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SYMBOLS AND USAGES

billion	1,000 million
kg	kilogram
m	metre
n.a.	not available
n.e.c	not elsewhere classified
n.p.	not published
n.y.a.	not yet available
no.	number
'000	thousand
'000m	thousand million
$	dollar
$m	million dollars
$b	billion dollars
$US	American dollar
%	per cent
*	estimate has a relative standard error of 25% to 50% and should be used with caution
**	estimate has a relative standard error of greater than 50% and is considered too unreliable for general use
. .	not applicable
—	nil or rounded to zero (including null cells)

Where figures have been rounded, discrepencies may occur between the sums of the component items and totals.

Selected chronic conditions among Aboriginal and Torres Strait Islander peoples

In 2004–05, after adjusting for differences in the age structure of the populations, Indigenous people were more than 3 times more likely than non-Indigenous people to have diabetes and more than 10 times as likely to have kidney disease.

Despite advances in medicine, chronic conditions continue to be major contributors to the burden of disease worldwide.[1] In Australia, Aboriginal and Torres Strait Islander peoples continue to have a higher prevalence than non-Indigenous people of many chronic conditions.[2]

This article focuses on diabetes, cardiovascular disease and kidney disease. Diabetes and cardiovascular disease both contribute significantly to the burden of illness in the general population.[3] Both have the potential for prevention via the reduction of identified risk behaviours such as obesity and low levels of exercise. Kidney disease, although not as common, is of particular concern among Indigenous Australians.[4]

Prevalence of selected chronic conditions

In 2004–05, around 74,000 Indigenous people of all ages (16%) reported having at least one of either diabetes (or high sugar levels), cardiovascular disease or kidney disease. Of the three selected chronic conditions, cardiovascular disease was the most prevalent in the Indigenous population (12%) followed by diabetes (6%) and kidney disease (2%).

In 2004–05, Indigenous people living in remote areas had higher rates of diabetes, cardiovascular disease and kidney disease than did those living in non-remote areas. In particular, the rate of diabetes in remote areas (9%) was almost double that in non-remote areas (5%). Similarly, the prevalence of kidney disease in remote areas (3%) was more than twice the rate in non-remote areas (1%).

Data sources

This article draws data primarily from the 2004–05 National Aboriginal and Torres Strait Islander Health Survey (NATSIHS). The results from this survey are based on self-reported data from a sample of over 10,000 Indigenous persons within private dwellings.

In addition, other ABS surveys such as the 2004–05 National Health Survey (NHS) have also been used, as well as databases maintained by the Australian Institute of Health and Welfare (AIHW).

Morbidity and mortality data

Indigenous data from the AIHW morbidity and mortality databases include only data from Queensland, South Australia, Western Australia and the Northern Territory. These jurisdictions have sufficient level of identification of Indigenous status to enable mortality statistics on Indigenous Australians to be produced. Care should be exercised when applying data to other jurisdictions which have not been included in data analyses.[4]

Age standardised data

Age standardised rates enable comparisons to be made for age-related variables between populations which have different age structures by removing the influence of age from the data. The Indigenous and non-Indigenous populations of Australia have markedly different age structures. Where appropriate, this article draws on age standardised rates to make comparisons between the two populations. Data are standardised to the 2001 Australian estimated resident population.

After adjusting for differences in the age structure of the populations, Indigenous people were 1.5 times more likely than non-Indigenous people to have at least one of these three conditions. In 2004–05, Indigenous people were 1.3 times more likely

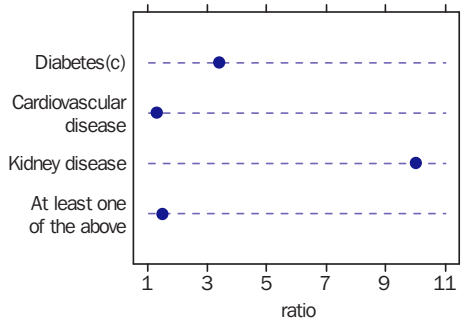
Indigenous persons: Prevalence of selected chronic conditions — 2004–05

	Remoteness					
	Remote		*Non-remote*		*Total*	
	'000	%	'000	%	'000	%
Diabetes(a)	11.6	9.2	17.4	5.0	29.1	6.1
Cardiovascular disease	17.7	14.1	38.2	11.0	55.9	11.8
Kidney disease	3.8	3.0	4.9	1.4	8.7	1.8
At least one of the above conditions	24.8	19.7	49.5	14.2	74.3	15.7
Total Indigenous persons	**126.0**	**100.0**	**348.3**	**100.0**	**474.3**	**100.0**

(a) Includes high sugar levels.

Source: ABS 2004–05 NATSIHS.

Selected chronic conditions: ratio(a) of Indigenous to non-Indigenous(b) — 2004–05



(a) Indigenous rate divided by non-Indigenous rate.
(b) Age standardised to the 2001 estimated resident population.
(c) Includes high sugar levels.

Source: ABS 2004–05 NATSIHS and 2004–05 NHS.

to have cardiovascular disease, 3.4 times more likely to have diabetes and more than 10 times more likely than non-Indigenous people to have kidney disease.

Co-morbidity

Although in this article each of these three conditions will be discussed separately, they have risk factors in common. As a result it is not unusual to develop more than one condition (co-morbidity). For example, in 2004–05, Indigenous people aged 35 years and over with cardiovascular disease were 2.5 times as likely as all other Indigenous people in the same age group to report having diabetes and 4 times as likely to have kidney disease.

Definitions

In this article, *Diabetes* refers to diabetes or high sugar levels and includes Type 1 and Type 2 diabetes.

Overweight/obese was determined through the Body Mass Index (BMI) method calculated from self-reported height and weight information, using the formula weight (kg) divided by the square of height (m). People with a BMI score of 25 to less than 30 are classified as overweight and those with a BMI of 30 or greater as obese.

Exercise levels were based on frequency, intensity and duration of exercise in the two weeks before the participant's interview. The components required to derive the exercise level were not collected in remote areas.

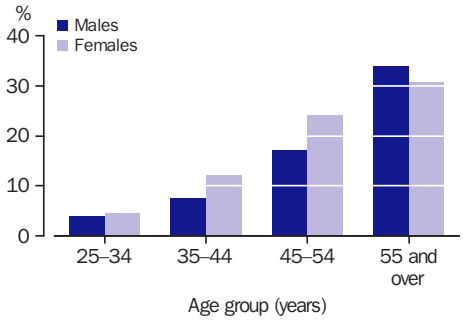
Remoteness Area is based on a classification of road distance to different sized population centres, where the population is considered to govern the range and type of services available. In this article, *remote areas* include the Remoteness categories Remote Australia and Very Remote Australia, while *non-remote areas* include Major Cities of Australia, Inner Regional Australia and Outer Regional Australia. For further information see *Statistical Geography: Volume 1 - Australian Standard Geographical Classification (ASGC) 2001* (ABS cat. no. 1216.0).

Diabetes

Diabetes mellitus is a chronic condition in which the body is deficient in producing or using insulin. Long-term effects of diabetes include damage to the heart, blood vessels and kidneys.[5] (See *Australian Social Trends 2007,* Diabetes mellitus, pp. 76–81.)

In 2004–05, around 29,000 Indigenous people of all ages (6%) reported having diabetes. Within the Indigenous population, diabetes was more prevalent among females than males. The difference in rates between males and females was greatest in the

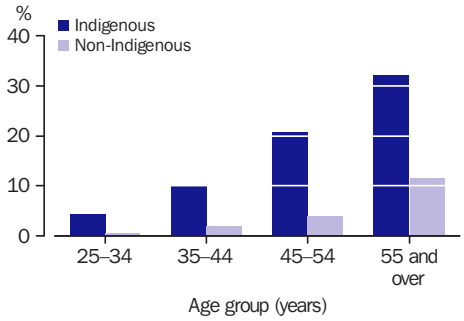
Rates of diabetes(a) among Indigenous persons — 2004–05



(a) Includes high sugar levels.

Source: ABS 2004–05 NATSIHS.

Rates of diabetes(a) by Indigenous status — 2004–05



(a) Includes high sugar levels.

Source: ABS 2004–05 NATSIHS and 2004–05 NHS.

45–54 year age groups, 17% of males and 24% of females. In 2004–05, nearly one-third (32%) of Indigenous people aged 55 years and over reported having diabetes.

In all age groups from 25–34 years and older, a larger proportion of Indigenous people than non-Indigenous people reported diabetes.

In 2004–05, the prevalence of diabetes was progressively higher in older age groups within both the Indigenous and non-Indigenous populations. However, the prevalence among Indigenous Australians increased noticeably at ages around 20 years younger than in the non-Indigenous population. In 2004–05, prevalence among Indigenous people aged 35–44 years (10%) was similar to that among non-Indigenous Australians aged 55 years and over (12%).

In 2003–04, Indigenous Australians were much more likely than other Australians to be hospitalised as a result of diabetes. After adjusting for differences in age structures, the hospital separation rate, with diabetes as a principal diagnosis, of Indigenous people was about 7 times higher than for non-Indigenous people.[5] The standardised separation rate for diabetes as any diagnosis was about 12 times higher for Indigenous people than for the non-Indigenous population.

While there is incomplete coverage of Indigenous deaths in all state and territory registration systems, data of appropriate quality relating to mortality are available for Queensland, South Australia, Western Australia and the Northern Territory.[6] Between 2000 and 2004 in these jurisdictions, diabetes was the main underlying cause of 8% of Indigenous deaths. The age standardised mortality rate for Indigenous people over this time period was 9 times that of non-Indigenous people.

Hospital separations

Hospital separations are derived from AIHW data collected from hospitals in Australia. Data are collected for each 'separation', which begins when a patient is admitted to hospital and ends when the total hospital stay ends or there is a change to the type of care (for example, from acute care to rehabilitation).[6]

Diabetes hospital separations do not have an agreed methodology. People with diabetes are at a high risk of developing a range of complications which, rather than diabetes, may be the primary reason for a hospital episode. Therefore, analysis of separations for principal diagnosis alone will tend to underestimate the number of hospital separations caused by diabetes. However, analysis of separations with any diagnosis of diabetes may overestimate the number of hospital separations caused by diabetes. The true number of hospitalisations attributable to diabetes lies somewhere between the two figures.[5]

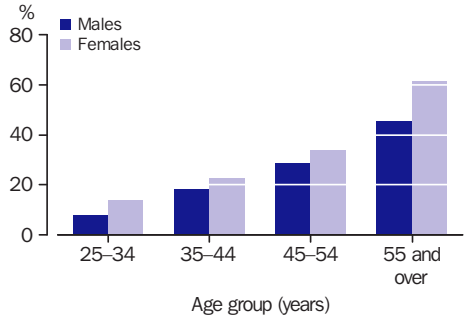
Cardiovascular disease

In this article, cardiovascular disease refers to all diseases of the circulatory system, which includes all diseases of the heart and blood vessels. In 2004–05, around 56,000 Indigenous people of all ages (12%) reported a cardiovascular disease. The most common form of cardiovascular disease was high blood pressure, which had a prevalence rate of 7% within the Indigenous population.

In 2004–05, cardiovascular disease in the Indigenous population was more prevalent among females than males, in all age groups from 25–34 years and older. The difference in rates between males and females was greatest in people aged 55 years and over (61% of females compared to 45% of males).

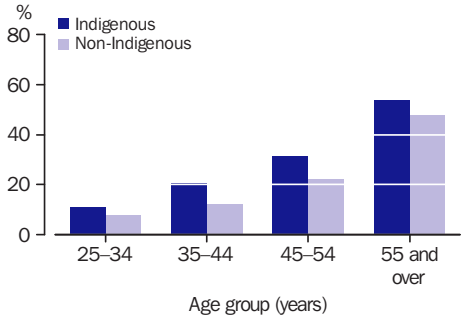
The prevalence of cardiovascular disease increases noticeably for Indigenous people from around 35 years of age, some ten years younger than in the non-Indigenous population.

Rates of cardiovascular disease among Indigenous persons — 2004–05



Source: ABS 2004–05 NATSIHS.

Rates of cardiovascular disease by Indigenous status — 2004–05



Source: ABS 2004–05 NATSIHS and 2004–05 NHS.

In 2003–04, after age standardisation, Indigenous people were about twice as likely as non-Indigenous people to be hospitalised with cardiovascular disease as their principal diagnosis.[6]

Between 2000 and 2004, cardiovascular disease was the main underlying cause of 27% of all deaths among Indigenous people. It is one of the leading causes of death for both Indigenous and non-Indigenous Australians. The age standardised mortality rate (based on the jurisdictions with sufficient level of coverage) from cardiovascular disease for Indigenous people between 2000 and 2004 was 1.7 times that for non-Indigenous people.[7]

Kidney disease

Chronic kidney disease is the long-term and usually irreversible loss of kidney function. Due to a lack of specific symptoms during the early stage, diagnosis is often made during the latter stages.[8] While kidney disease affects relatively few people, regular treatments (such as dialysis) can be particularly onerous for the patient and their family.

As the NATSIHS did not gather data from individuals in hospitals, and people with chronic kidney disease accounted for over one-third of all Indigenous hospital separations in 2003–04, measures of prevalence are likely to be underestimates.[6] In 2004–05, it was estimated that around 9,000 Indigenous people (2%) of all ages had kidney disease.

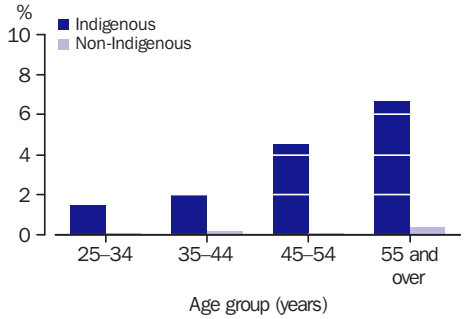
In the Indigenous population, the rate of kidney disease increased noticeably with age. This differs from the non-Indigenous population, where the prevalence of kidney disease was lower and relatively stable across age groups.

In 2003–04, 38% of hospitalisations of Indigenous people were for treatment involving dialysis. By comparison, in the non-Indigenous population, around 10% of all hospitalisations involved dialysis. Overall, the age standardised rate of hospitalisation of Indigenous Australians for care involving dialysis was 12 times the rate of non-Indigenous Australians.[6]

Between 2001 and 2003, in the four jurisdictions where the coverage of mortality data was sufficient, kidney disease was the main underlying cause of 3% of all Indigenous deaths. In a further 11% of deaths, kidney disease was recorded as an associated cause of death.[8]

Between 2000 and 2004, the age standardised mortality rate for Indigenous Australians for kidney disease was 3.7 times that for non-Indigenous Australians.[7]

Rates of kidney disease — 2004–05



Source: ABS 2004–05 NATSIHS and 2004–05 NHS.

End stage renal disease

End stage renal disease (ESRD) requires kidney replacement therapy (dialysis or a kidney transplant). In Australia, people who develop ESRD and undertake dialysis or kidney transplantation are registered with the Australia and New Zealand Dialysis and Transplant Registry (ANZDATA).

Indigenous identification in the ANZDATA registry is based on hospital records. However, because of the heightened awareness of the extent of renal disease among Indigenous Australians and the prolonged and repeated contact with renal units in hospitals, it is believed that Indigenous identification in the ANZDATA registry is more complete than in general hospital data.[6]

Between 2001 and 2005, 9% of all new patients registered with ANZDATA in Australia were identified as Indigenous Australians (917 people).[9] This is a much higher proportion than Indigenous representation in the total population (estimated to be 2.4% in June 2006).[10,11]

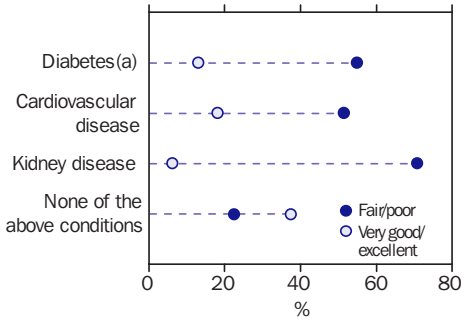
Self-assessed health

Self-assessed health status provides an indicator of overall health as it reflects an individual's perception of his or her own health.

In 2004–05, Indigenous people aged 35 years and over who had diabetes, cardiovascular disease or kidney disease were more likely to rate their own health as fair or poor when compared to other people in the same age group who did not have these conditions.

In 2004–05, 55% of Indigenous people aged 35 years and over who had reported having diabetes rated their health as either fair or poor, similar to those with cardiovascular disease (51%). Over two-thirds (71%) of Indigenous people aged 35 years and over with kidney disease reported fair or poor health.

Self-assessed health status among Indigenous persons aged 35 years and over — 2004–05



(a) Includes high sugar levels.

Source: ABS 2004–05 NATSIHS.

The greater proportion of Indigenous people with kidney disease who reported fair or poor health may be related to the significant impact chronic kidney disease can have on a patient's life, particularly if they are undergoing dialysis.[8]

Risk behaviours

Diabetes, cardiovascular disease and kidney disease are conditions which develop over the course of a lifetime. In most cases, these conditions can be prevented or at least delayed by modifying common risk factors which include obesity, smoking and low levels of physical activity.[4] Also, after the diagnosis of a chronic condition individuals may modify their risk behaviour, for example, by increasing their exercise level or by giving up smoking.

As with many chronic diseases, the causes are complex and can be interrelated. For example, smoking and physical inactivity can significantly increase the risk of chronic kidney disease. Physical inactivity can also indirectly increase the risk of kidney disease by influencing the development of biomedical risk factors such as Type 2 diabetes.[8]

In 2004–05, of Indigenous people aged 35 years and over, 47% were current daily smokers and 68% were overweight or obese. In non-remote areas, 82% of Indigenous people in this age group had low exercise levels.

While the 2004–05 NATSIHS was a cross-sectional survey and causality cannot be determined, associations between risk factors and long-term conditions are of interest. In 2004–05, the rate of people currently smoking among Indigenous people aged 35 years and over was greater in the population who did not report any of the three chronic conditions (51%) than in the population who did report a chronic condition (between 34% and 44%). This may be related to people who had been smokers stopping smoking, perhaps after diagnosis of a chronic condition.

In 2004–05, among Indigenous people aged 35 years and over, 83% of those reporting diabetes, 76% of those with cardiovascular disease and 69% of those with kidney disease were overweight/obese.

Indigenous persons aged 35 years and over: proportion of people with condition who reported a risk behaviour — 2004–05

	Current daily smoker	*Overweight/ obese(a)*	*Sedentary/low level exercise(b)*	*All persons aged 35 years and over with condition*
	%	%	%	'000
Diabetes(c)	33.7	83.4	83.6	24.8
Cardiovascular disease	43.7	76.5	86.0	42.6
Kidney disease	37.0	68.8	90.5	5.2
Total proportion of Indigenous persons aged 35 years and over with risk behaviour	47.4	68.2	81.6	131.8
	%	%	%	'000
Total persons aged 35 years and over with none of the above three conditions	51.1	62.7	79.2	76.9

(a) Proportions calculated excluding persons for whom BMI was not known.
(b) Non-remote areas only.
(c) Includes high sugar levels.

Source: ABS 2004–05 NATSIHS.

Similarly, in non-remote areas the vast majority of Indigenous people with at least one of the three chronic conditions had low or sedentary levels of exercise (between 84% of those reporting diabetes and 90% of those reporting kidney disease).

Endnotes

1 World Health Organisation, *Global strategy on diet, physical activity and health*, viewed 1 May 2007, <http://www.who.int/dietphysicalactivity/strategy/eb11344/strategy_english_web.pdf>.

2 National Health Priority Action Council (NHPAC) 2006, *National chronic disease strategy*, Department of Health and Ageing, Canberra.

3 Australian Institute of Health and Welfare, *National Health Priority Areas*, AIHW, viewed 12 April 2007, <http://www.aihw.gov.au/nhpa/index.cfm>.

4 Australian Institute of Health and Welfare 2004, *Australia's Health 2004*, cat. no. AUS 44, AIHW, Canberra.

5 Australian Institute of Health and Welfare 2006, *Diabetes hospitalisations in Australia, 2003–04*, cat. no. AUS 84, AIHW, Canberra.

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7 Australian Health Ministers' Advisory Council, 2006, *Aboriginal and Torres Strait Islander Health Performance Framework Report 2006*, AHMAC, Canberra.

8 Australian Institute of Health and Welfare 2005, *Chronic kidney disease in Australia, 2005*, cat. no. PHE 68, AIHW, Canberra.

9 Australia and New Zealand Dialysis and Transplant Registry, *ANZDATA Registry Report 2006*, ANZDATA, Adelaide.

10 Australian Bureau of Statistics 2004, *Experimental estimates and projections, Aboriginal and Torres Strait Islander Australians*, cat. no. 3238.0, ABS, Canberra.

11 Australian Bureau of Statistics 2006, *Population projections*, cat. no. 3222.0, ABS, Canberra.

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