

1.12 Children's hearing loss

This indicator includes a number of measures of children's hearing including prevalence rates and hospitalisation rates for diseases of the ear and mastoid process, and rates of ear and hearing problems managed at consultations with general practitioners

Data sources

Data for this measure come from the National Aboriginal and Torres Strait Islander Health Survey, the Western Australian Aboriginal Child Health Survey, the Bettering the Evaluation and Care of Health survey and the AIHW National Hospital Morbidity Database. Limited data are presented on child hearing screening from the state and territory health departments.

National Aboriginal and Torres Strait Islander Health Survey (NATSIHS)

The 2004–05 NATSIHS collected information from 10,439 Indigenous Australians of all ages. This sample was considerably larger than the supplementary Indigenous samples in the 1995 and 2001 National Health Surveys. The survey was conducted in remote and non-remote areas of Australia and collected a range of information from Indigenous Australians about health-related issues including health-related actions, health risk factors, health status, socioeconomic circumstances and women's health. It is planned to repeat the NATSIHS at 6-yearly intervals, with the next NATSIHS to be conducted in 2010–11. Selected non-Indigenous comparisons are available through the 2004–05 National Health Survey (NHS).

Western Australian Aboriginal Child Health Survey

This survey was a large-scale investigation into the health of 5,289 Western Australian Aboriginal and Torres Strait Islander children aged 0–17 years. It was undertaken in 2001 and 2002 by the Telethon Institute for Child Health Research in conjunction with the Kulunga Research Network. The survey was the first to gather comprehensive health, educational and developmental information on a population-based sample of Aboriginal and Torres Strait Islander children and their families and communities.

Bettering the Evaluation and Care of Health (BEACH) survey

Information about encounters in general practice is available from the BEACH survey which is conducted by the AIHW Australian GP Statistics and Classification Centre. Information is collected from a random sample of approximately 1,000 general practitioners (GPs) from across Australia each year. A sample of 100 consecutive encounters is collected from each GP.

The number of Indigenous patients identified in the BEACH survey is likely to be underestimated. This is because some GPs might not ask about Indigenous status, or the patient may choose not to identify (AIHW 2002). The estimates presented here are also derived from a relatively small sample of GP encounters involving Indigenous Australians.

Because of a late inclusion of a 'not stated' category of Indigenous status in 2001–02 (before which 'not stated' responses were included with non-Indigenous encounters), GP encounters for which Indigenous status was not reported have been included with encounters for non-Indigenous people under the 'other' category.

Data are presented for the 5-year period 2002–03 to 2006–07, during which there were 7,542 GP encounters with Aboriginal and Torres Strait Islander patients recorded in the survey, representing 1.5% of total GP encounters in the survey.

Hospitalisations

The National Hospital Morbidity Database is a compilation of episode-level records from admitted patient morbidity data collection systems in Australian hospitals in each state and territory. Information on the characteristics, diagnoses and care of admitted patients in public and private hospitals is provided annually to the AIHW by state and territory health departments.

Data are presented for the six jurisdictions which have been assessed by the AIHW as having adequate identification of Indigenous hospitalisations in 2004–05 – New South Wales, Victoria, Queensland, Western Australia, South Australia and the Northern Territory. These six jurisdictions represent approximately 96% of the Indigenous population of Australia. Data are presented by state/territory of usual residence of the patient.

Hospitalisations for which the Indigenous status of the patient was not reported have been included with hospitalisations data for non-Indigenous people under the ‘other’ category. This is to enable consistency across jurisdictions, as public hospitals in some states and territories do not have a category for the reporting of ‘not stated’ or inadequately recorded/reported Indigenous status.

Hospitalisation data are presented for the 2-year period July 2004 to June 2006. An aggregate of 2 years of data has been used, as the number of hospitalisations for some conditions is likely to be small for a single year.

The principal diagnosis is the diagnosis established to be the problem that was chiefly responsible for the patient’s episode of care in hospital. The additional diagnosis is a condition or complaint either coexisting with the principal diagnosis or arising during the episode of care. The term ‘hospitalisation’ has been used to refer to a separation which is the episode of admitted patient care, which can be a total hospital stay (from admission to discharge, transfer or death) or a portion of a hospital stay beginning or ending a change in a type of care (for example, from acute to rehabilitation). ‘Separation’ also means the process by which an admitted patient completes an episode of care by being discharged, dying, transferring to another hospital or changing type of care.

Child hearing screening data

No data are currently available on Aboriginal and Torres Strait Islander children’s hearing loss in the Australian Capital Territory, Queensland and Western Australia. New South Wales, Victoria, South Australia, Tasmania and the Northern Territory currently have screening programs for hearing loss at school entry, but comprehensive data are not yet available.

Analysis

Age-standardised rates and ratios have been used for this indicator as a measure of morbidity in the Indigenous population relative to other Australians. Ratios of this type illustrate differences between the rates of morbidity among Indigenous people and those of other Australians, taking into account differences in age distributions.

Self-reported prevalence

Self-reported data from the National Aboriginal and Torres Strait Islander Health Survey on the prevalence of diseases of the ear and mastoid are presented in Table 1.12.1, Figure 1.12.1 and Table 1.12.2.

Prevalence by age

- In 2004–05, approximately 10% of Indigenous children aged 0–14 years reported having ear or hearing problems compared with 3% of non-Indigenous children of the same age. Prevalence rates for ear/hearing problems were 95 per 1,000 population among Indigenous children and 30 per 1,000 population among non-Indigenous children.
- Diseases of the ear and mastoid were more prevalent among Indigenous children aged 5–14 years (12%) than among Indigenous children aged 0–4 years (6%) (Figure 1.12.1).
- Complete or partial deafness/ hearing loss and otitis media were both more prevalent among Indigenous children than among non-Indigenous children. Approximately 5% of Indigenous children aged 0–14 years reported complete or partial hearing loss or deafness compared with 1% of non-Indigenous children. Approximately 4% of Indigenous children of the same age reported otitis media compared with 2% of non-Indigenous children. Otitis media is infection and inflammation of the middle ear space and eardrum. Symptoms include earache, fever and, in some cases, diminished hearing.

Table 1.12.1: Children reporting diseases of the ear and mastoid, by Indigenous status and age group, 2004–05^(a)

Age (years)	0–4		5–14		0–14	
	Indigenous	Non-Indigenous	Indigenous	Non-Indigenous	Indigenous	Non-Indigenous
	Per cent					
Complete or partial deafness/ hearing loss	2 ^(b)	1 ^(b)	6*	2*	5*	1*
Otitis media	4*	2* ^(b)	5*	1*	4*	2*
Other diseases of the ear and mastoid	— ^(b)	— ^(c)	2 ^(b)	1	1 ^(b)	—
Total^{(d)(e)}	6*	2*	12*	3*	10*	3*
Total number	60,183	1,198,038	120,486	2,561,973	180,669	3,760,010

* Represents results with statistically significant differences in the Indigenous/non-Indigenous comparisons.

(a) Self-reported data from the National Aboriginal and Torres Strait Islander Health Survey 2004–05 and National Health Survey 2004–05.

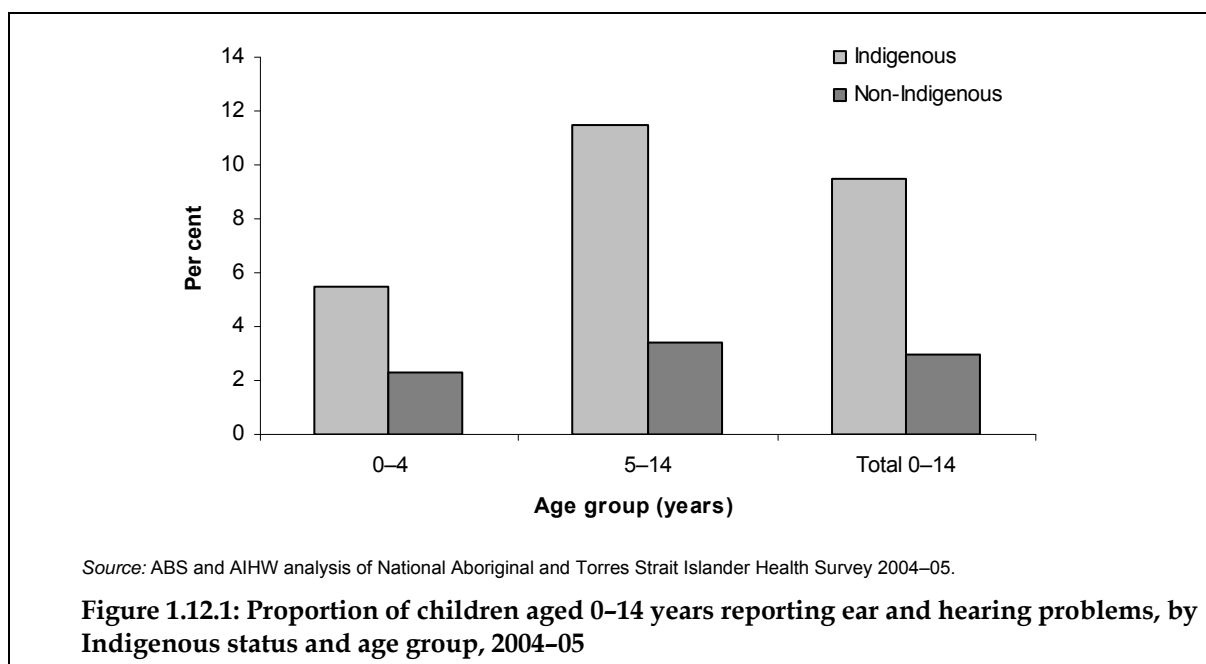
(b) Estimates having a relative standard error of between 25% and 50% and should be used with caution.

(c) Estimate having a relative standard error greater than 50% are considered too unreliable for general use.

(d) Includes 'Type of ear/hearing problem' not known.

(e) Components may not add to total as persons may have reported more than one type of condition.

Source: ABS and AIHW analysis of 2004–05 National Aboriginal and Torres Strait Islander Health Survey and 2004–05 National Health Survey.



Prevalence by remoteness and time series

- In 2004-05, prevalence of diseases of the ear and mastoid process was higher among Indigenous children aged 0-14 years in remote areas (12% males and 13% females) than those in non-remote areas (9% males and 8% females) (Table 1.12.2).
- Overall, there has been little change in the prevalence of ear and hearing problems among Indigenous children aged 0-14 years between 2001 and 2004-05, but in remote areas there has been a decline over this period for both Indigenous males (from 18% in 2001 to 12% in 2004-05) and Indigenous females (from 18% in 2001 to 13% in 2004-05).

Table 1.12.2: Indigenous children aged 0-14 years reporting conditions of the ear and mastoid process, by remoteness, 1995, 2001 and 2004-05

	1995 ^(a)		2001		2004-05		
	Males	Females	Males	Females	Males	Females	Persons
	Per cent						
Remote	n.a.	n.a.	18	18	12	13	13
Non-remote	7	4	6	11	9	8	8
Total	n.a.	n.a.	10	13	10	9	10
Total number	54,392	52,401	90,615	85,878	92,767	87,902	180,699

(a) Data for the National Aboriginal and Torres Strait Islander Health Survey 1995 are available for non-remote regions only. Total numbers are therefore for non-remote areas only.

Source: ABS and AIHW analysis of 2004-05 National Aboriginal and Torres Strait Islander Health Survey.

Prevalence by selected population and health characteristics

Table 1.12.3 presents the proportion of Indigenous children aged 0–14 years who had ear and circulatory problems by selected demographic characteristics and risk factors.

- In 2004–05, among Indigenous children aged 0–14 years, a higher proportion of those who lived in households with regular smokers who smoked at home indoors reported having ear and hearing problems than those who did not live with regular smokers who smoked at home indoors (13% compared to 8%).
- Indigenous children who lived in overcrowded households or in the most disadvantaged quintile of index of disparity were more likely to have ear and hearing problems (both 15%) than Indigenous children who did not live in overcrowded households (8%) or were in the least disadvantaged index of disparity (11%).
- A higher proportion of Indigenous children aged 12–14 years who reported they did not eat vegetables daily and/or did not eat fruit daily reported ear and hearing problems than Indigenous children who did eat fruit and vegetables daily.
- Approximately 11% of Indigenous children whose last consultation with a GP was less than 3 months ago reported ear and hearing problems compared to 8% of Indigenous children whose last GP consultation was 3 or more months ago.

Table 1.12.3: Proportion of Indigenous children aged 0–14 years with ear/hearing problems, by selected demographic characteristics and risk factors, 2004–05

	Has ear/hearing problems	Does not have ear/hearing problems
	Per cent	
Lives in households with regular smokers		
Yes	10.4	89.6
No	8.0	92.0
Lives in households with regular smokers who smoke at home indoors		
Yes	13.0	87.0
No	8.3	91.7
Overcrowding in housing		
Yes	14.5	85.5
No	8.3	92.0
SEIFA — index of disparity		
Most disadvantaged quintile	14.7	85.3
Least disadvantaged quintile	10.6	89.4
Eats vegetables daily^(a)		
Yes	7.7	92.3
No	20.8	79.2
Eats fruit daily^(a)		
Yes	7.8	92.2
No	13.8	86.2
Time since consulted GP/specialist		
Less than 3 months	11.0	89.0
3 months or more	8.4	91.6
Total	9.5	90.5
Total number	17,097	163,572

(a) Children aged 12–14 years.

Source: AIHW analysis of 2004–05 National Aboriginal and Torres Strait Islander Health Survey.

Hospitalisations

- For the 2-year period July 2004 to June 2006, in New South Wales, Victoria, Queensland, Western Australia, South Australia and the Northern Territory, there were 56,663 hospitalisations from diseases of the ear and mastoid process among children aged 0–14 years, 4.6% of which were hospitalisations of Aboriginal and Torres Strait Islander children.
- Diseases of the ear and mastoid process accounted for 4.4% of total hospitalisations among Indigenous children aged 0–14 years.

Hospitalisations by age and principal diagnosis

- For the 2-year period July 2004 to June 2006, in New South Wales, Victoria, Queensland, Western Australia, South Australia and the Northern Territory combined, for diseases of the ear and mastoid process there were 1,083 hospitalisations among Indigenous children aged 0–4 years, and 1,516 hospitalisations among those aged 5–14 years. This represented 3% and 7% of total hospitalisations among Indigenous children respectively (Table 1.12.4).
- Indigenous children aged 0–4 years were less likely to be hospitalised from diseases of the ear and mastoid process as other children, but Indigenous children aged 5–14 years were 1.4 times more likely to be hospitalised from these diseases as other children.
- Diseases of the middle ear, which include otitis media, were the most common type of ear disease causing hospitalisation among Indigenous children. Indigenous children aged 0–4 years were less likely to be hospitalised for diseases of the middle ear than other children, whereas Indigenous children aged 5–14 years were 1.4 times more likely to be hospitalised than other children (Table 1.12.4).

As well as rates and ratios for the six jurisdictions which have been assessed as having adequate identification of Indigenous hospitalisations in 2004–05, unadjusted and adjusted national level data for children aged 0–14 years are also included in table 1.12.4. The Australia data are adjusted by applying a completeness factor of 89.4%, which is an estimate of the level of Indigenous under-identification in hospital separations data.

- Over the period July 2004 to June 2006, Indigenous children aged 0–14 years in New South Wales, Victoria, Queensland, Western Australia, South Australia and the Northern Territory combined were hospitalised for diseases of the ear and mastoid process at similar rates to other Australians.
- When hospital rates are adjusted at the national level for Indigenous under-identification, Indigenous children were hospitalised for diseases of the ear and mastoid process at slightly higher rates than non-Indigenous children (ratio of 1.1).

Hospitalisations for tympanoplasty procedures

Indigenous children aged 0–14 years had reported rates of tympanoplasty procedures with a principal diagnosis of otitis media at almost four times the rate of other children. Differences observed in hospitalisations from otitis media may be due to the chronic nature of the disease among Indigenous children resulting in greater damage to the eardrum.

Table 1.12.4: Hospitalisations for diseases of the ear and mastoid process, by Indigenous status, children aged 0–14 years, NSW, Vic, Qld, WA, SA and NT, July 2004 to June 2006^{(a)(b)(c)(d)}

	Number		Per cent ^(e)		Indigenous			Other ^(e)			Rate ratio ⁽ⁱ⁾
	Indigenous	Other ^(e)	Indigenous	Other ^(e)	No. per 1,000 ^(f)	LCL 95% ^(g)	UCL 95% ^(h)	No. per 1,000 ^(f)	LCL 95% ^(g)	UCL 95% ^(h)	
Aged 0–4 years											
Diseases of middle ear and mastoid (H65–H75)	983	28,443	2.7	5.2	8.5	7.9	9.0	12.0	11.9	12.2	0.7*
Other disorders of ear (H90–H95)	51	1,589	0.1	0.3	0.4	0.3	0.6	0.7	0.6	0.7	0.7*
Diseases of the external ear (H60–H62)	47	617	0.1	0.1	0.4	0.3	0.5	0.3	0.2	0.3	1.6*
Diseases of inner ear (H80–H83)	n.p.	37	n.p.	—	n.p.	n.p.	n.p.	—	—	—	n.p.
Total	1,083	30,686	2.9	5.6	9.3	8.8	9.9	13.0	12.8	13.1	0.7*
Aged 5–14 years											
Diseases of middle ear and mastoid (H65–H75)	1,390	21,263	6.4	5.1	6.0	5.7	6.3	4.2	4.2	4.3	1.4*
Other disorders of ear (H90–H95)	59	903	0.3	0.2	0.3	0.2	0.3	0.2	0.2	0.2	1.4*
Diseases of the external ear (H60–H62)	66	1,149	0.3	0.3	0.3	0.2	0.4	0.2	0.2	0.2	1.2
Diseases of inner ear (H80–H83)	n.p.	63	n.p.	—	n.p.	n.p.	n.p.	—	—	—	n.p.
Total	1,516	23,378	7.0	5.6	6.5	6.2	6.8	4.7	4.6	4.7	1.4*
Aged 0–14 years											
Diseases of middle ear and mastoid (H65–H75)	2,373	49,706	4.1	5.1	6.8	6.5	7.1	6.7	6.7	6.8	1.0
Other disorders of ear (H90–H95)	110	2,492	0.2	0.3	0.3	0.3	0.4	0.3	0.3	0.4	0.9
Diseases of the external ear (H60–H62)	113	1,766	0.2	0.2	0.3	0.3	0.4	0.2	0.2	0.3	1.4*
Diseases of inner ear (H80–H83)	3	100	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6
Total NSW, Vic, Qld, WA, SA & NT	2,599	54,064	4.4	5.6	7.5	7.2	7.7	7.3	7.3	7.4	1.0
Total Australia	2,628	56,021	4.4	5.6	7.2	6.9	7.5	7.3	7.2	7.3	1.0
Total Australia adjusted ^{(j)(k)}	2,937	55,712	4.9	5.5	8.0	7.7	8.3	7.2	7.2	7.3	1.1*

(continued)

Table 1.12.4 (continued): Hospitalisations for diseases of the ear and mastoid process, by Indigenous status, NSW, Vic, Qld, WA, SA and NT, July 2004 to June 2006^{(a)(b)(c)(d)(e)}

- (a) Categories are based on the ICD-10-AM fifth edition (National Centre for Classification in Health 2006); ICD-10-AM codes H60–H95.
- (b) Financial year reporting.
- (c) Data are reported by state/territory of usual residence of the patient hospitalised and are for New South Wales, Victoria, Western Australia, South Australia, the Northern Territory and Queensland only. These six jurisdictions are considered to have adequate levels of Indigenous identification, although the level of accuracy varies by jurisdiction and hospital. Hospitalisation data for these six jurisdictions should not be assumed to represent the hospitalisation experience in the other jurisdictions.
- (d) Proportion of total hospitalisations for Indigenous and non-Indigenous people in that age group for the period 2004–05 to 2005–06.
- (e) 'Other' includes hospitalisations of non-Indigenous people and those for whom Indigenous status was not stated.
- (f) Age-specific hospitalisation rate using the average Indigenous December populations for the relevant years.
- (g) LCL = lower confidence limit.
- (h) UCL = upper confidence limit.
- (i) Rate ratio Indigenous:other.
- (j) Includes all eight states and territories, including the Australian Capital Territory and Tasmania; Other Territories and Residence State not applicable (e.g. overseas, at sea, no fixed address).
- (k) Australian hospitalisation numbers and rates have been adjusted for Indigenous under-identification using a national adjustment factor of 0.89. This factor was derived from a study undertaken by the AIHW in 2007 which assessed the level of Indigenous under-identification in hospital data in all states and territories by comparing information gathered from face-to face interviews in public hospitals with results from hospital records. By applying this factor, the number of Indigenous hospitalisations was increased by 11% and these additional hospitalisations then subtracted from the number of hospitalisations for Other Australians.

Source: AIHW analysis of National Hospital Morbidity Database.

Time series analysis

Time series data are presented for the four jurisdictions that have been assessed as having adequate identification of Indigenous hospitalisations for all years from 1998–99 to 2005–06 – Queensland, Western Australia, South Australia and the Northern Territory. These four jurisdictions represent approximately 60% of the Indigenous Australian population. New South Wales and Victoria were identified as having adequate identification of Indigenous hospitalisations from 2004–05 onwards, therefore they were included as part of the current period analysis (2004–05 to 2005–06) but not as part of the time series analyses.

Hospitalisation rates, rate ratios and rate differences between Indigenous and other Australians for diseases of the ear and mastoid process over the 7-year period 1998–99 to 2005–06 are presented in Table 1.12.5 and Figure 1.12.2.

- In Queensland, Western Australia, South Australia and the Northern Territory combined, there were significant declines in hospitalisation rates for diseases of the ear and mastoid process among Indigenous children aged 0–14 years during the period 1998–99 to 2005–06, with an average yearly decline in the rate of around 0.2 per 1,000 population. This is equivalent to a 17% reduction in the rate over the period. The declines in hospitalisation rates were significant for both males and females.
- There were also significant declines in hospitalisation rates among other Australian children, with an average yearly decline in the rate of 0.2 per 1,000. This is equivalent to an 18% decline in the rate over the period.
- There was no significant change in the hospitalisation rate ratios or rate difference between Indigenous and other children during the period 1998–99 to 2005–06.

Note that changes in the level of accuracy of Indigenous identification in hospital records will result in changes in the level of reported hospital separations for Indigenous Australians. Also, changes in access, hospital policies and practices all affect the level of hospitalisation over time. Caution should be used in interpreting changes over time, as it is not possible to ascertain whether a change in reported hospitalisation is due to changes in the accuracy of Indigenous identification or real changes in the rates at which Indigenous people are hospitalised. An increase in hospitalisation rates may reflect increased use of admitted patient hospital services rather than a worsening of health.

Table 1.12.5: Age-standardised hospitalisation rates, rate ratios and rate differences from diseases of the ear and mastoid process, children aged 0–14 years, Qld, WA, SA & NT, 1998–99 to 2005–06^(a)

	1998–99	1999–00	2000–01	2001–02	2002–03	2003–04	2004–05	2005–06	Annual change ^(b)	% change over period ^(c)
Indigenous rate (no. per 1,000)										
Males	10.1	10.4	10.4	9.4	8.5	9.5	8.8	9.0	–0.2*	–15.6
Females	9.2	9.0	8.6	9.2	7.8	8.2	7.8	7.3	–0.3*	–19.5
Persons	9.7	9.7	9.5	9.3	8.1	8.9	8.3	8.2	–0.2*	–17.4
Other Australian^(d) rate (no. per 1,000)										
Males	11.4	11.1	11.1	10.8	10.7	10.3	10.2	9.4	–0.3*	–15.7
Females	8.2	8.0	8.1	7.8	7.5	7.2	7.0	6.5	–0.2*	–20.4
Persons	9.9	9.6	9.7	9.3	9.1	8.8	8.6	8.0	–0.2*	–17.6
Rate ratio^(e)										
Males	0.9	0.9	0.9	0.9	0.8	0.9	0.9	1.0	—	0.8
Females	1.1	1.1	1.1	1.2	1.0	1.1	1.1	1.1	—	1.0
Persons	1.0	1.0	1.0	1.0	0.9	1.0	1.0	1.0	—	0.5
Rate difference^(f)										
Males	–1.3	–0.7	–0.7	–1.4	–2.2	–0.8	–1.4	–0.3	—	–16.2
Females	0.9	0.9	0.5	1.4	0.3	1.0	0.8	0.8	—	–11.4
Persons	–0.2	0.1	–0.2	0.0	–1.0	0.1	–0.3	0.2	—	–24.2

* Represents results with statistically significant increases or declines at the $p < 0.05$ level over the period 1998–99 to 2005–06.

(a) Data are from public and most private hospitals. Data exclude private hospitals in the Northern Territory.

(b) Average annual change in rates, rate ratios and rate differences determined using linear regression analysis.

(c) Per cent change between 1998–99 and 2005–06 based on the average annual change over the period.

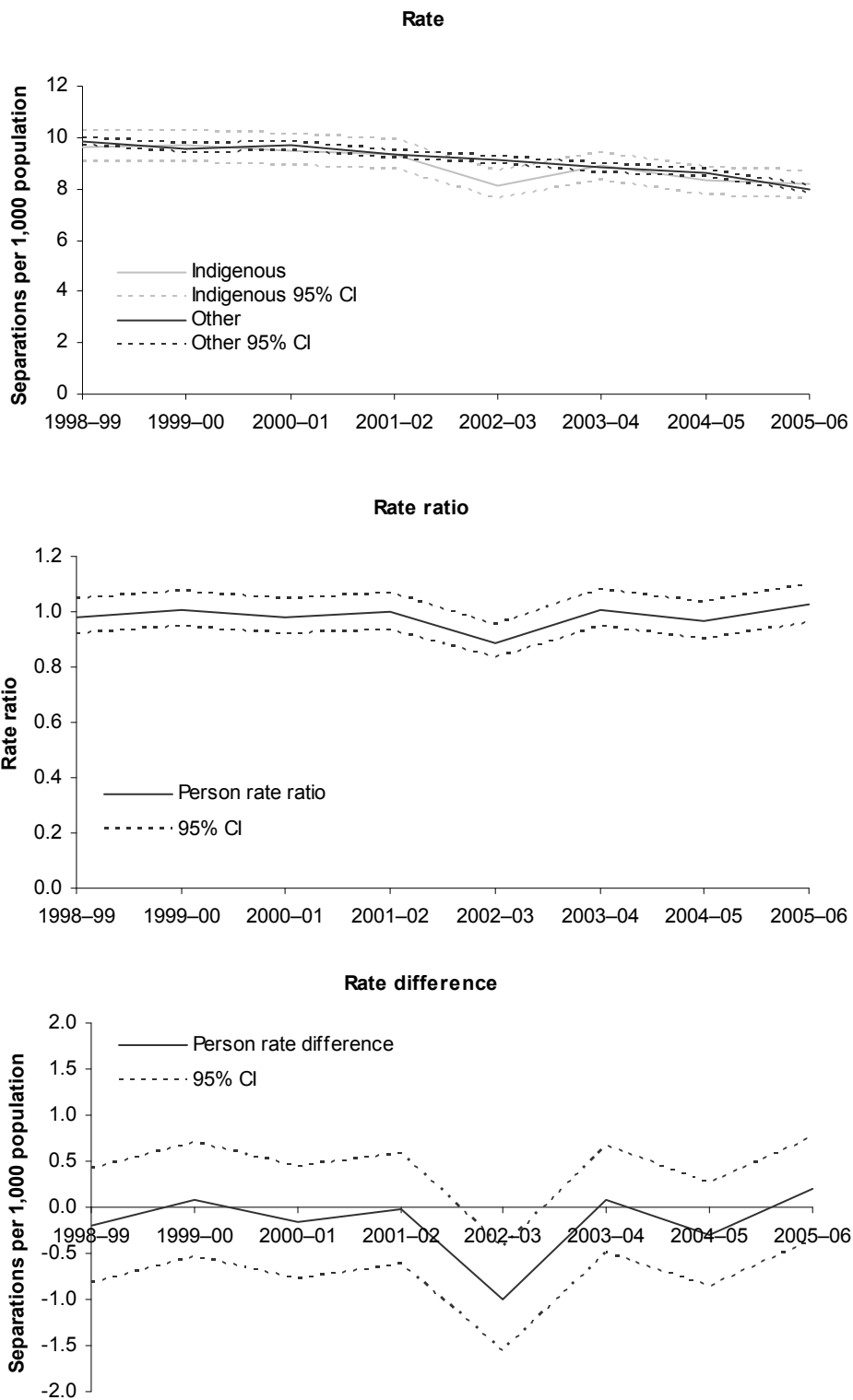
(d) 'Other' includes hospitalisations for non-Indigenous people and those for whom Indigenous status was not stated.

(e) Hospitalisation rates for Indigenous Australians divided by hospitalisation rates for other Australians.

(f) Hospitalisation rates for Indigenous Australians minus hospitalisation rates for other Australians.

Note: Rates have been directly age-standardised using the 2001 Australian standard population.

Source: AIHW analysis of National Hospital Morbidity Database.



Source: AIHW analysis of National Hospital Morbidity Database.

Figure 1.12.2: Hospitalisation rates, rate ratios and rate differences between Indigenous and other children aged 0-14 years from diseases of the ear and mastoid process, Qld, WA, SA and NT, 1998-99 to 2005-06

General practitioner encounters

Information about general practitioner (GP) encounters is available from the BEACH survey. Information is collected from a random sample of approximately 1,000 general practitioner from across Australia each year. A sample of 100 consecutive encounters is collected from each GP. Data for the 5-year period 2002–03 to 2006–07 are presented in Table 1.12.6.

- In the period 2002–03 to 2006–07 there were 58,145 GP encounters with patients aged 0–14 years, 1,635 (2.8%) of which were with Aboriginal and Torres Strait Islander patients.
- Ear and hearing problems were responsible for 11% of total problems managed among Indigenous patients aged 0–14 years and 9% of total problems managed among other patients of the same age.
- Ear and hearing problems were managed at GP encounters with Indigenous children at similar rates to encounters with other children (at rates of 13.1 and 10.8 per 100 encounters for Indigenous and other children aged 0–14 years respectively).
- Acute otitis media/myringitis was the most common ear and hearing problem managed at GP encounters, responsible for 6.4% of total problems managed among Indigenous patients aged 0–14 years. It made up a greater proportion of problems managed in the 0–4 year age group (7.2%) than at encounters with children aged 5–14 years (5.4%).
- Acute otitis media/myringitis was managed at GP encounters with Indigenous children aged 0–14 years at similar rates to encounters with other children of the same age (7.8 per 100 encounters compared with 7.0).

Table 1.12.6: Ear and hearing problems^(a) managed by general practitioners, by Indigenous status of patient, 2002–03 to 2006–07^{(b)(c)(d)}

	Number		Per cent total problems ^(e)		Indigenous			Other ^(f)			Ratio ⁽ⁱ⁾
	Indigenous	Other ^(f)	Indigenous	Other ^(f)	No. per 100 encounters ^(g)	95% LCL ^(h)	95% UCL ⁽ⁱ⁾	No. per 100 encounters ^(g)	95% LCL ^(h)	95% UCL ⁽ⁱ⁾	
0–4 years											
Acute otitis media/ myringitis	80	2,510	7.2	7.2	8.8	6.3	11.4	8.4	8.0	8.9	1.1
Other infections of ear	25	467	2.3	1.3	2.8	1.5	4.0	1.6	1.4	1.8	1.8
<i>Subtotal infections of ear</i>	<i>105</i>	<i>2,977</i>	<i>9.5</i>	<i>8.6</i>	<i>11.6</i>	<i>8.5</i>	<i>14.7</i>	<i>10.0</i>	<i>9.5</i>	<i>10.5</i>	<i>1.2</i>
Hearing loss	—	11	—	—	—	—	—	—	—	0.1	—
Other diseases of the ear	12	439	1.1	1.3	1.3	0.4	2.3	1.5	1.1	1.8	0.9
Total diseases of the ear	117	3,427	10.6	9.9	12.9	9.5	16.4	11.5	10.8	12.2	1.1
5–14 years											
Acute otitis media/ myringitis	48	1,439	5.4	4.6	6.6	4.2	8.9	5.4	5.1	5.7	1.2
Other infections of ear	29	753	3.3	2.4	4.0	2.0	5.9	2.8	2.6	3.1	1.4
<i>Subtotal infections of ear</i>	<i>77</i>	<i>2,192</i>	<i>8.7</i>	<i>7.1</i>	<i>10.5</i>	<i>7.1</i>	<i>13.9</i>	<i>8.2</i>	<i>7.8</i>	<i>8.6</i>	<i>1.3</i>
Hearing loss	—	23	—	0.1	—	—	—	0.1	0.1	0.1	—
Other diseases of the ear	21	437	2.4	1.4	2.9	1.5	4.3	1.6	1.4	1.8	1.8
Total diseases of the ear	98	2,652	11.1	8.5	13.4	9.3	17.5	9.9	9.5	10.4	1.3

(continued)

Table 1.12.6 (continued): Ear and hearing problems^(a) managed by general practitioners, by Indigenous status of patient, 2002–03 to 2006–07^{(b)(c)(d)}

	Number		Per cent total problems ^(e)		Indigenous			Other ^(f)			Ratio ^(j)
	Indigenous	Other ^(f)	Indigenous	Other ^(f)	No. per 100 encounters ^(g)	95% LCL ^(h)	95% UCL ⁽ⁱ⁾	No. per 100 encounters ^(g)	95% LCL ^(h)	95% UCL ⁽ⁱ⁾	
0–14 years											
Acute otitis media/myringitis	128	3,949	6.4	6.0	7.8	5.8	9.8	7.0	6.7	7.3	1.1
Other infections of ear	54	1,220	2.7	1.9	3.3	2.1	4.5	2.2	2.0	2.3	1.5
<i>Subtotal infections of ear</i>	<i>182</i>	<i>5,169</i>	<i>9.1</i>	<i>7.9</i>	<i>11.1</i>	<i>8.5</i>	<i>13.8</i>	<i>9.1</i>	<i>8.8</i>	<i>9.5</i>	<i>1.2</i>
Hearing loss	—	34	—	0.1	—	—	—	0.1	—	0.1	—
Other diseases of the ear	33	876	1.7	1.3	2.0	1.1	2.9	1.6	1.3	1.8	1.3
Total diseases of the ear	215	6,079	10.8	9.2	13.1	10.1	16.2	10.8	10.3	11.3	1.2

(a) ICP-2 codes: H00–H99. Acute otitis media/myringitis = H71; other ear infections = H70, H72, H73, H74; hearing loss = H28, H84, H85, H86; other diseases of the ear = H00–H27, H29–H69, H75–H83, H87–H99.

(b) These survey results are likely to undercount the number of Indigenous Australians visiting doctors.

(c) Combined financial year data for 5 years.

(d) Data for Indigenous and other Australians have not been weighted.

(e) Per cent of total problems within age group.

(f) Includes non-Indigenous patients and patients for whom Indigenous status was not stated.

(g) Age-specific rate (no. per 100 encounters). Figures do not add to 100 as more than one problem can be managed at each encounter.

(h) LCL = lower confidence interval.

(i) UCL = upper confidence interval.

(j) Rate ratio Indigenous:other.

Source: AIHW analysis of BEACH survey of general practice, AGPSCC.

Additional information

Ear and hearing problems among Aboriginal children in Western Australia

The Western Australian Aboriginal Child Health Survey collected information on ear and hearing problems among Aboriginal children living in Western Australia in 2001 and 2002.

- Approximately 18% of Aboriginal children were assessed by their carers as having recurring ear infections. Children aged 12–17 years were less likely to have recurring ear infections (14%) than younger children aged 0–3 and 4–11 years (20%). Of those children with recurring ear infections, over two-thirds (69%) had at least one episode in which infection ruptured the eardrum causing ear discharge.
- Overall, approximately 13% of Aboriginal children aged 4–17 years had recurring ear infections with at least one instance of discharging ears, and a further 9% had had an isolated case of discharging ears. The risk of discharging ears in children with recurring ear infections was highest in areas of high and extreme isolation (83%).
- Carers of children aged 4–17 years were also asked about their child's hearing and learning ability. Approximately 7% of children were assessed as having abnormal hearing, 9% with unintelligible speech, 10% as having difficulty with sounds, 5% with a stammer and 9% as having learning difficulties. Younger children aged 4–11 years were more likely to have language difficulties such as unintelligible speech (11%) and difficulty with sounds (13%) than children aged 12–17 years (5% and 4% respectively).
- Aboriginal children with ear infections had a significantly greater risk of abnormal hearing, language problems and learning difficulties. Approximately 30% of children with recurrent ear infections with discharge had abnormal hearing compared with 2% of children with no ear infections. Children with recurring ear infections with discharge were around three times as likely to have difficulty with sounds and twice as likely to have learning difficulties as children with no ear infection.

Child hearing screening

Limited data are currently available on the screening of Aboriginal and Torres Strait Islander children's hearing in most states and territories. Available data are summarised below.

- In South Australia, in 2003, the prevalence of otitis media leading to hearing loss and contributing to communication problems and long-term disability was estimated to be 11.1% for Aboriginal children compared with 4.7% for the general community (SIMC 2004).
- In Victoria, all children are screened for hearing loss at 500 Hz at 30 dB and 1,000, 2,000 and 4,000 Hz at 20 dB through two universal programs – Maternal and Child Health (2–8 weeks) and School Nursing (prep school 5–6 years). In 2004, 58,793 prep children were screened, of whom 724 were recorded as Aboriginal and/or Torres Strait Islander. Of the Indigenous children screened, 598 were recorded with hearing within normal limits and 141 were referred for further action.
- In the Northern Territory in 2004, 62% of school-aged children (aged 4–16 years) tested in remote communities in the Northern Territory were identified with varying degrees of hearing loss in one or both ears. The tests were performed by audiologists and nurse audiometrists who travelled to remote communities. The numbers tested included mostly children who failed hearing screening at school entry (aged 4–5 years) and children with hearing concerns, but also older children who have had existing hearing loss and were being monitored.

Data quality issues

National Aboriginal and Torres Strait Islander Health Survey (NATSIHS)

The NATSIHS uses the standard Indigenous status question. The NATSIHS sample was specifically designed to select a representative sample of Aboriginal and Torres Strait Islander Australians and thus overcomes the problem inherent in most national surveys with small and unrepresentative Indigenous samples. As with other surveys, the NATSIHS is subject to sampling and non-sampling errors. Calculations of standard errors and significance testing help to identify the accuracy of the estimates and differences.

Information recorded in this survey is essentially 'as reported' by respondents. The ABS makes every effort to collect accurate information from respondents, particularly through careful questionnaire design, pre-testing of questionnaires, use of trained interviewers and assistance from Indigenous facilitators. Nevertheless, some responses may be affected by imperfect recall or individual interpretation of survey questions.

Non-Indigenous comparisons are available through the National Health Survey (NHS). The NHS was conducted in major cities and regional and remote areas, but very remote areas were excluded from the sample. Time series comparisons are available through the 1995 and 2001 National Health Surveys.

In remote communities there were some modifications to the NATSIHS content in order to accommodate language and cultural appropriateness in traditional communities and help respondents understand the concepts. Some questions were excluded and some reworded. Also, paper forms were used in communities in remote areas and computer-assisted interview (CAI) instruments were used in non-remote areas. The CAI process included built-in edit checks and sequencing.

Further information on NATSIHS data quality issues can be found in the NATSIHS 2004–05 publication (ABS 2006).

Western Australian Aboriginal Child Health Survey

Survey data are subject to sampling and non-sampling errors. Confidence intervals are published with the data to provide a guide to the reliability of the estimates. Non-sampling errors can occur in surveys because of questionnaire design problems, respondent difficulty recalling information/lack of appropriate records, and errors made in the recording and processing of the data. Every effort was made to minimise non-sample errors in this survey (Zubrick et al. 2004).

General practitioner data (BEACH)

Information about general practitioner encounters is available from the Bettering the Evaluation and Care of Health (BEACH) survey. The BEACH data on Indigenous Australians should be treated with care. First, the sample frame has not been designed to produce statistically significant results for population subgroups such as Indigenous Australians. Second, the identification of Indigenous Australians is not complete. In the BEACH survey, 'not stated' responses to the Indigenous identification question are often higher than the 'yes' responses. It can be assumed, therefore, that the survey consistently undercounts the number of Indigenous Australians visiting general practitioners, but the extent of this undercount is not measurable.

Hospital separations data

Separations

The number and pattern of hospitalisations can be affected by differing admission practices between regions and jurisdictions and from year to year, and differing levels and patterns of service delivery.

(continued)

Data quality issues (continued)

Indigenous status question

Some jurisdictions have slightly different approaches to the collection and storage of the standard Indigenous status question and categories in their hospital collections. The 'not stated' category is missing from several collections. It is recommended that the standard wording and categories be used in all jurisdictions (AIHW 2005).

Under-identification

The incompleteness of Indigenous identification means the number of hospital separations recorded as Indigenous is an underestimate of hospitalisations of Aboriginal and Torres Strait Islander peoples. For several years, Queensland, South Australia, Western Australia and the Northern Territory reported that Indigenous status in their hospital separations data was of acceptable quality (AIHW 2007). The AIHW, however, has recently completed an assessment of the level of Indigenous under-identification in hospital data in all states and territories. Results from this assessment indicate that New South Wales, Victoria, Queensland, Western Australia, South Australia and the Northern Territory have adequate Indigenous identification (20% or less overall under-identification of Indigenous patients) in their hospital separations data (AIHW unpublished data). It has been recommended that reporting of Indigenous hospital separations be limited to aggregated information from New South Wales, Victoria, Queensland, Western Australia, South Australia and the Northern Territory. The proportion of the Indigenous population covered by these six jurisdictions is 96%. The following caveats have also been recommended for analysis of hospitalisation data from selected jurisdictions (ABS & AIHW 2005):

- *Interpretation of results should take into account the relative quality of the data from the jurisdictions included (currently a small degree of Indigenous under-identification in data from Western Australia and the Northern Territory and relatively marked Indigenous under-identification in data from South Australia and Victoria).*
- *Data for these six jurisdictions over-represent Indigenous populations in less urbanised and more remote locations.*
- *Hospitalisation data for these six jurisdictions are not necessarily representative of the jurisdictions not included.*

From the AIHW study it was possible to produce correction factors for the level of Indigenous under-identification in hospital data for each jurisdiction and at the national level.

Numerator and denominator

Rate and ratio calculations rely on good numerator and denominator data. The changes in the completeness of identification of Indigenous people in hospital records may take place at different rates from changes in the identification of Indigenous people in other administrative collections and population censuses. Denominators used here are sourced from Experimental estimates and projections: Aboriginal and Torres Strait Islander Australians 1991 to 2009 (ABS 2004).

Child hearing screening

The Australian Capital Territory, Queensland and Western Australia reported that there were no data available on Aboriginal and Torres Strait Islander children's hearing loss. Victoria reported that children are screened for hearing through two universal programs – Maternal and Child Health (2–8 weeks), and School Nursing (prep school 5–6 years). Screening relies on a consent form being completed by the parent. The form is still valid if Indigenous status is not completed. All children are screened for hearing loss at 500 Hz at 30 dB and 1000, 2000 and 4000 Hz at 20 dB. School Nursing has made efforts to improve the quality of the data but the level of accurate identification is uncertain.

(continued)

Data quality issues (continued)

Tasmanian enrolment cards are completed by parents or nurses; asking for Indigenous status is compulsory but responding is voluntary. Children whose hearing loss has been detected and who attend the Australian Hearing Service have their Indigenous status collected (SIMC 2004).

In 2004–05, NSW Health has started a statewide otitis media screening initiative for Aboriginal children aged 0–6 years over a 4-year term. Data are not yet available.

In the Northern Territory, remote nurses from the Maternal and Child Health team perform hearing screening at 1,000 Hz and 4,000 Hz at 25 dB at school entry. Children who fail the hearing screening are then referred to hearing services within the Department of Health and Community Services for follow-up diagnostic assessments.

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