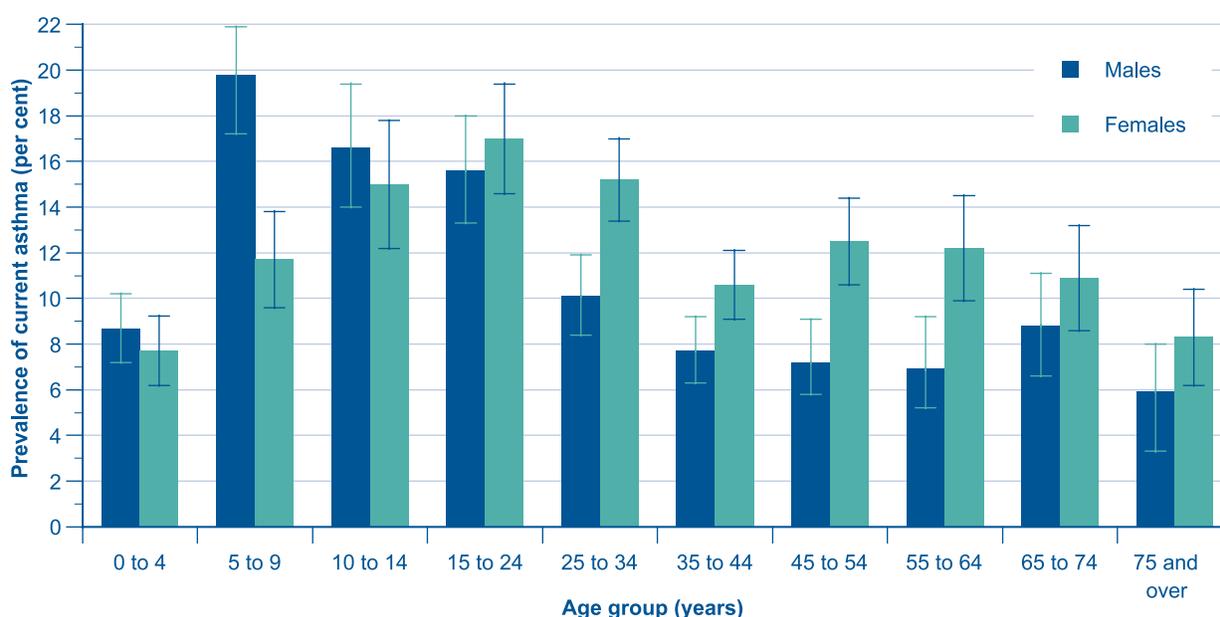
In this section we report on population differentials in the prevalence of asthma in Australia, using data from the ABS National Health Survey 2001. Subjects were classified as having current asthma if they reported ever being diagnosed with asthma by a doctor and still getting asthma.

Age and sex

The prevalence of current asthma in males was highest in the 5 to 9 years age group, whereas in females it was highest in 15 to 24 year olds (Figure 3.4). The prevalence of asthma was also high in both males and females aged 10 to 14 years and males 15 to 24 years.

The prevalence of asthma was higher in males than females among persons aged less than 15 years, especially in those aged 5 to 9 years. In contrast, the prevalence of asthma was higher in females than in males among persons aged 15 years and over, particularly among those aged 25 to 64 years.

Figure 3.4
Prevalence of current asthma, by age and sex, Australia, 2001

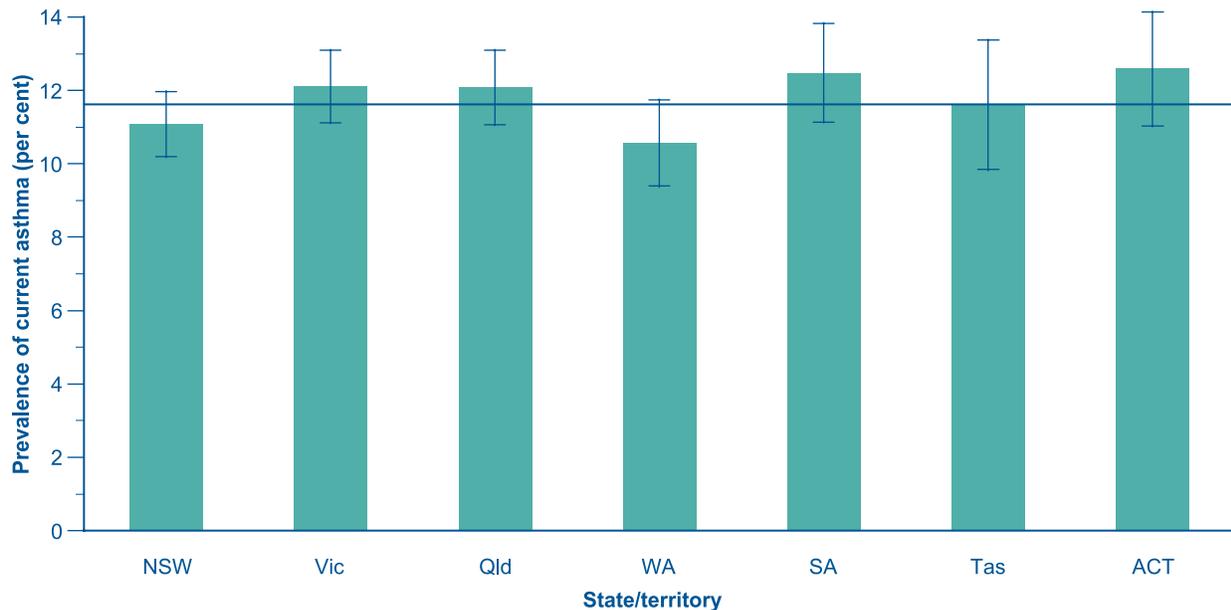


Source: ABS National Health Survey 2001.

States and territories

The prevalence of asthma did not differ significantly from the national average in any of the states or territories (Figure 3.5).

Figure 3.5
Prevalence of current asthma, by state and territory, all ages, Australia, 2001



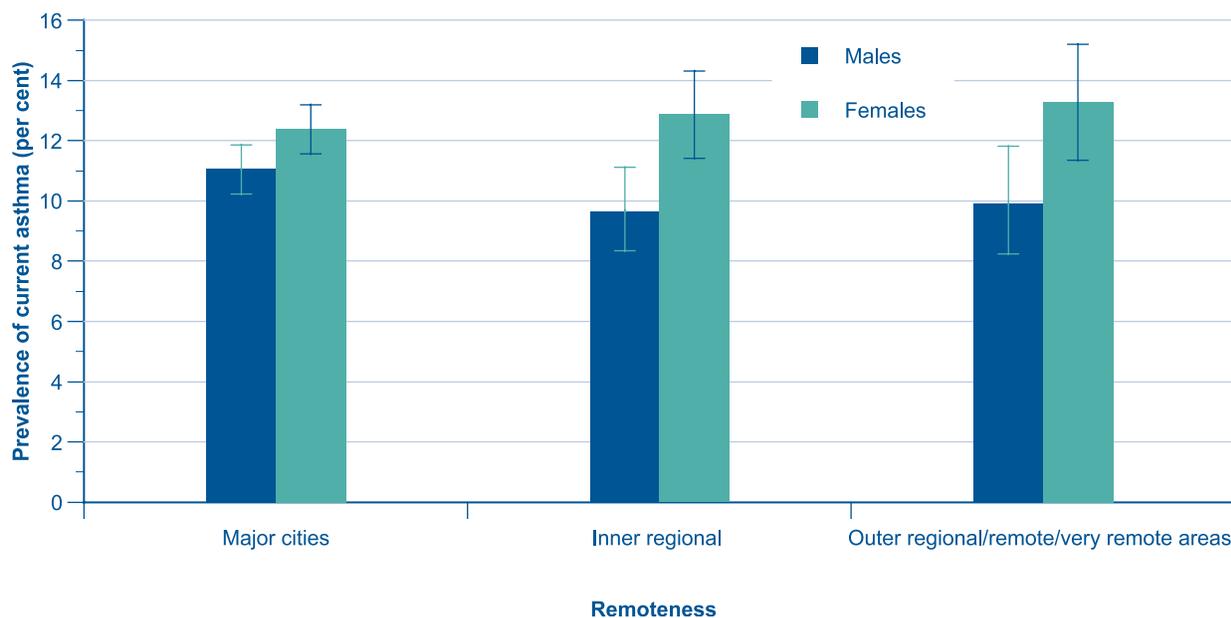
Note: Horizontal line represents prevalence of current asthma in Australia (11.6%). Northern Territory excluded as the numbers are too small to produce reliable estimates.

Source: ABS National Health Survey 2001.

Urban, rural and remote areas

Overall, the prevalence of asthma did not differ substantially between major cities, inner regional areas and outer regional and remote areas (Figure 3.6). The excess prevalence of asthma among females was greater in inner regional and outer regional and remote areas than in major cities.

Figure 3.6
Prevalence of current asthma, by sex and remoteness, all ages, Australia, 2001



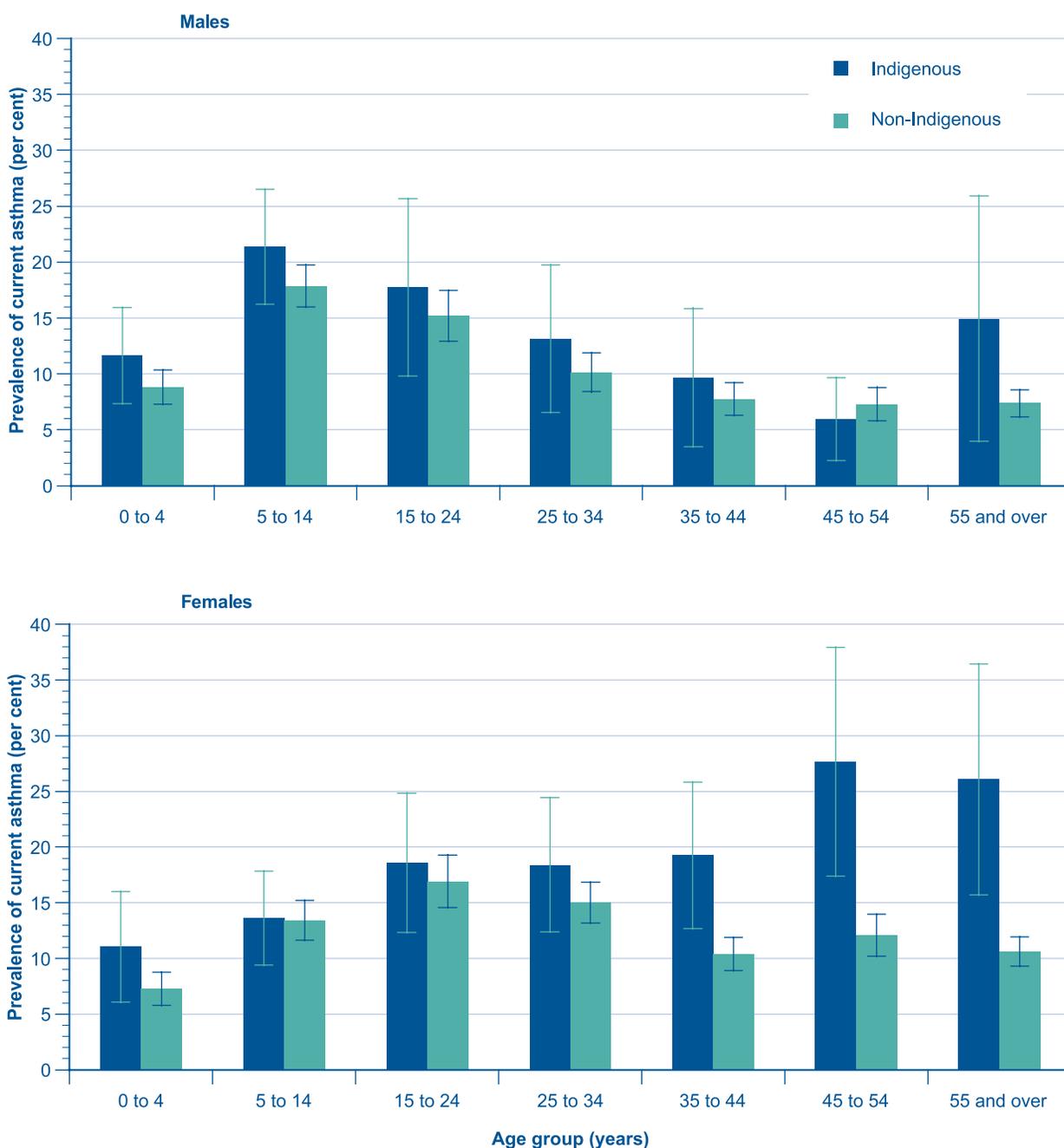
Note: Remoteness classified according to the Australian Standard Geographical Classification (ASGC) categories of remoteness.

Source: ABS National Health Survey 2001.

Aboriginal and Torres Strait Islander Australians

Data from the National Health Survey and the Indigenous National Health Survey 2001 (see Appendix 1, Section A1.6.2) show that the prevalence of current asthma was significantly higher among adult Aboriginal and Torres Strait Islander women than among other Australian women ($p < 0.001$; Figure 3.7). However, the prevalence of asthma was similar among Aboriginal and Torres Strait Islander men and other Australian men also and among children of both groups. The prevalence of ever having doctor-diagnosed asthma and the prevalence of wheeze in the last 12 months were also higher in the Indigenous Australian population (data not shown). Among Aboriginal and Torres Strait Islander adults, the prevalence of asthma was much higher among females than males. In fact, among Aboriginal and Torres Strait Islander women, the prevalence was higher in older adults than in children, an age distribution of asthma that was quite unlike the age distribution in other Australian women.

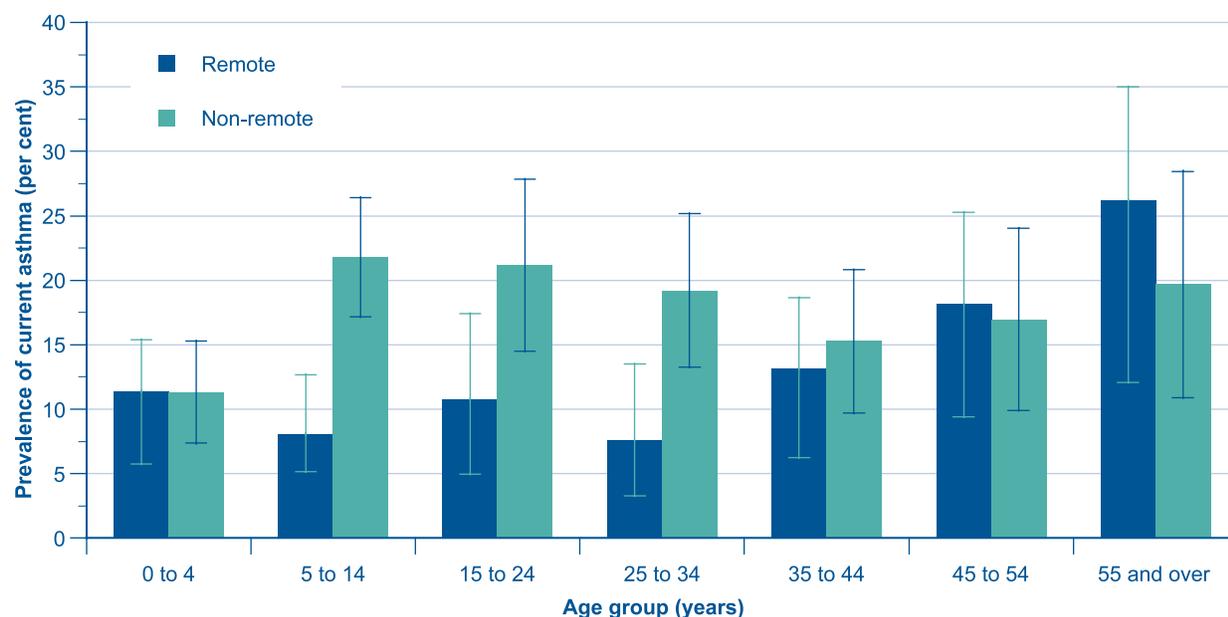
Figure 3.7
Prevalence of current asthma, by age group, sex, and Indigenous status, Australia, 2001



Source: ABS National Health Survey 2001.

Among children and young adults, the prevalence of asthma was higher in Aboriginal and Torres Strait Islander people living in non-remote areas than in those living in remote areas (Figure 3.8). This trend was reversed among older adults, with a higher prevalence among Aboriginal and Torres Strait Islander people living in remote areas. However, this estimate may have included a broader range of conditions. Due to linguistic differences, the questionnaire administered to Aboriginal and Torres Strait Islander people living in sparsely-populated remote areas did not distinguish between 'asthma' and 'breathing problems' (see Appendix 1, Section A1.6.2).

Figure 3.8
Prevalence of current asthma among Aboriginal and Torres Strait Islander people, by age group and remoteness, Australia, 2001



Note: Some people in 'Remote' were administered the 'Sparsely populated area' survey which used the term 'asthma or breathing problems' to define asthma status.

Source: ABS Indigenous Health Survey 2001.

There have also been several locally-based surveys that measured the prevalence of asthma among Aboriginal and Torres Strait Islander Australians (Table 3.4). There is substantial variation among the prevalence estimates. In part, this reflects the range of measures of asthma that have been used and also the means of identifying Indigenous status. However, some real variation in the prevalence of asthma within the Aboriginal and Torres Strait Islander population is likely, in particular relating to the remoteness or other characteristics of the setting. Additional studies reporting the prevalence of asthma among Indigenous Australian children have been included in Table 2.3 of this report.

Table 3.4
Prevalence of asthma among Aboriginal and Torres Strait Islander people, Australia, 1999–2001

Location	Source	Year	Age range	Rates	95% CI (number in survey)
Ever diagnosed with asthma by a doctor					
Tropical North, WA	(2)	2000	18 years and over	13.6%	6.5–18.8% (119)
Central Desert, WA	(2)	1999	18 years and over	21.8%	12.5–34.8% (59)
Ever diagnosed with asthma by a doctor and 'Yes' to 'Do you still get asthma?'					
Australia	(1)	2001	0 to 17 years	15.8%	13.4–18.2% (1,828)
			18 years and over	17.0%	14.5–19.5% (1,853)
Wheeze in last 12 months					
Tropical North, WA	(2)	2000	18 years and over	31.5%	23.5–40.8% (119)
Central Desert, WA	(2)	1999	18 years and over	41.5%	28.1–54.0% (59)

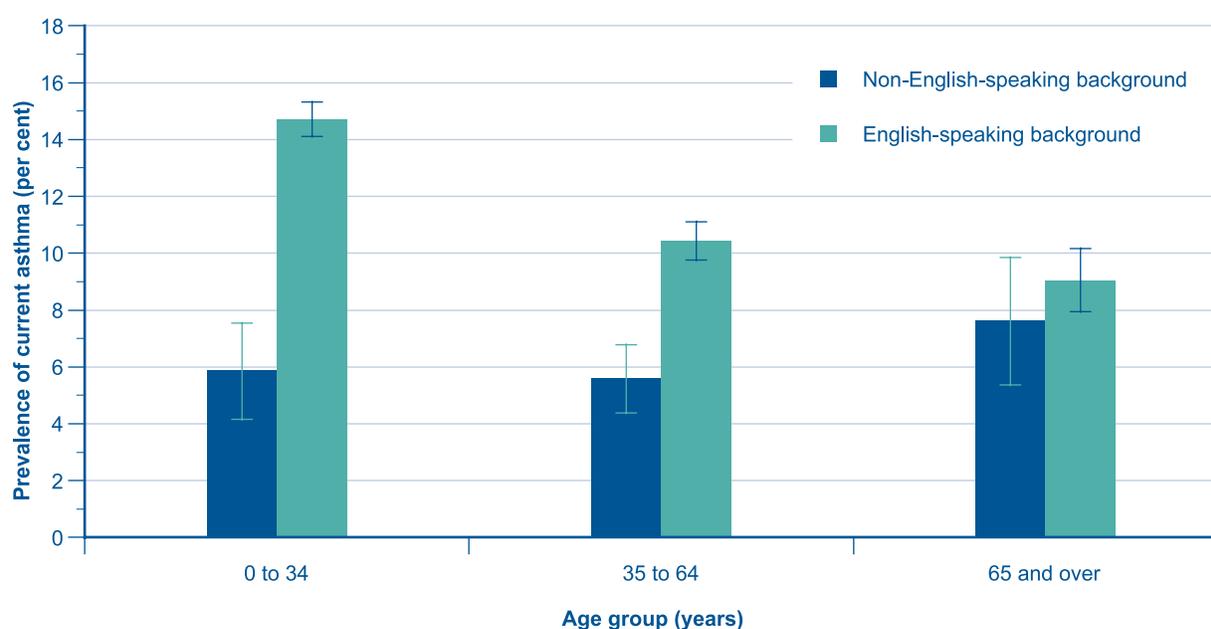
Sources: (1) ABS, National Health Survey 2001 (Indigenous CURF); (2) Verheijden et al. 2002.

Culturally and linguistically diverse background

Data from the National Health Survey 2001 demonstrated that the prevalence of current asthma was lower in people from non-English-speaking backgrounds (Figure 3.9). The prevalence of ever having asthma was also lower among people from non-English-speaking backgrounds (data not shown).

This is consistent with previous observations that the prevalence of asthma is higher in children and adults born in Australia than among those who were born overseas and subsequently migrated to Australia (Leung et al. 1994; Peat et al. 1992). The prevalence of asthma has been shown to increase among migrant populations with the duration of residence (Leung et al. 1994).

Figure 3.9
Prevalence of current asthma, by broad age group and English-speaking versus non-English-speaking background, Australia, 2001

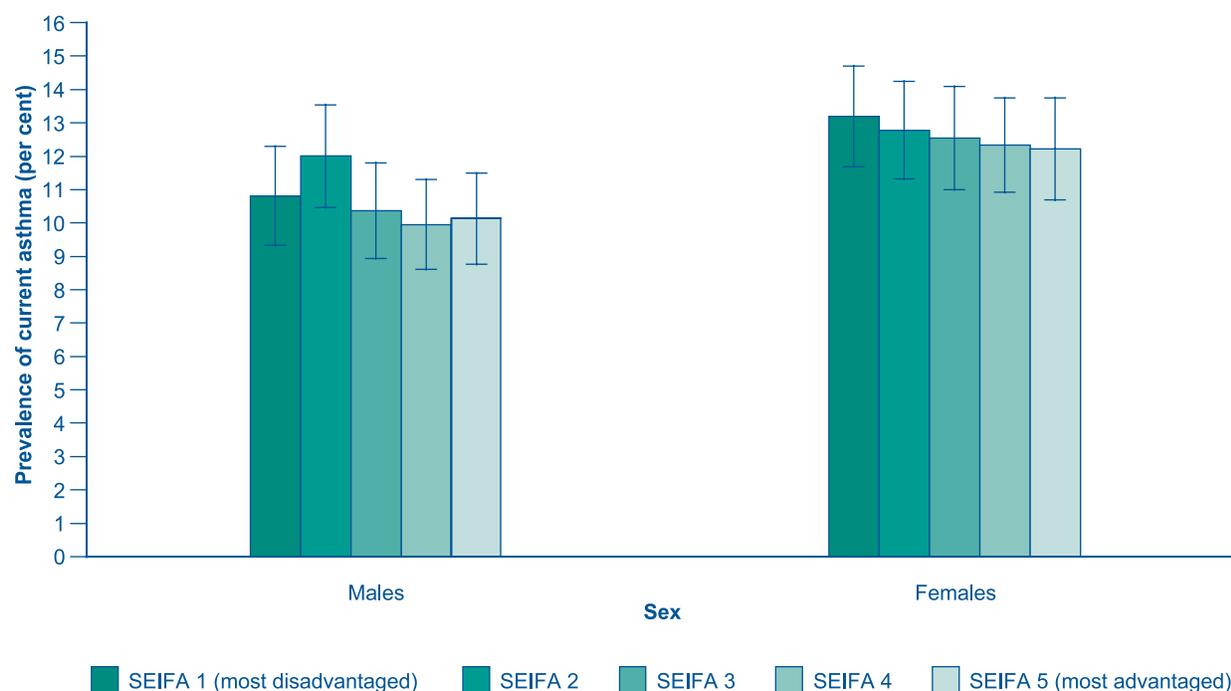


Source: ABS National Health Survey 2001.

Socioeconomic disadvantage

People living in the most socioeconomically disadvantaged localities (classified using SEIFA; see Appendix 1, Section A1.12.3) did not have a substantially higher (or lower) prevalence of asthma compared with those in less disadvantaged areas (Figure 3.10). This finding contrasts with observations in some other countries. For example, in the USA there is a higher prevalence of asthma in children from lower income families (Miller 2000) and among families eligible for subsidised school lunches (Yawn et al. 2002).

Figure 3.10
Prevalence of current asthma, by sex and socioeconomic status, Australia, 2001



Note: Socioeconomic status is classified using the Socio-Economic Index for Areas (SEIFA), in which SEIFA 1 represents the most disadvantaged socioeconomic quintile, and SEIFA category 5 the most advantaged.

Source: ABS National Health Survey 2001.

Summary

Recent data suggest that 10 to 12% of adults and 14 to 16% of children report a diagnosis of asthma that remains a current problem. International comparative studies have shown a high prevalence of asthma in Australia, compared with many other countries. During the 1980s and early 1990s there is some evidence of a small increase in the prevalence of asthma among adults.

Asthma is more common in boys than girls before teenage years and, thereafter, it is more common among females than males. The highest reported prevalence is among 5 to 9 year old boys. In contrast to some overseas studies, there is no convincing evidence that people living in rural and remote areas and in socioeconomically disadvantaged areas in Australia have a higher risk of having asthma. Indigenous Australian women more commonly report asthma than other Australian women and this difference increases with increasing age. Persons of English-speaking backgrounds have a higher prevalence of asthma than other populations within the community.