



Australian Government

Australian Institute of Health and Welfare

Department of Health and Ageing

ARTHRITIS SERIES Number 13

a snapshot of **arthritis** in Australia 2010

**National Centre for Monitoring Arthritis
and Musculoskeletal Conditions**

October 2010

Australian Institute of Health and Welfare
Canberra

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This publication is part of the Australian Institute of Health and Welfare's Arthritis series. A complete list of the Institute's publications is available from the Institute's website <www.aihw.gov.au>.

ISSN 1833-0991

ISBN 978-1-74249-048-9

Suggested citation

Australian Institute of Health and Welfare 2010. A snapshot of arthritis in Australia 2010. Arthritis series no. 13. Cat. no. PHE 126. Canberra: AIHW.

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Published by the Australian Institute of Health and Welfare
Printed by New Millennium Print Pty Ltd

Please note that there is the potential for minor revisions of data in this report.
Please check the online version at <www.aihw.gov.au> for any amendments.

Contents

Acknowledgments.....	iii
Summary points	iv
What is arthritis?	1
Prevalence	2
Co-morbidity	5
Disability	6
Self-perceived health status	7
Treatment and management.....	8
Mortality	11
Preventing arthritis and its complications.....	12
Expenditure	13
Appendix 1: Data sources	15
Appendix 2: Defining population groups	17
References	18

Acknowledgments

Saarah Ehsan, Naila Rahman and Kuldeep Bhatia from the National Centre for Monitoring Arthritis and Musculoskeletal Conditions at the Australian Institute of Health and Welfare prepared this snapshot. The authors would like to thank Tracy Dixon, Lynelle Moon, Susan Killion and various members of the Arthritis Data Working Group/Steering Committee for their input.

The Australian Government Department of Health and Ageing funded this report.

Summary points

- Arthritis is one of the most common long-term diseases in Australia. More than 3.1 million Australians (15.2% of the total population) were estimated to be affected by arthritis in 2007–08. The disease is more common in females than in males.
- The prevalence of arthritis increased from 13.6% to 15.3% between 2001 and 2004–05. However, almost no change in its prevalence was noted between 2004–05 and 2007–08.
- Indigenous Australians have higher prevalence of arthritis than non-Indigenous Australians. Socioeconomic factors also influence the prevalence of arthritis in Australia.
- Arthritis is a significant contributor to disability in Australia; almost one-third of people with the disease report some core activity restrictions. However, only one out of seven people have severe or profound activity restrictions.
- It is the eighth most frequently managed problem by general practitioners (GPs) in Australia. In GP–patient encounters, it was managed at the rate of 3.6 per 100 encounters in 2007–08.
- There are more than 100 types of arthritis. Osteoarthritis and rheumatoid arthritis are two of its most common types. Osteoarthritis affects an estimated 1.6 million Australians, and over 428,000 people are estimated to have rheumatoid arthritis.
- The prevalence of osteoarthritis has fluctuated around 7.5% to 7.6% since 2001. The prevalence of rheumatoid arthritis however, declined from 2.4% to 2.1% between 2001 and 2007–08.
- Osteoarthritis is the major underlying factor in the need for joint replacements, in particular those of the knee or hip. More than 97% of knee and hip replacements attributed to arthritis are on account of osteoarthritis.
- Both knee and hip replacements due to arthritis are on the increase. Between 2000–01 and 2007–08, the number of total knee replacements increased from 16,089 to 26,712, an increase of 67% over 7 years. Total hip replacements during the same period increased by 40%, from 14,416 to 19,279.
- Arthritis and musculoskeletal conditions are a major cause of health expenditure. In 2004–05, they accounted for \$4.0 billion in direct expenditure. Osteoarthritis and rheumatoid arthritis were responsible for about one-third of this expenditure.

What is arthritis?

Derived from the Greek words *arthron* which means joint and *itis* for inflammation, arthritis literally means the inflamed joint. Its hallmarks are pain, swelling and stiffness. More than 100 different types of arthritis are currently identified.

Through joint-damage and deformity, arthritis is a source of much disability and reduced quality of life in the population, particularly among the elderly. It also adds to health system expenditure considerably (AIHW 2010a).

This snapshot provides the latest facts and figures about arthritis in Australia. Information is included about its epidemiology, comorbidity, associated disability, self-perceived health status, treatment and management, mortality, health expenditure and prevention. Statistical information about the two most common types of arthritis, osteoarthritis and rheumatoid arthritis, is included to illustrate the impact of arthritis at the specific type of arthritis level.

The information given in this report has been derived from a variety of data sources, including population health surveys, provider-based disease management data, vital statistics collections and administrative data sets. The report broadly covers the period between 2001 and 2008. Further details about the data sources used in the preparation of this report are at Appendix 1.

Osteoarthritis

The most common form of arthritis, osteoarthritis, is the 10th leading cause of non-fatal burden of disease worldwide (Symmons et al. 2004). Its main symptoms are pain, swelling and joint stiffness. A characteristic feature of osteoarthritis is cartilage loss, the connective tissue that provides cushioning to the bone ends. Bony outgrowths are also common in osteoarthritis.

Osteoarthritis largely affects the weight-bearing joints of the hips, knees and ankles but also those of the hands and spine. The slow progression of osteoarthritis means that a joint may take many years to fail. Swelling, deformity, loss of mobility and muscle wasting are features of the advanced stages of the disease (Solomon et al. 2005).

Osteoarthritis is more common in females than in males, is far more prevalent in later years of life, and is often associated with overweight and obesity (AIHW 2007a).

Rheumatoid arthritis

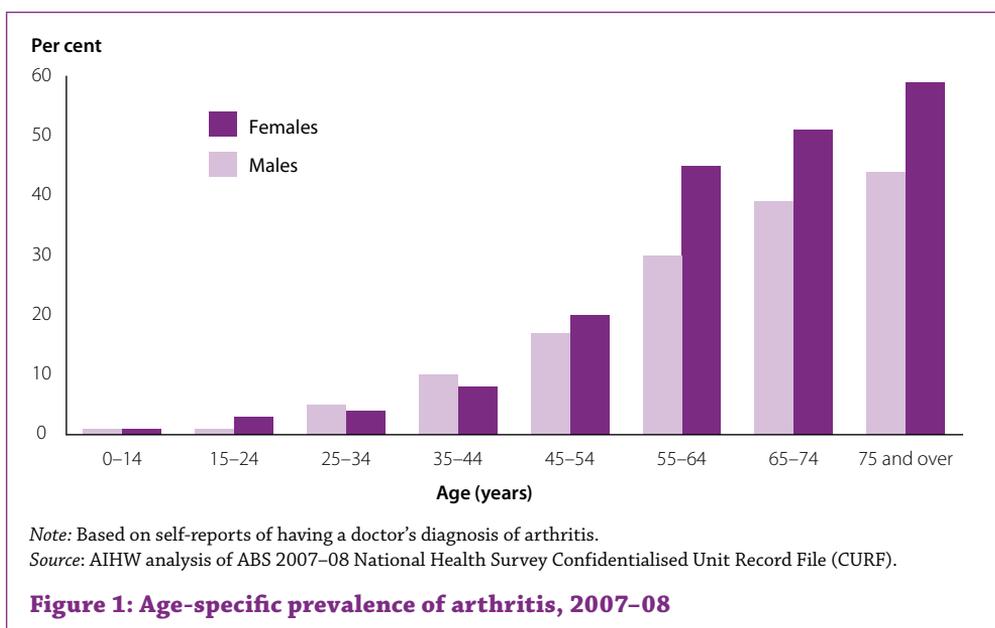
Rheumatoid arthritis, the severest form of arthritis, is an autoimmune disease in which the immune system of the body attacks its own tissues inappropriately. It is not confined to the joints only; the disease also affects many other body parts and organs (Koehn et al. 2002).

The progression of rheumatoid arthritis varies from person to person, but is typically characterised by periodic flares and occasional remissions (AIHW 2009a). The incidence of rheumatoid arthritis is more common between the ages of 30 and 65 years, though the disease may occur at any age.

Prevalence

More than 3.1 million Australians, based on 2007–08 National Health Survey (NHS) self-reports, are estimated to be affected by arthritis, a prevalence rate of 15.2% (ABS 2009a). Almost 6 out of 10 Australians with arthritis are females.

The prevalence of arthritis increases with age, especially after the age of 45 years, and is highest among those aged 75 years and over. While it is slightly more common among males than among females in ages 25–44 years, the prevalence of arthritis is higher among females in older age groups (Figure 1).



Osteoarthritis is estimated to affect over 1.6 million Australians, more than half of the people with arthritis, with a prevalence rate of 7.8%. Almost two-thirds of them are females. The prevalence of osteoarthritis rises with age, in particular after the age of 45 years. Nearly 4 out of 10 females aged 75 years and over have osteoarthritis (Table 1).

Table 1: Age-specific prevalence of osteoarthritis and rheumatoid arthritis, 2007–08

Type of arthritis	Sex	Age group (in years)						
		15–24	25–34	35–44	45–54	55–64	65–74	75 and over
		Per cent						
Osteoarthritis	Males	0.6	1.3	3.5	7.2	15.6	18.1	23.7
	Females	1.2	1.9	3.4	10.6	26.0	30.9	39.6
Rheumatoid arthritis	Males	0.1	0.3	1.3	2.3	3.8	4.6	5.0
	Females	0.6	0.9	2.0	2.7	7.2	8.1	5.6

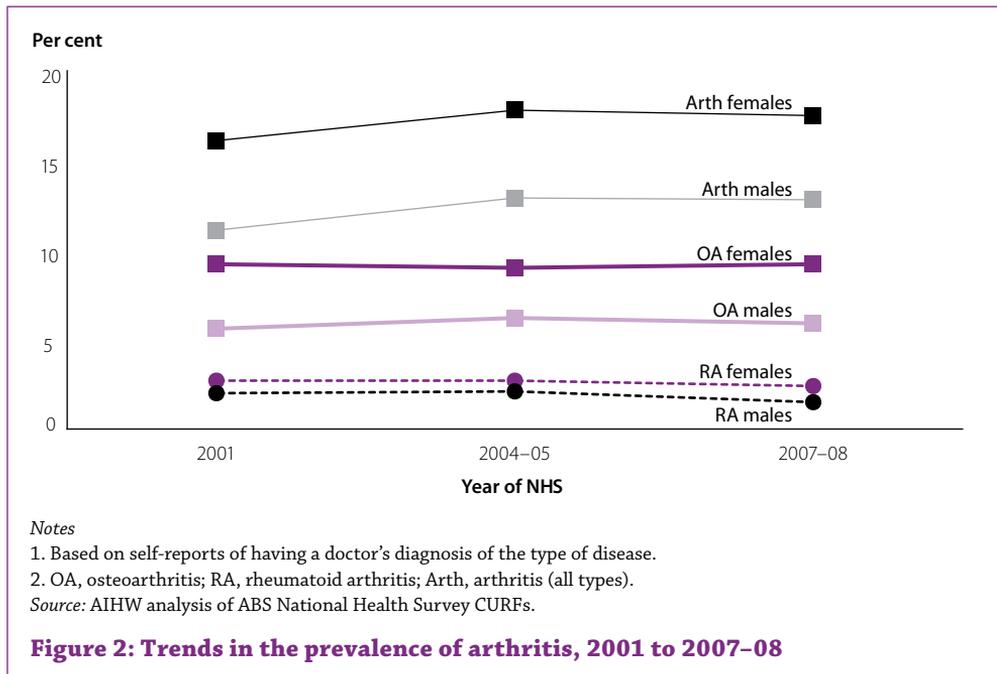
Note: Based on self-reports of having a doctor's diagnosis of the type of disease.

Source: AIHW analysis of ABS 2007–08 National Health Survey CURF.

Rheumatoid arthritis is estimated to affect over 428,000 Australians, a prevalence rate of 2.1%. Almost 63% of these are females. While the prevalence of rheumatoid arthritis continues to rise with age among males, it peaks in females in ages 65–74 years (Table 1).

The NHS time series reveal an increase in the prevalence of arthritis between 2001 and 2007–08. However, all of this increase occurred between 2001 and 2004–05 (Figure 2). No significant difference was noted in the prevalence of arthritis between 2004–05 and 2007–08.

The prevalence of osteoarthritis did not increase overall between 2001 and 2007–08; while there was a slight increase in its rate among males, no change was noted among females. However, there was a noticeable decline in the prevalence of rheumatoid arthritis during this period. The male rate decreased by one-fourth between 2001 and 2007–08; the decline was slightly lower in females (Figure 2).



Regional variation

The *Major cities* of Australia have the lowest rate of arthritis prevalence, both among males and females (Table 2). The *Inner regional* area, on the other hand, has the highest prevalence. Similar patterns of regional variation are noted in the prevalence of both osteoarthritis and rheumatoid arthritis except among females with rheumatoid arthritis. No regional variation is noted in the prevalence of rheumatoid arthritis among females (Table 2).

Table 2: Regional variation in the prevalence of arthritis, 2007–08

Area of usual residence	Osteoarthritis		Rheumatoid arthritis		Arthritis (all types)	
	Males	Females	Males	Females	Males	Females
	Per cent					
Major cities	4.8	8.4	1.2	2.4	11.4	15.7
Inner regional	7.2	10.3	2.1	2.3	14.7	17.4
Other areas	7.1	9.2	2.0	2.4	14.5	16.1

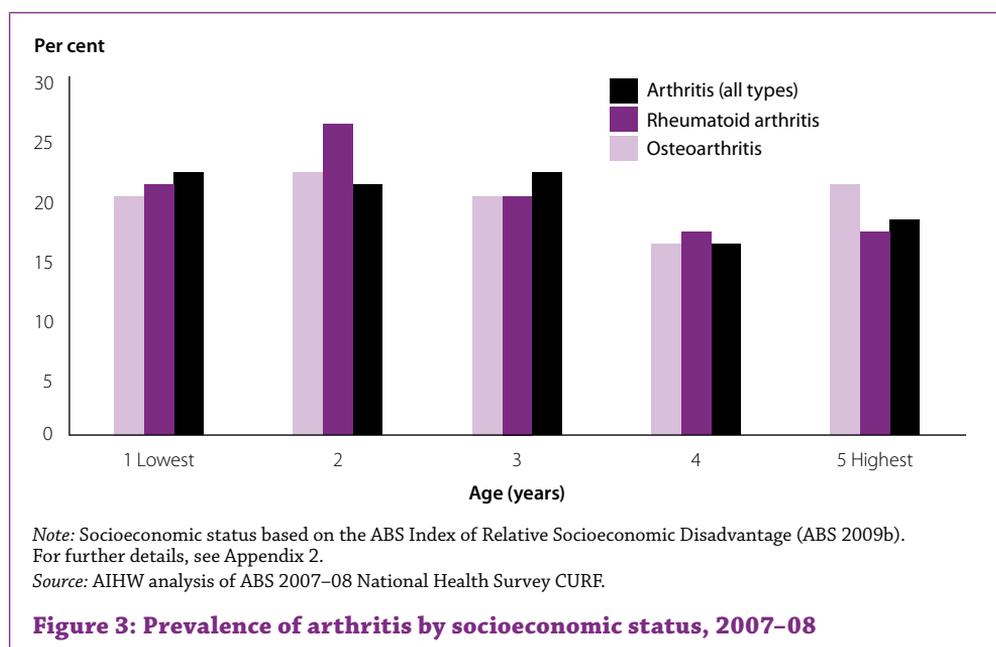
Notes

1. Rates are age-standardised to the Australian population as at 30 June 2001.
2. Regional areas are defined using the Accessibility/Remoteness Index of Australia (ABS 2001); for further details, see Appendix 2.

Source: AIHW analysis of ABS 2007–08 National Health Survey CURF.

Relationship with socioeconomic status

Australians living in areas of relatively low socioeconomic status (SES) had higher prevalence of arthritis than those living in high SES areas in 2007–08 (Figure 3). A similar disparity is noted in the prevalence of rheumatoid arthritis. However, no clear relationship is noted between the prevalence of osteoarthritis and level of SES (Figure 3).



Indigenous Australians

Indigenous people have a higher prevalence of both osteoarthritis and rheumatoid arthritis than non-Indigenous people (Table 3). These comparisons are based on data from the 2004–05 National Aboriginal and Torres Strait Islanders Health Survey (NATSIHS) and 2004–05 NHS (ABS 2006a; 2006b). These numbers could not be updated to 2007–08 as no Indigenous data were collected in conjunction with the 2007–08 NHS.

Table 3: Prevalence of osteoarthritis and rheumatoid arthritis by sex and Indigenous status, 2004–05

Arthritis type	Males			Females		
	Indigenous ^(a) (Per cent)	Non-indigenous (Per cent)	Rate ratio	Indigenous ^(a) (Per cent)	Non-indigenous (Per cent)	Rate ratio
Osteoarthritis ^(b)	12	8	*1.49	17	12	*1.42
Rheumatoid arthritis ^(c)	4	2	1.89	4	2	*1.96

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

(a) Persons living in non-remote areas of Australia only; (b) ages 25 years and over; (c) all ages.

Note: The rate ratios are based on indirectly age-standardised prevalence rates for Indigenous Australians.

Source: AIHW 2008a.

Comorbidity

People with arthritis often have other diseases and long-term conditions concurrently; mostly this is due to the co-occurrence of age-related problems or similar underlying disease processes and risk factors (AIHW 2005). This is particularly the case for osteoarthritis. However, some of the comorbidity of rheumatoid arthritis is due to its systemic nature.

Because of considerable differences in the age-specific prevalence of osteoarthritis and rheumatoid arthritis, information on comorbidity presented below has been organised under two age groups, persons younger than or older than 55 years of age.

Table 4: Comorbidities of arthritis, ages less than 55 years, 2007–08

Osteoarthritis		Rheumatoid arthritis	
Comorbid disease/condition	Per cent	Comorbid disease/condition	Per cent
Back pain and disc disorders	31.4	Mental disorders	32.1
Mental disorders	26.8	Back pain and disc disorders	29.1
Migraine	18.7	Asthma	22.3
Asthma	16.0	Migraine	14.8
Hypertension	13.6	Hypertension	10.8

Source: AIHW analysis of ABS 2007–08 National Health Survey CURF.

The top 5 long-term comorbid diseases/conditions in ages less than 55 years are exactly the same for both osteoarthritis and rheumatoid arthritis, although their rankings differ somewhat for the two types of arthritis (Table 4). The high prevalence of back pain and disc disorders in almost one-third of persons with both osteoarthritis and rheumatoid arthritis is notable.

The top 5 comorbid diseases/conditions with osteoarthritis and rheumatoid arthritis in ages 55 years and over however have a slightly different mix (Table 5). While hypertension, osteoporosis and ischaemic heart disease are often co-present with both forms of arthritis, osteoarthritis is the second most common comorbidity in persons with rheumatoid arthritis. Back pain and disc disorders co-exist with both types of arthritis in 1 out of 4 persons aged 55 years and over.

Table 5: Comorbidities of arthritis, ages 55 years and over, 2007–08

Osteoarthritis		Rheumatoid arthritis	
Comorbid disease/condition	Per cent	Comorbid disease/condition	Per cent
Hypertension	37.4	Hypertension	30.8
Back pain and disc disorders	28.3	Osteoarthritis	26.1
Osteoporosis	23.4	Back pain and disc disorders	24.8
Ischaemic heart disease	14.8	Osteoporosis	15.9
Mental disorders	14.7	Ischaemic heart disease	15.3

Source: AIHW analysis of ABS 2007–08 National Health Survey CURE.

Disability

Arthritis is a significant contributor to disability. It limits physical functioning in everyday tasks, thus reducing the quality of life of those affected. More than 1 million Australians with arthritis, almost one-third of all those with the disease, are estimated to have activity restrictions in their daily tasks (Table 6).

Table 6: Arthritis and activity restrictions, 2007–08

Disability	Level of activity restriction	Extent of the problem	
		Number ('000)	Per cent
Core activity restrictions		1,016.8	32.4
	<i>Mild</i>	147.6	4.7
	<i>Moderate</i>	445.8	14.2
	<i>Severe</i>	219.8	7.0
	<i>Profound</i>	203.4	6.5
No activity restrictions		2,118.3	67.6
Total		3,135.1	100.0

Note: For definitions of various core activity restrictions, see ABS 2009a.

Source: AIHW analysis of ABS 2007–08 National Health Survey CURE.

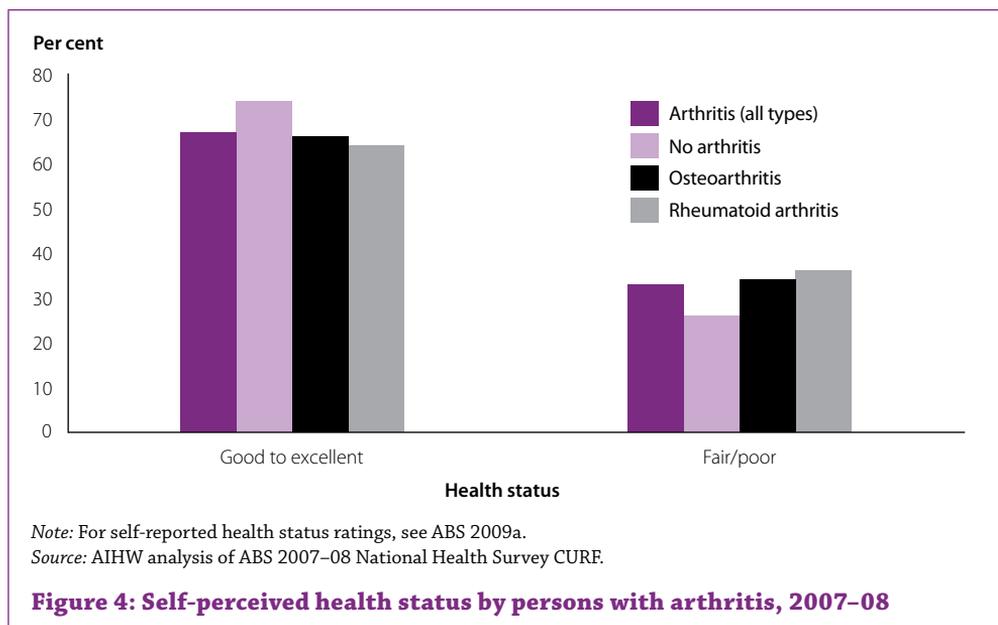
Almost 6 out of 10 persons with arthritis reporting disability have only mild or moderate restrictions in their daily activities (Table 6). Since age is a pervasive determinant of arthritis-attributable disability as well as other long-term conditions, these restrictions could not be fully assigned to arthritis alone.

The ABS Survey of Disability, Ageing and Carers (SDAC) provides further insight to the role of arthritis as a disabling condition. According to this survey, an estimated 561,000 Australians had arthritis as their main disabling condition in 2003 (AIHW 2007b).

The extent of arthritis-attributable disability as determined through the two ABS surveys, 2003 SDAC and 2007–08 NHS, differs considerably because of varying definitions and sampling strategies. No direct comparison of the two sets of numbers can therefore be made.

Self-perceived health status

The chronic nature of arthritis can affect the way people perceive the state of their health, although many comment that the condition does not interfere with their day-to-day life. Data from the 2007–08 NHS seem to confirm this perception broadly (Figure 4).



Almost two-thirds of people with arthritis report their health as good, very good or excellent; however, this proportion is slightly lower than that reported by people without arthritis. Broadly similar self-perceptions of health are given by people with osteoarthritis and rheumatoid arthritis (Figure 4).

Treatment and management

Most forms of arthritis have no known cure. The focus therefore is on effective strategies for relieving pain and reducing symptoms (see Box). This takes place in a variety of health-care settings, to cater for various aspects of care, including in general practice, allied health establishments, specialist surgeries and hospitals (AIHW 2008b).

General practitioners (GPs) are usually the first and most common point of contact for people with arthritis. In addition to providing assessments, prescriptions and referrals for specialists, they also help patients with self-management of their disease. The management of advanced arthritis and associated complications, through surgical and other procedures, mostly takes place in hospitals. Allied health professionals, in particular physical therapists, play an important role in managing pain and improving mobility.

Box: Treatment and management of arthritis

The treatment and management of arthritis is guided by five basic principles: stop the disease process, keep the joints moving, prevent deformity, reconstruct the joints if need be, and rehabilitate. Central to these strategies is medical management through the use of medicines.

The medications used commonly to manage arthritis are pain-relieving and inflammation-reducing agents, such as paracetamol and non-steroidal anti-inflammatory drugs (NSAIDs). For rheumatoid arthritis, disease-modifying anti-rheumatic drugs (DMARDs) are also used to alter the disease process, decrease pain and minimise joint damage.

Dietary supplementations also play a role in arthritis management. In osteoarthritis, glucosamine and chondroitin are commonly used for relieving pain and possibly reducing cartilage breakdown (AIHW 2007a). In rheumatoid arthritis, omega-3 oils and glucosamine are used particularly for managing pain and joint stiffness (AIHW 2009a).

Other management options include physical therapy and exercise to reduce joint stiffness and increase muscle strength, especially of muscles surrounding the joints. Weight loss is also an effective means to minimise load on the joints, as well as pain.

Surgery may be considered in more severe cases of osteoarthritis and rheumatoid arthritis (Solomon et al. 2005). Often this involves the replacement of various sections of the joint with artificial parts, known as prostheses. This treatment option is more commonly known as a joint replacement or 'arthroplasty'.

Secondary measures that can be taken to prevent or delay the onset of arthritis and its various complications are: adopting a healthy lifestyle—which includes a healthy diet and regular exercise—and avoiding joint injuries and tasks that increase joint strain.

General practice visits

Arthritis is the 8th most frequent problem managed by GPs in Australia (Britt et al. 2009). In GP/patient encounter (or visit) terms, it was managed at the rate of 3.6 per 100 encounters in 2007–08 (Table 7).

Table 7: Management of arthritis by general practitioners, 2007–08

Measure	Type of arthritis		
	Osteoarthritis	Rheumatoid arthritis	Arthritis (all types)
Per cent of all problems managed	1.7	0.3	2.4
Management per 100 encounters	2.6	0.5	3.6

Source: Britt et al. (2009).

Osteoarthritis and rheumatoid arthritis account for the bulk of arthritic problems managed by GPs. While osteoarthritis was managed at 72% of these visits (2.6 per 100 encounters) in 2007–08, rheumatoid arthritis was managed at 14% of occasions (0.5 per 100 encounters).

There has been no major change in the GP management rate for arthritis over the decade between 1998–99 and 2007–08 (O'Halloran and Pan 2009). While there was a slight increase in the management of osteoarthritis, from 2.2 per 100 GP/patient-encounters to 2.6 per 100 encounters, the rate of management of rheumatoid arthritis remained unchanged in that period.

Hospitalisation

Arthritis-related hospitalisation is both for surgical and non-surgical procedures. There were over 212,000 hospitalisations in 2007–08 with the principal diagnosis of arthritis. Almost 454,000 surgical and non-surgical procedures were performed during these hospitalisations, an average of 3.3 procedures (1.2 surgical and 2.1 non-surgical) at every hospital admission (Table 8).

Table 8: In-hospital surgical and non-surgical procedures for arthritis, 2007–08

Measure	Principal diagnosis		
	Osteoarthritis	Rheumatoid arthritis	Arthritis (all types)
No. of hospitalisations	86,141	7,809	212,144
No. of surgical procedures	100,393	3,833	251,815
Total knee arthroplasty	25,970	330	26,712
Total hip arthroplasty	18,847	164	19,279
No. of non-surgical procedures ^a	263,068	11,594	453,795

^a Mainly non-invasive in nature, these procedures include cognitive, therapeutic or diagnostic interventions.

Note: More than one surgical or non-surgical procedure may be performed during any one hospitalisation.

Source: AIHW National Hospital Morbidity Database.

Osteoarthritis is the principal diagnosis in 40% of arthritis-related hospitalisations. On average, 4 surgical and non-surgical procedures are performed at osteoarthritis-related hospitalisations. More than 4 out of 10 surgical procedures for osteoarthritis involve a total knee or hip replacement (arthroplasty).

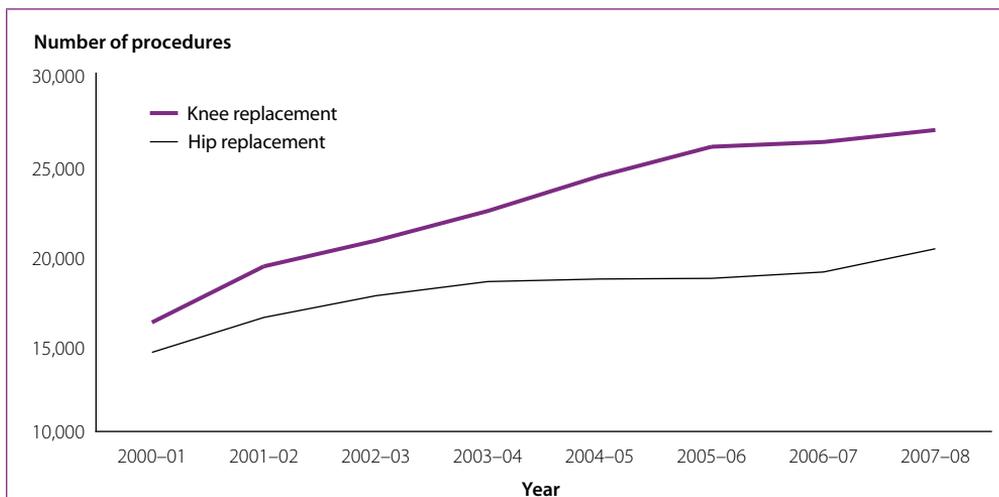
In comparison, surgical procedures are performed in less than 50% of hospitalisations for rheumatoid arthritis. Less than 1 out of 7 of these surgical procedures involves a knee or hip replacement (Table 8).

Knee and hip replacements

Arthritis, in particular osteoarthritis, can severely damage joints. This is particularly the case for large joints, such as of the knee and hip. In many cases the damaged joint can be removed and replaced with an artificial one, a procedure technically called arthroplasty. Joint replacements restore joint function, help relieve pain and improve the quality of life.

A total of 26,712 knee arthroplasties were performed in 2007–08 in Australia with the principal diagnosis of arthritis (Table 8). The bulk of these (more than 97%) was on account of osteoarthritis. The number of arthritis-attributable total hip replacements in 2007–08 was 19,279 (Table 8). The proportion of osteoarthritis-attributable hip replacements was high.

Arthroplasties to reduce the impact of arthritis are on the increase in Australia. Over the period 2000–01 to 2007–08, the number of knee arthroplasties for arthritis increased by 67% from 14,866 to 26,712 (Figure 5). The number of hip arthroplasties during the same period increased from 13,524 to 19,279, an overall increase of 40%.



Source: AIHW National Hospital Morbidity Database.

Figure 5: Trends in total knee and hip replacements for arthritis, 2000–01 to 2007–08

Medicine use

Medicines play a central role in the management of arthritis, to reduce pain and inflammation, improve mobility and slow disease progression. Both pharmaceutical and complementary medicines are used. Since the mid-1990s, the medicines available for managing arthritis have improved considerably, both in quality and safety.

There were more than 1.6 million subsidised prescriptions for meloxicam, a NSAID, dispensed in 2007 for managing osteoarthritis, costing consumers \$7.4 million and the Australian Government \$36.9 million (AIHW 2010b).

Early use of disease-modifying anti-rheumatic drugs (DMARDs) has now become common practice in managing rheumatoid arthritis. Methotrexate, a DMARD, was the most frequently used arthritis medication in 2007, with more than 100,000 subsidised prescriptions dispensed, costing consumers \$1.1 million and the Australian Government \$2.5 million (AIHW 2010b).

Mortality

Arthritis is not commonly recorded as a cause of death. Of 137,854 deaths in Australia in 2007, osteoarthritis and rheumatoid arthritis were the underlying causes in 79 and 159 deaths, respectively. However, they contributed to over 1,800 deaths.

Osteoarthritis was listed as an associated cause in 1,180 deaths in 2007, the most common of which were deaths from diseases of the circulatory system and neoplasms (Table 9). It was also listed as an associated cause in around 10% of deaths attributed to mental and behavioural disorders and diseases of the respiratory system.

Table 9: Osteoarthritis as an associated cause of death, 2007

Underlying cause of death	Deaths	
	Number	Per cent
Diseases of the circulatory system	470	39.8
Neoplasms	196	16.6
Mental and behavioural disorders	126	10.7
Diseases of the respiratory system	101	8.6
Endocrine, nutritional and metabolic diseases	63	5.3
Other causes	224	19.0
Total	1,180	100.0

Source: AIHW National Mortality Database.

Rheumatoid arthritis was listed as an associated cause in 646 deaths in 2007 (Table 10). Again, diseases of the circulatory system and neoplasms were the most common underlying causes of death. Diseases of the respiratory system, as well as the endocrine, nutritional and metabolic diseases, were the other underlying causes of death with which rheumatoid arthritis was associated.

Although rheumatoid arthritis has a much lower prevalence in the population than osteoarthritis, it contributes relatively more to mortality. The systemic nature of the disease accounts for these increased contributions.

Table 10: Rheumatoid arthritis as an associated cause of death, 2007

Underlying cause of death	Deaths	
	Number	Per cent
Diseases of the circulatory system	258	39.9
Neoplasms	135	20.9
Diseases of the respiratory system	63	9.8
Endocrine, nutritional and metabolic diseases	37	5.6
Diseases of the digestive system	31	4.8
Diseases of the genitourinary system	14	2.3
Other causes	108	16.7
Total	646	100.0

Source: AIHW National Mortality Database.

Preventing arthritis and its complications

Both primary and secondary prevention are important in reducing the adverse impact of arthritis. While opportunities for primary prevention are limited in the absence of a clear understanding of causal mechanisms, much can be done to avoid complications (and reduce further adverse impact) of arthritis through secondary measures.

Primary prevention

Three basic principles in preventing arthritis, in particular osteoarthritis, are to:

- control weight
- keep fit
- protect joints.

In the case of osteoarthritis, maintaining a healthy weight, undertaking regular physical activity and consuming a healthy diet can help avoid or delay disease onset. The need to protect the joints is equally important. Joints, ligaments and bones can be damaged by misuse of an inflamed or injured joint. Injuries such as torn meniscus or ligament in the knee, a broken hip or a broken finger can also contribute to the development of osteoarthritis.

About a quarter of persons without arthritis reported maintaining normal weight in 2007–08 (Table 11). The proportion was much lower among persons with osteoarthritis.

Table 11: Aspects of prevention (primary and secondary) among people with arthritis, 2007–08

Healthy habit	Type of arthritis			No arthritis
	Osteoarthritis	Rheumatoid arthritis	All types of arthritis	
		Per cent		
Maintaining normal weight	15.8	26.2	25.2	24.9
Moderate/high exercise	26.9	18.4	24.7	27.2
Recommended usual daily serves of vegetable and fruit	5.9	4.6	5.1	6.4

Note: Rates were age-standardised to the Australian population as at 30 June 2001.

Source: AIHW analysis of ABS 2007–08 National Health Survey CURE.

Secondary prevention

Persistence with the healthy lifestyle habits, as described above for primary prevention, can also help manage the symptoms of arthritis and prevent long-term complications. Early treatment and management of pain, inflammation and other symptoms helps to improve mobility as well as to reduce complications.

Australians with osteoarthritis are less often in the normal weight range than those without the disease (Table 11). However, they report maintaining their physical activity at a level similar to the rest of the population. People with rheumatoid arthritis on the other hand are generally within the normal weight range, at par with the rest of the Australian population, but are less likely to engage in a moderate or high level of exercise.

Expenditure

Arthritis and musculoskeletal conditions are a major cause of health expenditure. In 2004–05, they accounted for a total of \$4.0 billion in direct expenditure in Australia (Table 12), the third largest set of disease costs. This expenditure includes hospital-admitted patient services, out-of-hospital medical services, prescription pharmaceuticals and research (AIHW 2009b).

Table 12: Direct health expenditure for arthritis, 2004–05

Health service area	Type of arthritis		All musculoskeletal conditions (including arthritis)
	Osteoarthritis	Rheumatoid arthritis	
		(\$ million)	
Admitted patient services	898.5	34.3	2,003.2
Out-of-hospital medical services	188.6	44.6	1,180.8
Prescription pharmaceuticals	105.5	92.1	680.3
Research	28.3	4.1	91.6
Total	1,220.9	175.1	3,955.9

Source: AIHW 2009b.

Osteoarthritis accounted for about 30% of this expenditure (\$1.2 billion), while \$175 million was spent on rheumatoid arthritis. The main component of health expenditure for osteoarthritis was admitted patient services at \$898 million, a major portion of which is attributable to joint replacements. In contrast, more than half (\$92 million) of the expenditure for rheumatoid arthritis was on medicines.

National Centre for Monitoring Arthritis and Musculoskeletal Conditions

The Australian Institute of Health and Welfare (AIHW) established the National Centre for Monitoring Arthritis and Musculoskeletal Conditions in 2005 with support from the Australian Government under its Better Arthritis Care (BAC) initiative. The work of the centre was further supported under the Better Arthritis and Osteoporosis Care (BAOC) initiative of the Government in 2006.

The focus of BAOCC is on the prevention of arthritis and osteoporosis and to facilitate early detection, improved management and quality of life for people with these diseases. This is in order to reduce the personal, social and economic impacts of arthritis and osteoporosis in Australia. The centre generates reports and analyses on various aspects of the BAOCC initiative, with a particular focus on osteoarthritis, rheumatoid arthritis, juvenile arthritis and osteoporosis.

Appendix 1: Data sources

A variety of health data sources were used to generate the statistics provided in this report. These include population and provider-based surveys, vital statistics and administrative datasets. While some of the information included in the report is based on self-reports, most of the information used was obtained from service providers.

National Health Survey and National Aboriginal and Torres Strait Islander Health Survey

The ABS National Health Survey (NHS) and National Aboriginal and Torres Strait Islander Health Survey (NATSIHS) collect information about a variety of health-related issues for long-term diseases, including arthritis. The respondents are asked if they had ever been told by a doctor or nurse that they have arthritis. If they answered 'yes', we say that they have reported 'doctor-diagnosed arthritis'. Specific information about two major types of arthritis, osteoarthritis and rheumatoid arthritis, is also collected. These surveys do not collect information from people who live in institutions, such as hostels and residential care units, many of whom are elderly and may have arthritis more often than younger people because of its strong age associations.

The latest NHS was conducted in 2007–08, and NATSIHS in 2004–05.

Survey of Disability, Ageing and Carers

The ABS Survey of Disability, Ageing and Carers (SDAC) collects information about people with disability, people aged 60 years or over, and carers. Unlike other community-based epidemiological surveys (for example, NHS), SDAC includes people living in non-private dwellings, such as aged-care homes and hospitals. Those reporting disability are asked to name the health condition or injury, including arthritis, which caused them the most problems. This is known as the 'main disabling condition'.

The last SDAC was conducted in 2003. No specific information about disability associated with osteoarthritis and rheumatoid arthritis is available from this survey.

AIHW National Mortality Database

The AIHW National Mortality Database contains information about all deaths registered in Australia. The registration of deaths in Australia is the responsibility of the state and territory Registrars of Births, Deaths and Marriages. The registrars provide the deaths data to the ABS for coding and compilation into national statistics. The AIHW also holds these data.

The Mortality Database lists the cause of death information under two categories. The underlying cause of death is the condition, disease or injury that started the train of events which led to death. Any other factor that is not the underlying cause, but is considered to have contributed to death, is known as an associated cause of death.

The latest information available in this database is for the year 2007.

AIHW National Hospital Morbidity Database

The National Hospital Morbidity Database is an electronic collection of data from nearly every hospital in Australia. It covers information such as the diagnosis that led to the admission and the treatment provided. The data are collated and housed at the AIHW after being forwarded by the state and territory health authorities.

The database contains information about both surgical and non-surgical procedures. Information about both the principal diagnosis and any other diagnoses is available. The information in the database is, however, episode rather than person based.

The latest information available in this database is for the period 2008–09.

AIHW Disease Expenditure Database

The AIHW Disease Expenditure Database contains information about the monies spent by governments, other institutions and individuals to purchase or provide goods and services in relation to a particular disease or condition. The information is derived from a wide range of data sources including the ABS, Commonwealth, state and territory health authorities, the Department of Veterans' Affairs, the Private Health Insurance Administration Council, Comcare, and the major workers compensation and compulsory motor vehicle third-party insurers in each state and territory.

The information is available both at chapter level and for specific diseases and conditions. The expenditure information about arthritis is included under the chapter heading, Arthritis and musculoskeletal conditions. Information about osteoarthritis and rheumatoid arthritis is also collated.

The latest disease-specific expenditure information in this database is for the period 2004–05.

Bettering the Evaluation and Care of Health (BEACH) survey

The Bettering the Evaluation and Care of Health (BEACH) survey collects information about patients visiting general practitioners (GPs) from around 1,000 randomly selected GPs each year. Conducted by the Australian General Practice Statistics and Classification Centre, a collaborating unit of the AIHW, the survey seeks information about reasons for GP–patient encounters and the services provided.

The latest GP data available are for the period 2008–09.

Appendix 2: Defining population groups

To study variation in the prevalence of arthritis, the Australian population was divided into various groups based on the location of residence, socioeconomic level of the area in which the person is resident and Indigenous status. The methods used for delineating these population groups are described below.

Regional areas

In most of the national data collections in Australia, the area of usual residence is recorded at the Statistical Local Area (SLA) level. The SLAs are then classified into various regions based on their score on the Accessibility/Remoteness Index of Australia (ABS 2001). This index takes into consideration how distant a place is by road from urban centres of different sizes, and therefore provides a relative indication of how difficult it might be for the residents to access services, such as health care and education.

Three major geographical regions were defined for the analysis by the location of residence, namely *Major cities*, *Inner regional* areas, and *Other* areas (including *Outer regional*, *Remote* and *Very remote* locations). The areas outside the *Major cities* are also collectively referred to as *Rural and remote* areas.

Socioeconomic status

The socioeconomic status of a person was determined by using the Index of Relative Socioeconomic Disadvantage (IRSD). The IRSD is an area-based measure that represents the average level of disadvantage across a geographic area, in this case an SLA, in which the person resides (ABS 2009b). The index is derived from various social and economic characteristics of the SLA in question, such as income, educational attainment, levels of public sector housing and unemployment, and availability of jobs in various occupations.

Usually the grouping is in fifths but there can be others, such as fourths or tenths. The groups can then be compared for matters of interest—for example, according to their rates of smoking, obesity, deaths and so on.

In this report, the population living in the 20% of areas with the greatest overall level of disadvantage is described as the ‘lowest SES fifth’. The 20% at the other end of the scale—the top fifth—is described as the ‘highest SES fifth’.

Indigenous Australians

The Indigenous status of an Australian is based on self-identification as an Aboriginal or a Torres Strait Islander person. The identification of Indigenous people in the Australian health data sources is generally of poor quality. Efforts are currently underway to improve this anomaly.

The Indigenous data included in this study are based on the 2004–05 National Aboriginal and Torres Strait Islander Health Survey (NATSIHS). The survey did not collect information from Indigenous people living in *Remote* areas (ABS 2006b).

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