

7 Trends and patterns in arthritis and osteoporosis

The number of people who have a particular disease or condition is generally not constant between different population groups or geographic areas, or over time. Factors that affect the distribution of disease include:

- variations in exposure to risk factors or causes of disease
- changes in population structure (for example, increased numbers of older people)
- differences in access to treatment
- changes in treatment practices
- variations in genetic susceptibility to disease
- the effects of disease prevention and awareness strategies.

For these reasons and others (for example, differences in help-seeking behaviour), rates of health service use also vary. Examining variation in disease rates and service use across the population and over time can give us insights into the risk factors for and causes of disease, and the effects of public health strategies and interventions. It can also help to identify population groups that are at high risk or who have high rates of a disease so that interventions and health services can be located and targeted appropriately.

This chapter uses the national indicators for osteoarthritis, rheumatoid arthritis and osteoporosis as a basis for looking at trends and patterns in arthritis and osteoporosis in Australia. National data for each indicator (the most recent year available, by age group and sex) can be found in Appendix 1.

TRENDS OVER TIME

Prevalence

The prevalence of a disease (that is, the number of cases existing in the population) may change over time as exposure to risk factors changes, treatments improve (or are discovered) or death rates vary. For arthritis and osteoporosis—diseases that are more common in older people, rarely cause death directly and are not curable—the main factors influencing prevalence are population ageing and exposure to risk factors. Two risk factors for which time series data are available are physical inactivity in adults, and overweight and obesity in adults and children.

Physical inactivity

Exercise is essential for building and maintaining healthy bones. It also helps to improve and maintain balance, strength and joint flexibility, improves cartilage health, and may reduce the risk of falls.

Although the exact amount of exercise required for bone health is unclear, Australian and international guidelines recommend that adults undertake at least 30 minutes of moderate physical activity (such as brisk walking) on at least 5 days of the week for good health. Self-reported information from the Australia Bureau of Statistics' National Health Surveys (NHS) suggests that around 60% of Australian adults undertake less than this amount of activity, and that this has not changed significantly since 1989–90 (Table 7.1).

Table 7.1: Proportion of adults undertaking insufficient physical activity, 1989–90 to 2004–05

	1989–90	1995	2001	2004–05
Males	58	58	57	58
Females	65	65	64	64
Total	62	62	60	61

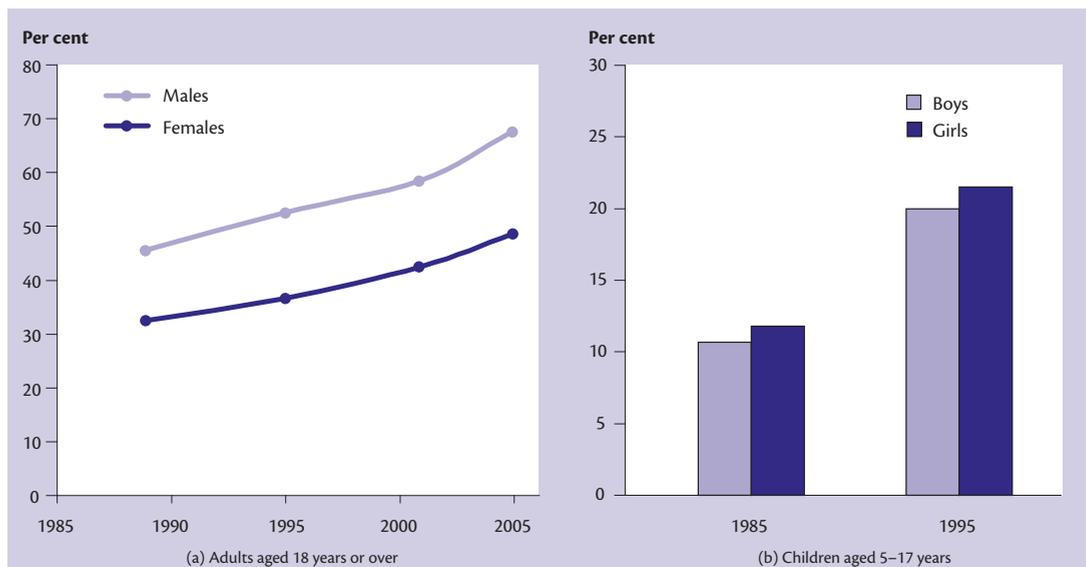
Notes

1. Classified as undertaking less than 300 minutes of leisure-time activity during the two weeks prior to the survey, based on self-reported information.
2. Proportion of people aged 18 years or over.
3. Age-standardised to the Australian population as at 30 June 2001.

Sources: AIHW analysis of the 1989–90, 1995, 2001 and 2004–05 NHS CURFs.

Overweight and obesity

Although body mass is a factor in building strong bones, being overweight or obese increases the risk of osteoarthritis, particularly in the knees. Excess weight is also a risk factor for other chronic conditions such as heart disease and Type 2 diabetes. Self-reported information from the NHS suggests that the number of Australians who are overweight or obese is rising. Between 1989–90 and 2004–05, the proportion of adults who were overweight or obese increased from 45% to 67% in men and from 32% to 48% in women (Figure 7.1(a)).



Notes

1. Overweight and obesity in adults is classified as body mass index (BMI = weight/height²) of 25 or greater, based on self-reported height and weight.
2. Overweight and obesity in children is classified using age- and sex-specific BMI values as determined by Cole et al. (2000), and based on measured height and weight.
3. Rates for adults are age-standardised to the Australian population as at 30 June 2001.

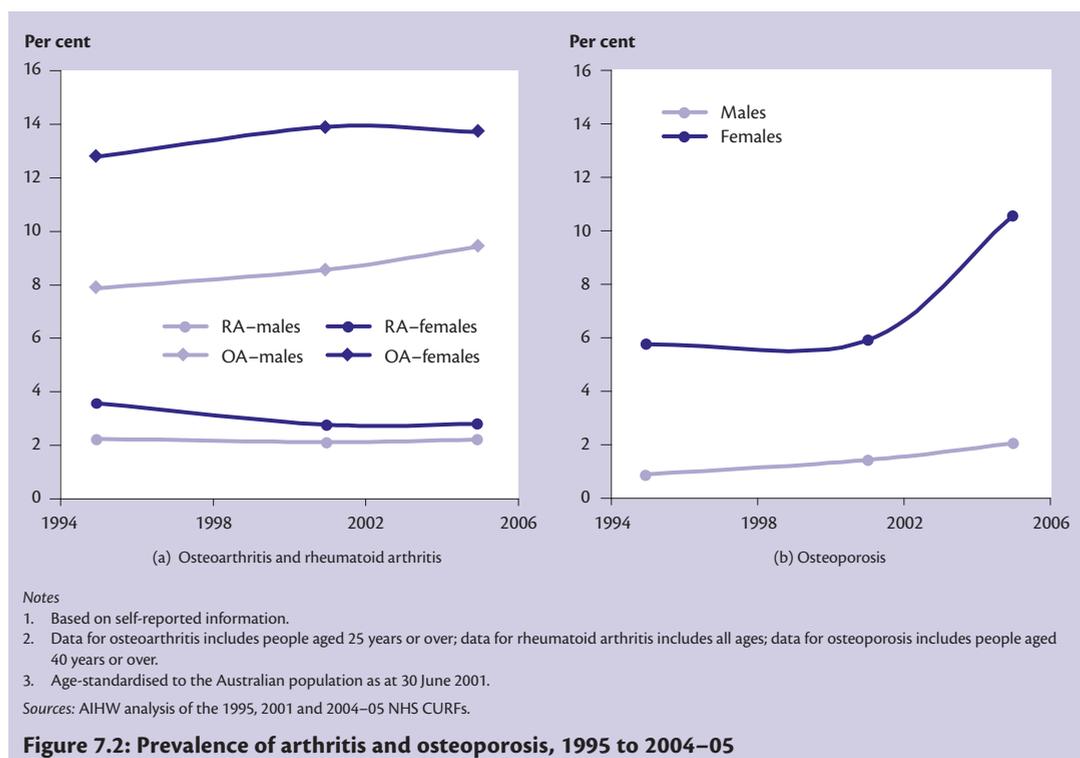
Sources: AIHW analysis of the 1989–90, 1995, 2001 and 2004–05 NHS CURFs (adults) and Magarey et al. 2001 (children).

Figure 7.1: Overweight and obesity in Australian adults and children

Overweight and obesity among Australian children and adolescents is also believed to be increasing. The most recent national data show that the proportion of 5–17 year olds who were overweight or obese doubled between 1985 and 1995 (Figure 7.1(b)). More recent data collected in New South Wales and Western Australia suggest that the upward trend has continued (Booth et al. 2006; Hands et al. 2004).

Arthritis

The prevalence of osteoarthritis in people aged 25 years or over (based on self-reported information) increased slightly between 1995 and 2004–05, from 8% to 9% among men and from 13% to 14% among women (Figure 7.2(a)). Over the same period, the prevalence of rheumatoid arthritis stayed relatively constant among males but decreased slightly in females.



It is believed that self-reported information may overestimate the prevalence of rheumatoid arthritis. The similarity to the word 'rheumatism' (which is a generic term describing painful, inflamed joints and muscles) may cause confusion and lead to reporting of rheumatoid arthritis in people who do not actually have the disease. Some of the apparent decrease in the prevalence of rheumatoid arthritis seen in Figure 7.2(a) could be due to a better understanding of these terms in the population.

Osteoporosis

Self-reported information suggests that the prevalence of osteoporosis in women aged 40 years or over increased rapidly between 2001 and 2004–05 (Figure 7.2(b)). It is likely that such a sharp increase is the result of greater awareness of osteoporosis among women and health professionals, leading to more cases being diagnosed, rather than a real increase in the number of cases. The prevalence of osteoporosis among men aged 40 years or over has also been increasing, but at a much slower rate.

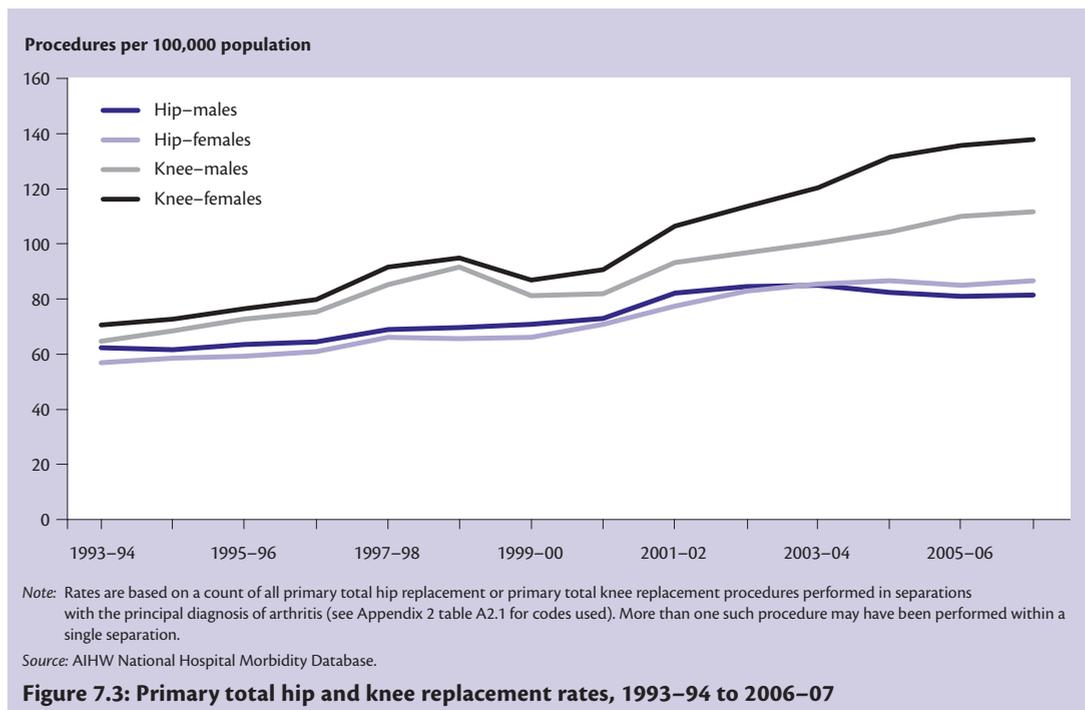
Health service use

Many factors influence the amount of health services used for a particular disease or condition. These include disease incidence and prevalence, disease severity, treatment patterns, and health service availability and accessibility, as well as cultural and personal choices about seeking and accepting medical assistance. The use of health services will vary as these factors change, both over time and across different population groups.

Two major forms of health service use for arthritis and osteoporosis are hip and knee replacements (mainly used for osteoarthritis) and hospital treatment of hip fractures (often the result of osteoporosis). This section presents information on changes in the use of these services over the past decade; variation in service use across the population is discussed later in this chapter.

Hip and knee replacements

When osteoarthritis is severe and conventional treatments (such as medications and physical therapies) do not provide sufficient relief, surgical replacement of the affected joint(s) with artificial components may be considered. These procedures can restore joint function, relieve pain and improve the quality of life, and have been shown to be a cost-effective treatment. The hips and knees are by far the most common joints replaced.

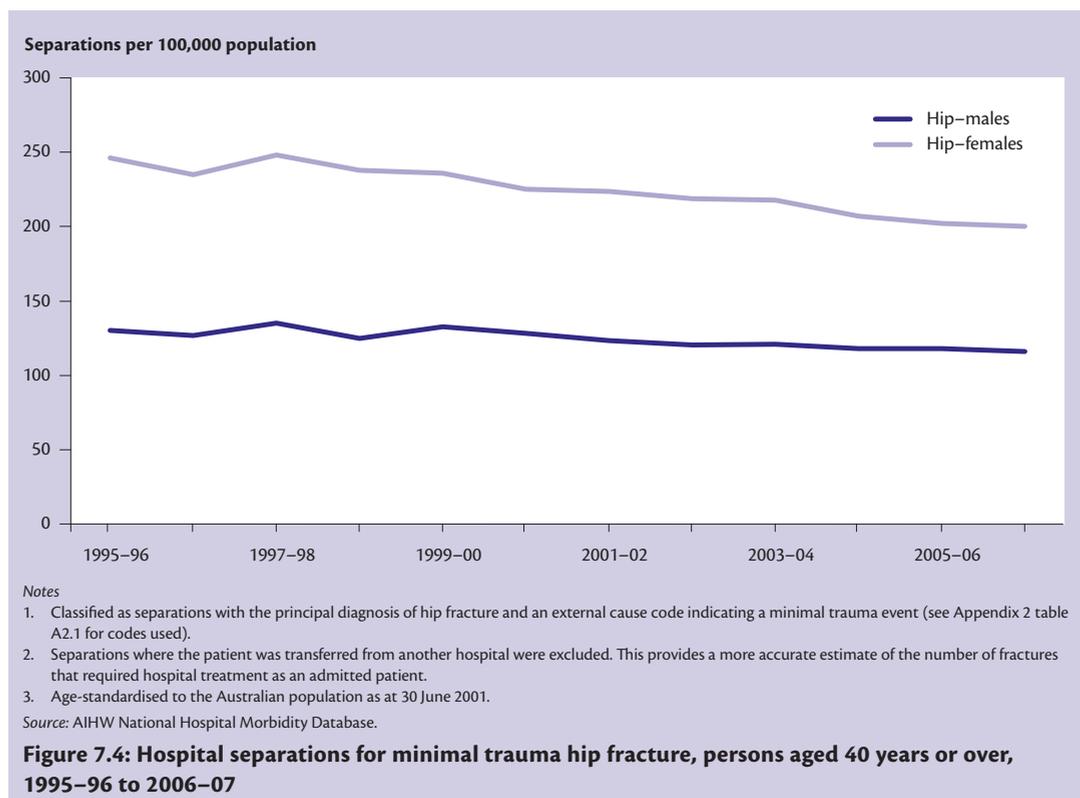


Demand for hip and knee replacement surgery is increasing worldwide, and Australia is no exception (Figure 7.3). The number of primary total hip replacements for arthritis increased by 92% between 1993-94 and 2006-07 (from 9,532 to 18,316), while the number of primary total knee replacements more than doubled over the same period (from 10,959 to 27,295). Rates of hip and knee replacements

have increased significantly in both the younger and oldest age groups, reflecting the rising demand for surgery at younger ages and improvements in medical techniques and outcomes enabling major surgery to be successfully undertaken on older persons.

Hip fractures

A large proportion of minimal trauma fractures are treated in clinics or hospital emergency departments. Unfortunately data on these services in Australia are limited and it is not possible to determine the total number of minimal trauma fractures that occur. However, due to the severe nature of hip fractures, people with these fractures are almost always admitted to hospital for treatment, and so the number of minimal trauma hip fractures can be determined with reasonable accuracy.



Between 1995-96 and 1999-00 the rate of hospital separations for minimal trauma hip fracture was relatively stable. From 1999-00 to 2006-07 the rate decreased by 13% in men (from 131 to 114 separations per 100,000 population) and 15% in women (from 234 to 198 per 100,000) (Figure 7.4).

Mortality

Arthritis and musculoskeletal conditions are not major contributors to mortality in Australia, accounting for around 1% of deaths. However, around 20% of these deaths are attributed to rheumatoid arthritis. People with rheumatoid arthritis are at increased risk of premature death, with a lifespan on average 5-10 years shorter than the general population (Kvien 2004). The systemic nature

of the disease can lead to life-threatening complications of the cardiovascular and respiratory systems (Gabriel et al. 2003). In addition, some of the treatments for rheumatoid arthritis can depress the immune system, leading to increased susceptibility to infection and the risk of immune-system-related diseases such as cancer (Sihvonen et al. 2004; Young et al. 2007).

Death rates for rheumatoid arthritis as the underlying or an associated cause of death did not vary greatly between 1999 and 2006 (Table 7.2). Females were more likely than males to have rheumatoid arthritis recorded on their death certificate.

Table 7.2: Death rates for rheumatoid arthritis, 1999 to 2006

Year	RA as the underlying cause of death		RA as an associated cause of death	
	Males	Females	Males	Females
Deaths per million population				
1999	7	12	24	37
2000	6	12	23	38
2001	6	10	23	37
2002	6	11	23	38
2003	6	11	21	38
2004	6	11	21	34
2005	4	11	20	31
2006	5	10	25	32

RA rheumatoid arthritis

Note: Age-standardised to the Australian population as at 30 June 2001.

Source: AIHW National Mortality Database.

POPULATION VARIATION

Rural and remote Australians

Australians living in rural and remote areas generally experience poorer health than their major city counterparts. On average, people living in more inaccessible regions of Australia are disadvantaged with regard to educational and employment opportunities, income, access to goods and services and, in some areas, access to basic necessities such as clean water and fresh food (AIHW 2008b). Other factors including the types of work available, socioeconomic status of residents and cultural or societal 'norms' may also influence the health of people living in different areas of Australia.

Men and women living in outer regional, remote or very remote areas ('outer areas') are more likely to be overweight or obese than those in major cities, and men in outer areas are more likely to undertake insufficient physical activity (Table 7.3). But despite these risk factors, people in outer areas are not significantly more likely than those in major cities to self-report having been diagnosed with arthritis or osteoporosis. In fact, women in the outer areas are less likely to self-report that they have been told by a doctor that they have osteoporosis. It is possible that people living in the outer areas may be less likely to attend a doctor and so obtain a diagnosis of arthritis or osteoporosis. However, people living outside major cities are more likely to have primary total hip and knee replacements than those in major cities. This difference has been reported in several international studies and may be related to the higher proportion of people with manual occupations (such as farming) in non-urban areas (Dunsmuir et al. 1996; Thelin & Holmberg 2007; Willis et al. 2000).

Table 7.3: Indicators for arthritis and osteoporosis by sex and geographic area of residence

Indicator	Males				Females			
	MC rate	rate ratio			MC rate	rate ratio		
		MC	IR	Outer ^(a)		MC	IR	Outer ^(a)
Insufficient physical activity (per cent of people aged 18 years or over)	56	1.00	1.05	*1.16	64	1.00	1.00	1.00
Overweight or obese (per cent of people aged 18 years or over)	60	1.00	1.02	*1.12	43	1.00	*1.09	*1.10
Prevalence of osteoarthritis (per cent of people aged 25 years or over)	7	1.00	1.21	0.98	12	1.00	1.15	0.88
Prevalence of rheumatoid arthritis (per cent)	1	1.00	1.38	1.09	2	1.00	1.41	1.32
Prevalence of osteoporosis (per cent of people aged 40 years or over)	2	1.00	1.08	0.84	11	1.00	0.86	*0.65
Primary total hip replacements for arthritis (number per 100,000 population)	75	1.00	*1.37	*1.27	102	1.00	*1.12	1.01
Primary total knee replacements for arthritis (number per 100,000 population)	98	1.00	*1.38	*1.27	146	1.00	*1.14	*1.09
Minimal trauma hip fractures (number per 100,000 population aged 40 years or over) ^(b)	100	1.00	1.00	1.02	246	1.00	*1.04	*1.16
Rheumatoid arthritis as underlying cause of death (deaths per million population)	3	1.00	1.21	*2.67	10	1.00	*1.60	1.33
Rheumatoid arthritis as associated cause of death (deaths per million population)	19	1.00	1.16	1.04	36	1.00	*1.21	*1.38

MC major cities

IR inner regional

* Significantly different from the rate in major cities.

(a) Hospital and mortality data include outer regional, remote and very remote areas. Data for physical activity, overweight and obesity, and disease prevalence does not include very remote areas.

(b) Separations where the patient was transferred from another hospital were excluded. This provides a more accurate estimate of the number of fractures that required hospital treatment as an admitted patient.

Notes

1. Rate ratios are a comparison of the number of events (or people self-reporting the characteristic) observed compared with the number that would be expected if the rate in major cities applied in all areas. See Appendix 2 for further information.
2. Area of residence is classified using the Australian Standard Geographic Classification devised by the ABS. See Appendix 2 for further information.
3. Data for physical activity, overweight and obesity, and disease prevalence are for 2004–05. Hospital data are for 2006–07. Mortality data are for 2006.

Sources: AIHW analysis of the 2004–05 NHS CURF, AIHW National Hospital Morbidity Database and AIHW National Mortality Database.

Aboriginal and Torres Strait Islander people

Australia's Indigenous peoples have much poorer health than other Australians across a wide range of measures. They have a lower life expectancy, are more likely to experience disability and reduced quality of life, and have a higher prevalence of diseases such as Type 2 diabetes, chronic kidney disease, cardiovascular disease and acute rheumatic fever (ABS & AIHW 2008).

Indigenous people are more likely than non-Indigenous people to undertake insufficient physical activity, and Indigenous females are more likely than non-Indigenous females to be overweight or obese (Table 7.4). As might be expected, given these and other risk factors (such as smoking and injury), Indigenous people are more likely to report being diagnosed with osteoarthritis or rheumatoid arthritis, compared with non-Indigenous people. The onset of arthritis also occurs at a younger age in Indigenous people compared with other Australians (AIHW: Rahman et al. 2005). Despite this, they are much less likely than other Australians to have a hip or knee replacement. Factors that may affect

access to joint replacement among Indigenous people include cost, transport difficulties, problems with accessing culturally appropriate care, remoteness and treatment preferences.

Indigenous males are also more likely to report being diagnosed with osteoporosis, compared with non-Indigenous males, and are twice as likely as other Australian males to have a hip fracture. But although Indigenous females are more likely than other Australian females to have a hip fracture, they are less likely to report being diagnosed with osteoporosis.

Table 7.4: Indicators for arthritis and osteoporosis by sex and Indigenous status

Indicator	Males		Females	
	Non-Indigenous	Indigenous	Non-Indigenous	Indigenous
	rate	rate ratio	rate	rate ratio
Insufficient physical activity (per cent of people aged 18 years or over) ^(a)	58	*1.17	63	*1.24
Overweight or obese (per cent of people aged 18 years or over)	62	1.05	45	*1.41
Prevalence of osteoarthritis (per cent of people aged 25 years or over) ^(a)	8	*1.49	12	*1.42
Prevalence of rheumatoid arthritis (per cent) ^(a)	2	1.89	2	*1.96
Prevalence of osteoporosis (per cent of people aged 40 years or over)	2	*2.48	11	*0.59
Primary total hip replacements for arthritis (number per 100,000 population)	80	*0.36	93	*0.19
Primary total knee replacements for arthritis (number per 100,000 population)	109	*0.47	149	*0.43
Minimal trauma hip fractures (number per 100,000 population aged 40 years or over) ^(a)	103	*2.01	259	*1.25

* Significantly different from the rate in the non-Indigenous population.

(a) Includes persons living in non-remote areas of Australia only.

Notes

1. Data for non-Indigenous Australians are crude rates. Data for Indigenous Australians are indirectly standardised rate ratios relative to the non-Indigenous population.
2. Rate ratios are a comparison of the number of events (or people self-reporting the characteristic) observed compared with the number that would be expected if the rate among non-Indigenous Australians applied among Indigenous Australians (see Appendix 2).
3. The numbers were too low to allow analysis of deaths related to arthritis or osteoporosis for the Indigenous population.
4. Data for physical activity, overweight and obesity, and disease prevalence are for 2004–05. Hospital data are for 2005–07.
5. Data on joint replacements and minimal trauma fracture are for NSW, Victoria, Queensland, SA, WA and NT only and may not be representative of other jurisdictions.

Sources: AIHW analysis of the 2004–05 NATSIHS CURF and AIHW National Hospital Morbidity Database.

Socioeconomically disadvantaged groups

Socioeconomic status is influenced by a range of factors, including employment status, occupation, income and education level. A person's socioeconomic status can affect where they live and in what conditions, the food they eat and the types of services they use. People who live in the most socioeconomically disadvantaged areas of Australia often experience poorer health than those who live in the least disadvantaged areas (AIHW 2008a).

Issues of location and cost can mean that socioeconomically disadvantaged Australians may have difficulty accessing health services and obtaining specialised treatments. They are also less likely to take advantage of screening tests such as Pap smears (ABS 2002). People living in socioeconomically disadvantaged areas are more likely to display health risk factors such as smoking, lack of exercise and obesity (ABS 2006), and are more likely to be exposed to environmental and occupational hazards (for example, heavy lifting, use of dangerous machinery, and exposure to dust and chemicals) (Evans & Kantrowicz 2002).

Table 7.5: Indicators for arthritis and osteoporosis by sex and socioeconomic status of area of residence

Indicator	Males		Females	
	Least disadvantaged fifth	Most disadvantaged fifth	Least disadvantaged fifth	Most disadvantaged fifth
	rate	rate ratio	rate	rate ratio
Insufficient physical activity (per cent of people aged 18 years or over)	51	*1.27	55	*1.26
Overweight or obese (per cent of people aged 18 years or over)	59	1.10	36	*1.41
Prevalence of osteoarthritis (per cent of people aged 25 years or over)	7	1.28	10	1.25
Prevalence of rheumatoid arthritis (per cent)	1	2.18	2	1.37
Prevalence of osteoporosis (per cent of people aged 40 years or over)	1	2.34	11	0.76
Primary total hip replacements for arthritis (number per 100,000 population)	88	*0.88	120	*0.80
Primary total knee replacements for arthritis (number per 100,000 population)	96	*1.11	139	*1.15
Minimal trauma hip fractures (number per 100,000 population aged 40 years or over)	98	*1.09	263	1.00
Rheumatoid arthritis as underlying cause of death (deaths per million population)	4	1.07	14	1.06
Rheumatoid arthritis as associated cause of death (deaths per million population)	17	*1.29	39	*1.13

* Significantly different from the rate in the least disadvantaged fifth of the population.

Notes

1. Socioeconomic status of area of residence was determined using the Index of Disadvantage as calculated by the ABS (see Appendix 2).
2. Data for the least disadvantaged fifth are crude rates. Data for the most disadvantaged fifth are indirectly standardised rate ratios relative to the least disadvantaged fifth population.
3. Rate ratios are a comparison of the number of events (or people self-reporting the characteristic) observed compared with the number that would be expected if the rate in the least disadvantaged fifth applied in the most disadvantaged fifth. See Appendix 2 for further information.
4. Data for physical activity, overweight and obesity, and disease prevalence are for 2004–05. Hospital data are for 2005–06. Mortality data are for 2004–2006.

Sources: AIHW analysis of the 2004–05 NHS CURF, AIHW National Hospital Morbidity Database and AIHW National Mortality Database.

People living in the most disadvantaged areas of Australia were more likely than those in the least disadvantaged areas to undertake insufficient physical activity (Table 7.5). Females in these areas were also more likely to be overweight or obese. Correspondingly, people in the most disadvantaged areas tended to be more likely than those in the least disadvantaged areas to report being diagnosed with arthritis, but the difference was not statistically significant.

Males living in the most disadvantaged areas were more likely than those living in the least disadvantaged areas to experience a minimal trauma hip fracture, but there was no difference among females. Interestingly, people living in the most disadvantaged areas of Australia were less likely than those in the least disadvantaged areas to undergo a hip replacement for arthritis but more likely to undergo a knee replacement.

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