

INTRODUCTION

The overwhelming majority of pregnancies in Australia do not result in severe illness or death. However, pregnancy, childbirth and infancy remain a time of vulnerability especially for Aboriginal and Torres Strait Islander mothers and children.

Many factors which affect the health of infants and children have their origin in the womb and are associated with the health-related behaviours of the mother. Smoking and excessive alcohol consumption during pregnancy can result in foetal death, premature birth and/or low birthweight. Premature and low birthweight infants are more at risk of developing conditions such as coronary heart disease and stroke when older. Poor nutrition during pregnancy and in the early years of life can affect child development and growth and may also lead to chronic disease later in life (WHO 1999).

The age of the mother can also affect the development of the foetus, with the risk of foetal complications increasing with pregnancies that occur in the teenage years and after about 35 years of age (Fraser et al. 1995; Fretts et al. 1995). Maternal age is also associated with perinatal health, with adverse outcomes more likely among younger and older mothers (Laws & Sullivan 2004).

This Chapter provides information on Indigenous mothers and their children. Maternal factors covered include fertility, maternal age, maternal mortality and risk factors during pregnancy. Factors related to infants and children include health status, hospitalisation and mortality.

MATERNAL FACTORS

*Mothers*

During 2000–02, Indigenous mothers comprised 3.5% of all mothers who gave birth in Australia (table 6.1). The proportion of Indigenous mothers ranged from less than 1% in Victoria to 39% in the Northern Territory. The reported number of Indigenous mothers was highest in Queensland (8,212), followed by New South Wales (6,370), Western Australia (4,631) and the Northern Territory (4,242).

*Mothers continued***6.1** INDIGENOUS MOTHERS, by state and territory—2000–02

	INDIGENOUS MOTHERS .....	
	no.	%(a)
New South Wales	6 370	2.5
Victoria	1 208	0.7
Queensland	8 212	5.6
South Australia	1 288	2.5
Western Australia(b)	4 631	6.3
Tasmania	na	na
Northern Territory	4 242	38.5
Australian Capital Territory(c)	177	1.3
<b>Australia</b>	<b>26 128</b>	<b>3.5</b>

na not available

(a) The proportion of Indigenous mothers in each jurisdiction.

(b) Data may differ from those published by the Department of Health, Government of Western Australia.

(c) Includes ACT and non-ACT residents who gave birth in the ACT. Among the 177 Indigenous mothers who gave birth, 128 were ACT residents.

Source: AIHW, *National Perinatal Data Collection*.*Fertility rate*

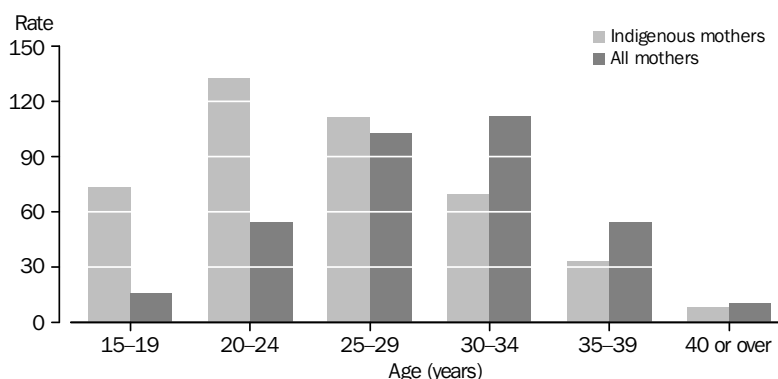
The total fertility rate (TFR) provides an estimate of the average number of children that a woman would have throughout her reproductive life if she were to experience the age-specific birth rate in a particular year. In 2003, the TFR for Indigenous women was estimated to be 2.15 babies, compared with 1.76 babies in the total Australian female population (ABS 2004a). Indigenous TFRs vary across the states and territories. The highest Indigenous fertility rate in 2003 occurred in the Northern Territory (2.83 babies), followed by Western Australia (2.32) and Queensland (2.21).

However, the fertility of Indigenous women may be underestimated because of the incomplete identification of Indigenous status in birth registrations. It should also be noted that because a considerable number of Indigenous babies are born to non-Indigenous women, measures of the fertility of Indigenous women inevitably underestimate the impact of these births on the growth of the Indigenous population.

High fertility at younger ages contributes to the relatively high fertility of Indigenous women. Teenage births are more common among Indigenous women than among other women (Sullivan & Lancaster 1999). In 2003, the teenage (15–19 years) birth rate among Indigenous women was more than four times the overall Australian teenage birth rate. Teenage pregnancies are associated with a number of adverse reproductive outcomes such as foetal complications and low birthweight (Fraser et al. 1995). The peak age group for births to Indigenous women was 20–24 years (133 babies per 1,000), compared with 30–34 years for all women (113 babies per 1,000) (graph 6.2).

Fertility rate continued

**6.2** AGE-SPECIFIC BIRTH RATES (a), by Indigenous status of the mother—2003



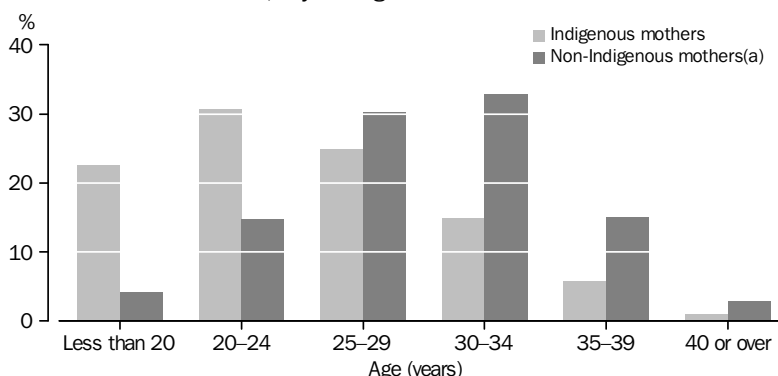
(a) Births per 1,000 females  
Source: ABS 2004a

Maternal age

The age of the mother can affect the development of the foetus, with the risk of foetal complications increasing in pregnancies that occur in the teenage years and for mothers over the age of about 35 years (Fraser et al. 1995; Fretts et al. 1995). Maternal age is also associated with perinatal health, with adverse outcomes more likely among younger and older mothers (Laws & Sullivan 2004). The mean age of Indigenous mothers in 2003 was 25 years compared with 31 years for all women (ABS 2004a).

In the National Perinatal Data Collection, 78% of Indigenous mothers who gave birth during the period 2000–02 were under 30 years of age, compared with 49% of non-Indigenous mothers (graph 6.3). The proportion of Indigenous mothers aged less than 20 years was highest in the Northern Territory (31%), followed by Western Australia (23%) and New South Wales (22%) (table 6.4). This compared with only 5% of non-Indigenous mothers in the Northern Territory, 5% in Western Australia and 4% in New South Wales.

**6.3** MATERNAL AGE, by Indigenous status of the mother—2000–02



(a) Excludes mothers for whom Indigenous status was not stated.  
Source: AIHW, National Perinatal Data Collection

*Maternal age continued***6.4** BIRTHS, by maternal age and Indigenous status of the mother—2000–02

	<i>Under 20 years</i>		<i>20–34 years</i>		<i>35 years or over</i>		<i>Total (a)</i>	
	no.	%	no.	%	no.	%	no.	%
<b>New South Wales</b>								
Indigenous	1 379	21.6	4 530	71.1	453	7.1	6 370	100.0
Non-Indigenous	9 916	4.0	192 901	77.5	45 973	18.5	248 913	100.0
<b>Victoria</b>								
Indigenous	258	21.4	844	69.9	105	8.7	1 208	100.0
Non-Indigenous	5 652	3.1	141 524	77.1	36 306	19.8	183 495	100.0
<b>Queensland</b>								
Indigenous	1 587	19.3	6 009	73.2	616	7.5	8 212	100.0
Non-Indigenous	7 818	5.7	108 209	78.7	21 482	15.6	137 509	100.0
<b>South Australia</b>								
Indigenous	265	20.6	918	71.3	105	8.2	1 288	100.0
Non-Indigenous	2 557	5.0	39 973	78.2	8 608	16.8	51 138	100.0
<b>Western Australia(b)</b>								
Indigenous	1 082	23.4	3 271	70.6	278	6.0	4 631	100.0
Non-Indigenous	3 257	4.7	53 977	78.1	11 843	17.1	69 077	100.0
<b>Northern Territory</b>								
Indigenous	1 304	30.7	2 712	63.9	218	5.1	4 242	100.0
Non-Indigenous	361	5.4	5 274	78.3	1 091	16.2	6 734	100.0
<b>Australian Capital Territory(c)</b>								
Indigenous	33	18.6	131	74.0	13	7.3	177	100.0
Non-Indigenous	444	3.3	10 433	76.8	2 710	19.9	13 588	100.0
<b>Australia(d)</b>								
Indigenous	5 908	22.6	18 415	70.5	1 788	6.8	26 128	100.0
Non-Indigenous	30 005	4.2	552 291	77.7	128 013	18.0	710 454	100.0

(a) Includes births where the mother's age was not stated. Excludes births to mothers whose Indigenous status was not stated.

(b) Data may differ from those published by the Department of Health, Government of Western Australia.

(c) Includes ACT and non-ACT residents who gave birth in the ACT. Among ACT resident Indigenous mothers who gave birth in the ACT, 18.0% were under 20 years, 73.4% were aged 20–34 years and 8.6% were aged 35 years or over.

(d) Excludes data for Tasmania.

Source: AIHW, National Perinatal Data Collection.

*Risk factors during pregnancy*

Among the risk factors for poor perinatal and child health are alcohol use, tobacco and drug use during pregnancy.

#### SMOKING

Smoking during pregnancy can have a number of detrimental effects on the foetus including low birthweight and spontaneous abortion. Smoking during pregnancy can also have a detrimental effect on the newborn including sudden infant death syndrome, asthma, lower respiratory tract infections, middle ear diseases and stillbirth (Zubrick et al. 2004).

In 2002, data were available from five states and territories: New South Wales, Western Australia, South Australia, the Australian Capital Territory and the Northern Territory. Aboriginal and Torres Strait Islander mothers accounted for 11% of mothers who smoked during pregnancy in these five jurisdictions (Laws & Sullivan 2004).

*Risk factors during  
pregnancy continued*

**SMOKING *continued***

According to the NSW Midwives data collection, in 2003, 57% of Indigenous mothers in New South Wales reported smoking at some point during pregnancy, compared with 14% of other mothers (NSW Health Department, Centre for Epidemiology and Research 2005).

In the Western Australian Aboriginal Child Health Survey (WAACHS), approximately 49% of mothers of Aboriginal children in Western Australia had smoked or chewed tobacco during pregnancy (table 6.5).

**ALCOHOL CONSUMPTION**

Excessive alcohol intake during pregnancy is associated with an increased risk of alcohol withdrawal symptoms in the baby, foetal alcohol syndrome and perinatal mortality (Zubrick et al. 2004). The Bibbulung Gnareep Solid Kid Study, which involved 274 Aboriginal families from the Perth area, looked at a range of factors influencing poor birth outcomes and poor health in the first 12 months of life. The study found that among other factors, maternal consumption of excess alcohol, namely spirits, during pregnancy was associated with poorer birth outcomes (Eades 2004).

In the WAACHS, the mothers of an estimated 23% of Aboriginal children in Western Australia reported they had consumed alcohol at some point during their pregnancy and an estimated 17% had both smoked and consumed alcohol while pregnant.

**MARIJUANA AND OTHER DRUG USE**

In the WAACHS, mothers of 9% of Western Australian Aboriginal children had used marijuana during pregnancy. Marijuana usage declined with increasing remoteness, from 11% in metropolitan areas to 2% in areas of extreme (geographic) isolation. Other drugs such as amphetamines and cocaine were reported for less than 1% of mothers.

**EFFECT OF SUBSTANCE USE DURING PREGNANCY ON BIRTHWEIGHT**

The WAACHS estimated the effects of tobacco, alcohol and marijuana use during pregnancy on birthweight by linking survey data to birth records on the Maternal and Child Health Research Data Base (MCHRDB). Mothers who used both alcohol and tobacco during pregnancy were almost twice as likely to have had a low birthweight baby as mothers who did not smoke or drink during pregnancy (15% compared with 8%) (table 6.5).

Overall, tobacco use during pregnancy was associated with a 200 gram reduction in mean birthweight of Aboriginal infants, and tobacco and alcohol use combined was associated with a 250 gram reduction in average birthweight. The effects of low birthweight are discussed in the following section on babies and children.

*Risk factors during pregnancy continued*

EFFECT OF SUBSTANCE USE DURING PREGNANCY ON BIRTHWEIGHT *continued*

**6.5** LOW BIRTHWEIGHT ABORIGINAL BABIES (a), by maternal substance use during pregnancy—2001–02

		Alcohol, no tobacco	Tobacco, no alcohol	Both alcohol and tobacco	No alcohol or tobacco	Total	Babies (no.) (b)
Mean birthweight	grams	3 270	3 110	3 060	3 310	<b>3 200</b>	. .
Low birthweight	%	10.2	11.0	15.4	7.8	<b>10.3</b>	2 180
Proportion of babies	%	6.0	32.1	17.3	44.6	<b>100.0</b>	21 200

. . not applicable

(a) Whose primary carer was their mother.

(b) Data are weighted estimates and have been derived by weighting the survey sample to reflect the Western Australian Aboriginal population.

Source: Zubrick et al. 2004.

*Maternal mortality*

Between 1997 and 1999, Indigenous status was recorded for 75 (83%) of the 90 maternal deaths during childbirth. Seven deaths were of Aboriginal and Torres Strait Islander mothers, accounting for 9% of the deaths where Indigenous status was known (Slaytor et al 2004). The maternal mortality ratio for Aboriginal and Torres Strait Islander women was approximately 24 per 100,000 confinements in 1997–99 and is more than three times as high as the maternal mortality ratio for other women (7 per 100,000 confinements). These rates must be interpreted with caution due to the very small number of Indigenous maternal deaths.

BABIES AND CHILDREN

*Births*

Information on births is published annually by the ABS from birth registration data and through the National Perinatal Data Collection (Midwives collections) held by the AIHW National Perinatal Statistics Unit (NPSU). The latest available data from the National Perinatal Data Collection are for 2002 and from ABS birth registrations are for 2003. The number of Indigenous births in both data collections is likely to be an underestimate as Indigenous status is not always recorded.

In 2003, there was a total of 11,740 registered births in Australia where at least one parent was of Indigenous origin, accounting for around 5% of total births (ABS 2004a). Of these Indigenous babies, around one-third (31%) had an Indigenous mother and an Indigenous father, and 43% had an Indigenous mother and a non-Indigenous father — a total of 8,567 births (73%) to Indigenous mothers. The remaining 27% of Indigenous babies had non-Indigenous mothers and Indigenous fathers.

In the National Perinatal Data Collection, which collects information on births to Indigenous mothers, there were 8,929 births to Aboriginal and Torres Strait Islander mothers in 2002 (8,827 live births and 102 foetal deaths). This represented 4% of the births where Indigenous status was known (249,266 births) in Australia. The differences between ABS birth registration data and the Perinatal Data Collection are thought to reflect differences in the level of Indigenous identification in the two data collections and delays or failure to register the birth of a child (ABS 2004a).

**Gestational age**

Gestational age is the length of the pregnancy in completed weeks. The gestational age for term pregnancies is between 37 and 41 weeks; for preterm births it is less than 37 weeks. In 2000–02, 13% of births to Indigenous mothers were preterm. Indigenous mothers had twice the rate of preterm births as non-Indigenous mothers. Almost one in four (24%) preterm births occurred at a gestational age of less than 32 weeks.

**Birthweight**

Babies born with a birthweight of less than 2,500 grams are classified as 'low birthweight'. Low birthweight may be a result of preterm birth, foetal growth restriction, a combination of the two, or other factors such as socioeconomic disadvantage, the age of the mother, the number of babies previously born, the mother's nutritional status, smoking and other risk behaviours, and illness during pregnancy (Horter et al. 1997; Kramer 1998). Low birthweight babies are at greater risk of poor health and death. They may require longer periods of hospitalisation after birth, and are more likely to develop significant disabilities (Leeson et al. 2001; Mick et al. 2002).

**6.6** BIRTHWEIGHT OF LIVE-BORN BABIES, by Indigenous status of the mother(a)—2000–02

	Low birthweight(b)		Normal or high birthweight(c)		Total(d)		Mean birthweight grams
	no.	%	no.	%	no.	%	
<b>New South Wales</b>							
Indigenous	765	12.0	5 601	87.9	6 371	100.0	3 203
Non-Indigenous	14 686	5.8	236 850	94.1	251 617	100.0	3 389
<b>Victoria</b>							
Indigenous	157	13.1	1 046	86.9	1 203	100.0	3 176
Non-Indigenous	11 607	6.3	173 691	93.7	185 316	100.0	3 368
<b>Queensland</b>							
Indigenous	950	11.6	7 256	88.4	8 209	100.0	3 210
Non-Indigenous	8 650	6.2	130 254	93.8	138 912	100.0	3 396
<b>South Australia</b>							
Indigenous	226	17.7	1 052	82.3	1 278	100.0	3 069
Non-Indigenous	3 258	6.3	48 435	93.7	51 695	100.0	3 371
<b>Western Australia(e)</b>							
Indigenous	669	14.5	3 959	85.5	4 629	100.0	3 118
Non-Indigenous	4 073	5.8	65 699	94.2	69 776	100.0	3 368
<b>Northern Territory</b>							
Indigenous	550	13.0	3 675	86.8	4 235	100.0	3 126
Non-Indigenous	406	6.0	6 360	93.8	6 779	100.0	3 364
<b>Australian Capital Territory(f)</b>							
Indigenous	39	21.8	140	78.2	179	100.0	3 037
Non-Indigenous	927	6.7	12 832	93.2	13 763	100.0	3 396
<b>Australia(g)</b>							
Indigenous	3 356	12.9	22 729	87.1	26 104	100.0	3 169
Non-Indigenous	43 607	6.1	674 121	93.9	717 858	100.0	3 382

(a) Excludes births to mothers whose Indigenous status was not stated.

(b) Less than 2,500 grams.

(c) 2,500 grams or more.

(d) Includes births where birthweight was not stated. Excludes foetal deaths.

(e) Data may differ from those published by the department of Health, Government of Western Australia.

(f) Includes ACT and non-ACT residents who gave birth in the ACT. Among live-born babies of ACT resident Indigenous mothers who gave birth in the ACT, 10.9% weighed less than 2,500 grams.

(g) Excludes data for Tasmania.

Source: AIHW, National Perinatal Data Collection.

*Birthweight continued*

In the period 2000–02, babies of Indigenous mothers were twice as likely to be of low birthweight as babies born to non-Indigenous mothers (13% compared to 6%) (table 6.6). Since 1991, there appears to have been little change in both the proportion of low birthweight babies born to Indigenous mothers and their mean birthweight (Plunkett et al. 1996; ABS & AIHW 1999, 2003).

*Perinatal mortality*

Perinatal deaths include both foetal deaths (stillbirths where birthweight is at least 400 grams or the gestational age is 20 weeks or over) and neonatal deaths (deaths within the first 28 days of life). Perinatal deaths may be underestimated because the number of neonatal deaths may not be accurately recorded, particularly deaths of babies who are transferred, readmitted to hospital, or who die at home. This is because some states and territories do not link records of registered perinatal deaths and the birth records of these babies in the National Perinatal Data Collection (Nassar et al. 2000). In recent years, a number of states and territories have linked their perinatal data collections to the registered perinatal deaths of their respective Registries of Births, Deaths and Marriages, in an effort to improve the extent to which neonatal deaths are recorded. This has led to improved information about perinatal deaths in those states and territories, and the reporting of higher numbers of neonatal deaths. Valid comparisons between the neonatal data and states and territories are therefore not always possible because not all states and territories have linked the two relevant data sets in order to improve the identification of neonatal deaths. In addition, differences in perinatal death rates may, in part, reflect the extent to which regional differences in the identification of babies of Indigenous mothers affect the overall level of identification within each jurisdiction.

For the period 1998–2002, the perinatal mortality rate for babies born to Indigenous women in Queensland, Western Australia, South Australia and the Northern Territory was twice that for babies born to non-Indigenous women in these jurisdictions (table 6.7). Foetal deaths accounted for the highest proportion of perinatal deaths (around 61% of Indigenous perinatal deaths and 68% of non-Indigenous perinatal deaths). In South Australia, the reported perinatal mortality rate for babies born to Indigenous women was three times the rate for babies born to non-Indigenous mothers (26 deaths per 1,000 compared with 9 deaths per 1,000).



Perinatal mortality  
continued

**6.7** PERINATAL MORTALITY, by Indigenous status of the mother—1998–2002

	FOETAL DEATHS		NEONATAL DEATHS (a)		TOTAL DEATHS (b)	
	no.	rate(c)	no.	rate(c)	no.	rate(c)
<b>Indigenous</b>						
Queensland	172	12.3	108	7.8	280	20.1
South Australia	39	18.0	18	8.5	57	26.3
Western Australia(d)	100	12.9	65	8.5	165	21.2
Northern Territory(e)	91	13.3	66	9.8	157	22.9
<i>Total</i>	402	13.1	257	8.4	659	21.4
<b>Non-Indigenous</b>						
Queensland	1 561	6.8	831	3.6	2 392	10.3
South Australia	545	6.2	241	2.7	786	8.9
Western Australia(d)	790	6.7	239	2.0	1 029	8.7
Northern Territory(e)	74	6.5	47	4.2	121	10.6
<i>Total</i>	2 970	6.6	1 358	3.0	4 328	9.6

(a) Data may exclude neonatal deaths within 28 days of birth for babies transferred or readmitted to hospital and those dying at home, for some states and territories.

(b) Excludes deaths of babies born to mothers whose Indigenous status was not stated.

(c) Per 1,000 perinatal deaths.

(d) Data may differ from those published by the Department of Health, Government of Western Australia.

(e) Neonatal deaths data for 2000–02 from Stewart & Li 2005.

Source: AIHW, National Perinatal Data Collection

HEALTHY CHILD  
DEVELOPMENT  
*Breastfeeding*

Breastfeeding has many positive effects on the survival chances, growth, development and health of infants. Many studies have shown that breastfeeding has a protective effect against conditions such as diarrhoea and respiratory infections and has benefits for children's growth, cognitive development and immunological functioning (Zubrick et al. 2004). Other studies have shown a protective effect against sudden infant death syndrome, asthma and other allergic diseases (Hoffman 1988; Oddy et al. 1999; Merrett et al. 1988).

The 2001 National Health Survey, which included an Indigenous supplement, collected information from 3,681 Aboriginal and Torres Strait Islander Australians, comprising 1,853 adults and 1,828 children. The survey estimated that in 2001, of all Indigenous women aged 18–64 years who had had children and whose breastfeeding status was known, 85% had breastfed their children. Indigenous women living in remote areas were more likely to have breastfed their children than those in non-remote areas (95% compared with 83%). A total of 75% of non-Indigenous mothers had breastfed their children.

Similar results were reported in the WAACHS, where 88% of Aboriginal children aged 0–17 years in Western Australia were reported, by carers, to have been breastfed. The proportion of Aboriginal children who had ever been breastfed increased with level of relative isolation, from 82% in the Perth metropolitan area to 96% in areas of extreme isolation (table 6.8). An estimated 35% of Aboriginal children aged 0–17 years had been breastfed for 12 months or more, and an estimated 10% of Aboriginal children aged 0–3 years were breastfed exclusively (i.e. were not given other types of milk).

**6.8** DURATION OF BREASTFEEDING AMONG INDIGENOUS CHILDREN(a), by level of relative isolation, Western Australia—2001–02

		LEVEL OF RELATIVE ISOLATION					Total
		None	Low	Moderate	High	Extreme	
<b>Children never breastfed</b>	%	<b>18.5</b>	<b>12.3</b>	<b>6.7</b>	<b>4.7</b>	<b>3.7</b>	<b>12.0</b>
Children ever breastfed							
Less than 3 months	%	20.2	19.0	7.6	6.8	3.4	14.7
3 months to less than 6 months	%	13.5	13.1	10.3	4.9	9.4	11.6
6 months to less than 9 months	%	8.0	7.2	10.6	6.2	5.8	8.0
9 months to less than 12 months	%	8.4	11.6	14.8	16.0	12.1	11.5
12 months or more	%	26.8	30.6	39.7	51.0	48.7	34.5
Still being breastfed	%	4.8	6.1	10.3	10.4	16.9	7.8
<b>Total ever breastfed</b>	%	<b>81.5</b>	<b>87.7</b>	<b>93.3</b>	<b>95.3</b>	<b>96.3</b>	<b>88.0</b>
<b>Children(b)</b>	no.	<b>8 780</b>	<b>6 050</b>	<b>4 920</b>	<b>2 240</b>	<b>1 970</b>	<b>24 000</b>

(a) Data are for children aged 0–17 years whose primary carer is their birth mother.

(b) Data are weighted estimates and have been derived by weighting the survey sample to reflect the Western Australian Aboriginal population.

Source: Zubrick et al. 2004

#### Diet and nutrition

Diet and nutrition are particularly important to Aboriginal and Torres Strait Islander people for a number of reasons. The change in their diet, following European settlement, from a traditional Aboriginal diet high in protein and fibre, to a diet high in carbohydrates and saturated fats, is associated with the present high levels of obesity, Type II diabetes and renal disease among Indigenous Australians (NHMRC 2000c). Aboriginal and Torres Strait Islander families living in isolated areas face particular challenges in providing their children with affordable, healthy food on a regular basis. Poor nutrition in the early years of life can affect childhood development, growth and health. Inadequate vitamin and nutrition intake, especially in the preschool years, can affect immune function and increase susceptibility to illness, disease and infection (Tomkins 2001).

The National Health and Medical Research Council Dietary Guidelines recommend consuming a wide variety of nutritious foods, including a high intake of plant food such as fruit and vegetables, while also recommending moderating total fat and saturated fat intake. The guidelines for vegetable intake recommend an average of two serves of vegetables each day for children aged 4–7 years and three serves per day for older children (NHMRC 2003). The fruit intake guidelines recommend an average of one serve of fruit each day for children aged 4–11 years and two serves per day for older children.

The WAACHS provides data on the dietary intake of Aboriginal children. Four indicators of dietary quality were used: water usually being drunk when thirsty, some form of unsweetened and unflavoured cow or soy milk being regularly consumed, fresh fruit usually being consumed on six or seven days of the week and at least half a cup of at least three vegetables, other than potato, usually being consumed on six or seven days of the week (Zubrick et al. 2004).

When asked which drink was usually consumed when thirsty, 68% of Aboriginal children aged 4–17 years reported water, 15% cordial, 10% soft drinks, 4% fruit juice, and 3% other drinks (table 6.9). Children living in areas of high or extreme isolation were more likely to drink water than children living in metropolitan areas.

*Diet and nutrition*  
*continued*

Around two-thirds of Aboriginal children aged 4–11 years (67%) and three-quarters of those aged 12–17 years (76%) were reported to usually eat fresh fruit daily. Younger children were more likely to have adequate vegetable intake (41%) than children in the 12–17 year age group (28%). Of the children who usually ate vegetables, half (50%) of 4–11 year olds ate five or more different vegetables (other than potato), and 27% of children aged 12–17 years ate five or more different vegetables.

Only one in five children met all four indicators of dietary quality. A greater proportion of children aged 4–11 years met all four indicators (21%) than did children aged 12–17 years (15%).

**6.9** DIETARY INDICATORS AMONG INDIGENOUS CHILDREN, by age group, Western Australia—2001–02

		AGE (YEARS)		
		4–11	12–17	Total
Drinks water usually when thirsty	%	67.1	69.4	68.0
Drinks unsweetened and unflavoured cow or soy milk regularly	%	94.2	90.5	92.7
Eats fresh fruit usually on six or seven days of the week	%	66.8	75.6	70.3
Eats adequate vegetables(a)	%	41.3	27.8	35.9
<b>All four indicators are met</b>	%	<b>21.0</b>	<b>15.3</b>	<b>18.7</b>
Children(b)	no.	13 800	9 100	22 900

(a) Eats at least half a cup of at least three vegetables, other than potato, usually on six or seven days of the week.

(b) Data are weighted estimates and have been derived by weighting the survey sample to reflect the Western Australian Aboriginal population.

Source: Zubrick et al. 2004

*Immunisation*

The Australian Childhood Immunisation Register (ACIR), managed by the Health Insurance Commission, holds information on childhood immunisation coverage. All children under seven years of age, enrolled in Medicare, are automatically included on the ACIR. Children who are not eligible to enrol in Medicare can be added to the ACIR when details of a vaccination are received from a doctor or immunisation provider. It should be noted that coverage estimates for Aboriginal and Torres Strait Islander children include only those who are identified as Indigenous and are registered on the ACIR. Children identified as Indigenous on the ACIR may not be representative of all Aboriginal and Torres Strait Islander children, therefore coverage estimates should be interpreted with caution.

In 2003, vaccination coverage for Indigenous children aged 12 months was lower than for other children for each single vaccine (table 6.10). However, at two years of age, a greater proportion of Indigenous children were fully vaccinated against hepatitis B, diphtheria, tetanus and pertussis (DTP), polio (OPV), and measles, mumps and rubella (MMR).

Aboriginal and Torres Strait Islander children had lower coverage for all vaccines at 12 months of age (82% compared with 91%), while at two years of age, they had vaccination coverage comparable with other children (91%). This suggests that there is a delay in the receipt of vaccines for Indigenous children in that significant numbers of Indigenous children are not vaccinated with the primary schedule of vaccines by

*Immunisation continued*

12 months of age but receive doses later (by two years of age). Schedules of vaccines may be delayed for a number of reasons including illness during infancy. The reported coverage estimates at two years of age also suggest that, while a greater proportion of Indigenous children at two years of age have been vaccinated for some diseases, they have not all been fully vaccinated.

For information on adult vaccination coverage refer to Chapter 7.

**6.10** CHILDREN FULLY VACCINATED, COVERAGE ESTIMATES AT ONE AND TWO YEARS OF AGE (a)(b)—31 December 2003

	ONE YEAR OLD		TWO YEARS OLD	
	Indigenous	Other	Indigenous	Other
	%	%	%	%
Hepatitis B	94.0	94.8	97.9	95.5
DTP (diphtheria, tetanus and pertussis vaccine)	84.8	92.7	96.7	95.7
OPV (oral polio vaccine)	84.1	92.6	95.2	94.5
Hib (Haemophilus influenzae type b)	93.0	94.4	92.9	92.9
MMR (measles, mumps and rubella vaccine)	. .	. .	94.2	93.1
<b>All vaccines</b>	<b>82.2</b>	<b>91.2</b>	<b>90.9</b>	<b>91.3</b>

. . not applicable

(a) Three month cohorts, age at 30 September 2003, calculated at 31 December 2003. Coverage assessment date was 12 or 24 months after the last birth date of each cohort.

(b) Includes data from New South Wales, Victoria, South Australia, Western Australia and the Northern Territory only. These jurisdictions have been assessed as having adequate completeness of data on Indigenous status by the states/territories.

Source: Menzies et al. 2004

HEALTH STATUS OF CHILDREN

*Disability*

The most recent data relating to disability in Indigenous children comes from the WAACHS. An estimated 2% of children aged 4–17 years in Western Australia needed help with activities of daily living such as eating, dressing, bathing and going to the toilet. Limitations in vigorous activity were experienced by 4% of children of the same age. Approximately 8% of Indigenous children did not have normal vision in both eyes, and 7% did not have normal hearing in both ears.

*Social and emotional wellbeing*

A variety of health conditions, social circumstances and behaviours experienced by individuals, their carers and families may have an impact on the social and emotional wellbeing of Aboriginal children (Zubrick et al. 2005). Information on the social and emotional wellbeing of Aboriginal children living in Western Australia is available from the WAACHS.

Approximately 24% of Indigenous children aged 4–17 years were assessed from questionnaires completed by their carers (a version of the Strengths and Difficulties Questionnaire) as being at high risk of clinically significant emotional or behavioural difficulties, compared with 15% of other children (Zubrick et al. 2005). Indigenous boys were twice as likely as Indigenous girls to be at high risk of clinically significant emotional or behavioural difficulties, and those living in areas of extreme isolation were less at risk than those living in urban areas.

*Social and emotional  
wellbeing continued*

#### FAMILY AND HOUSEHOLD FACTORS

A number of family and household factors were found to be associated with high risk of clinically significant emotional or behavioural difficulties in children. These include: the number of stress events experienced by the family in the 12 months before the survey, quality of parenting, family functioning, and family care arrangements. Household occupancy level, the physical health of the child (speech, hearing and vision problems), the physical health of the carer and the carer's use of mental health services were also associated with increased risk of clinically significant emotional or behavioural difficulties in children.

For example, around 22% of children aged 4–17 years in Western Australia were living in families where seven or more life stress events (e.g. illness, hospitalisation, death of a close family member, family break-up, arrests, job loss, financial difficulties) had occurred over the preceding 12 months. These children were more than five times as likely to be at high risk of clinically significant emotional or behavioural difficulties as children in families where two or fewer life stress events had occurred. Children in the primary care of a person with a long-term health condition were more than three times as likely to be at high risk of emotional and behavioural difficulties as children whose primary carer had no long-term medical condition (Zubrick et al. 2005).

The children of Aboriginal carers who had been forcibly separated from their natural family by the government, welfare or a mission were twice as likely to be at high risk of clinically significant emotional or behavioural difficulties as children whose primary carer had not been forcibly separated from their natural family. These children also had higher rates of conduct and hyperactivity problems.

#### HEALTH RISK FACTORS

A number of health risk factors were also found to be associated with a high risk of clinically significant emotional and behavioural difficulties. An estimated 18% of Western Australian Aboriginal young people aged 12–17 years who smoked regularly were at high risk of emotional and behavioural difficulties compared with 7% of non-smokers. Around one in three (29%) of young people who used marijuana daily were at risk of clinically significant emotional or behavioural difficulties compared with 9% of young people who had never used marijuana. Young people who did not participate in organised sport were twice as likely to be at high risk of emotional and behaviour difficulties compared with young people who did participate in sport (16% and 8% respectively). Those who had been subjected to racism in the past six months were more than twice as likely to be at high risk of emotional and behavioural difficulties as those who had not experienced racism.

#### SUICIDAL BEHAVIOUR

An additional survey was administered to Aboriginal young people aged 12–17 years to measure rates of suicidal thoughts and suicide attempts. Around one in six (16%) of Western Australian Aboriginal young people reported having had suicidal thoughts in the 12 months prior to the survey. A higher proportion of Aboriginal girls (20%) reported that they had seriously thought about ending their own life than Aboriginal boys (12%). Of those who reported having had suicidal thoughts in the 12 months prior to the survey, 39% also reported having attempted suicide in the same period. Aboriginal young

*Social and emotional wellbeing continued*

SUICIDAL BEHAVIOUR *continued*

people who had been exposed to family violence were more than twice as likely to have thought about ending their own life (22%) as those who had not been exposed to family violence (9%). A much higher proportion of Aboriginal boys with low self-esteem (21%) had thought about ending their own life than those with high self-esteem (5%).

*Other health conditions*

Of the health conditions reported in the WAACHS, respiratory conditions (e.g. asthma) and recurring infections (e.g. ear infections) were the most prevalent.

The prevalence of asthma reported in the 2001 NHS was 15% for Aboriginal and Torres Strait Islander children aged 0–14 years and 13% for non-Indigenous children of the same age. In the WAACHS, the occurrence of asthma was reported to be 23% for Aboriginal children aged 0–17 years in Western Australia. The prevalence of asthma varied by level of relative isolation, with asthma being four times as common among Aboriginal children aged 0–17 years living in Perth metropolitan areas as among those living in extremely isolated areas of the state.

Recurring infections (infections which repeatedly return after remission), are associated with the occurrence of other acute and chronic illnesses and are a particular problem for Aboriginal and Torres Strait Islander children. Results from the WAACHS indicate that an estimated 18% of Aboriginal children had a recurring ear infection, 12% had a recurring chest infection, 9% had a recurring skin infection and 6% had a recurring gastrointestinal infection. The prevalence of these infections was less at older ages (table 6.11).

**6.11** RECURRING INFECTIONS AMONG ABORIGINAL CHILDREN, by age group, Western Australia—2001–02

		AGE (YEARS)			
		0–3	4–11	12–17	
		years	years	years	Total
Chest infection	%	19.4	11.5	8.0	12.3
Gastrointestinal infection	%	7.2	6.1	3.5	5.6
Skin infection	%	8.0	10.3	6.1	8.5
Ear infection	%	20.4	19.9	13.6	18.1
<b>Children(a)</b>	no.	<b>6 900</b>	<b>13 800</b>	<b>9 100</b>	<b>29 800</b>

(a) Data are weighted estimates and have been derived by weighting the survey sample to reflect the Western Australian Aboriginal population.

Source: Zubrick et al. 2004

Around two-thirds of children (69%) reported none of the four types of recurring infections in table 6.11, with 22% reporting one type and 10% reporting more than one type of recurring infection.

*Infant and child hospitalisations*

In 2003–04, Aboriginal and Torres Strait Islander infants (aged less than one year) were hospitalised at a rate 1.3 times that of other infants. Diseases of the respiratory system were the leading cause of hospitalisation of Indigenous children, followed by conditions originating in the perinatal period, and infectious and parasitic diseases. For skin diseases, diseases of the respiratory system and infectious and parasitic diseases,

*Infant and child  
hospitalisations  
continued*

Aboriginal and Torres Strait Islander infants were hospitalised at around three times the rate of other infants (table 6.12).

### 6.12 REASONS FOR HOSPITALISATION OF INFANTS, by Indigenous status—2003–04

	INDIGENOUS		OTHER(a)		Rate ratio(b)
	no.	rate(c)	no.	rate(c)	
Diseases of the respiratory system (J00–J99)	2 902	238.0	16 902	71.1	3.3
Conditions originating in the perinatal period (P00–P96)	2 341	192.0	48 957	206.1	0.9
Infectious and parasitic diseases (A00–B99)	1 208	99.1	8 146	34.3	2.9
Contact with health services (Z00–Z99)	714	58.5	17 333	73.0	0.8
Symptoms not elsewhere classified (R00–R99)	511	41.9	11 961	50.3	0.8
Congenital malformations (Q00–Q99)	355	29.1	8 394	35.3	0.8
Injury and poisoning (S00–T98)	224	18.4	2 470	10.4	1.8
Diseases of the skin (L00–L99)	175	14.4	1 200	5.1	2.8
<b>Subtotal</b>	<b>8 430</b>	<b>691.3</b>	<b>115 363</b>	<b>485.6</b>	<b>1.4</b>
All other causes	610	50.0	18 413	77.5	0.6
<b>Total(d)</b>	<b>9 056</b>	<b>742.6</b>	<b>133 875</b>	<b>563.5</b>	<b>1.3</b>

(a) Includes infants whose Indigenous status was not stated.

(b) Rate for Indigenous Australians divided by the rate for other Australians.

(c) Per 1,000 population aged less than one year.

(d) Includes hospitalisations for which no principal diagnosis was recorded.

Source: AIHW, National Hospital Morbidity Database.

In 2003–04, Aboriginal and Torres Strait Islander children aged 1–14 years were hospitalised at similar rates to other children of the same age for most conditions. Aboriginal and Torres Strait Islander children were hospitalised for skin diseases, diseases of the respiratory system, and infectious and parasitic diseases at higher rates than for other children (table 6.13).

### 6.13 REASONS FOR HOSPITALISATION OF CHILDREN AGED 1–14 YEARS, by Indigenous status—2003–04

	INDIGENOUS		OTHER(a)		Rate ratio(b)
	no.	rate(c)	no.	rate(c)	
Diseases of the respiratory system (J00–J99)	4 748	28.0	73 250	20.6	1.4
Injury and poisoning (S00–T98)	3 479	20.5	61 090	17.2	1.2
Infectious and parasitic diseases (A00–B99)	2 078	12.3	29 070	8.2	1.5
Diseases of the digestive system (K00–K93)	1 787	10.5	46 156	13.0	0.8
Diseases of the skin (L00–L99)	1 359	8.0	9 845	2.8	2.9
Diseases of the ear and mastoid process (H60–H95)	1 292	7.6	27 978	7.9	1.0
Symptoms n.e.c. (R00–R99)	1 276	7.5	23 344	6.6	1.1
Contact with health services (Z00–Z99)	958	5.7	23 087	6.5	0.9
<b>Subtotal</b>	<b>16 977</b>	<b>100.2</b>	<b>293 820</b>	<b>82.5</b>	<b>1.2</b>
All other causes	4 570	27.0	109 926	30.9	0.9
<b>Total(d)</b>	<b>20 610</b>	<b>121.7</b>	<b>380 812</b>	<b>106.9</b>	<b>1.1</b>

(a) Includes children whose Indigenous status was not stated.

(b) Rate for Indigenous Australians divided by the rate for other Australians.

(c) Per 1,000 population aged 1–14 years.

(d) Includes hospitalisations for which no principal diagnosis was recorded.

Source: AIHW, National Hospital Morbidity Database.

*Infant and child mortality*

**INFANT MORTALITY**

Infant deaths are deaths of live-born children before the age of one. For the period 1999–2003, the mortality rate for Aboriginal and Torres Strait Islander infants living in Western Australia, South Australia, Queensland and the Northern Territory was almost three times that of non-Indigenous infants (table 6.14). The leading causes of death for Indigenous infants were conditions originating in the perinatal period (mainly foetus and newborn affected by complications of placenta, cord and membrane, and foetus and newborn affected by maternal complications of pregnancy), symptoms, signs and ill-defined conditions (mainly sudden infant death syndrome), congenital malformations (such as other congenital malformations of brain, congenital malformations of musculoskeletal system not elsewhere classified and congenital malformations of lung), respiratory diseases (mainly pneumonia), injury and poisoning (mainly accidental suffocation and strangulation in bed), and infectious and parasitic diseases (such as septicaemia, meningococcal infection and congenital syphilis).

Mortality rates for respiratory diseases and infectious and parasitic diseases were particularly high for Aboriginal and Torres Strait Islander infants, who died at ten and eight times the rates of non-Indigenous infants.

**6.14** CAUSES OF INFANT DEATHS, by Indigenous status—1999–2003(a)

	INDIGENOUS		NON-INDIGENOUS		Rate ratio(b)
	no.	rate(c)	no.	rate(c)	
Conditions originating in the perinatal period (P00–P96)	209	581.0	922	212.6	2.7
Symptoms, signs and ill-defined conditions (R00–R99)	89	247.0	221	51.0	4.9
Congenital malformations (Q00–Q99)	76	211.0	501	115.5	1.8
Diseases of the respiratory system (J00–J99)	29	81.0	35	8.1	10.0
External causes (V01–Y98)	22	61.0	76	17.5	3.5
Infectious and parasitic diseases (A00–B99)	19	53.0	29	6.7	7.9
All other causes	24	67.0	122	28.1	2.4
<b>Total(d)</b>	<b>469</b>	<b>1 304.0</b>	<b>1 931</b>	<b>445.3</b>	<b>2.9</b>

(a) Data from Queensland, South Australia, Western Australia and the Northern Territory. Based on state/territory of usual residence, year of occurrence of death for 1999–2002 and year of registration of death for 2003. Excludes a total of 48 deaths for which Indigenous status was not stated.

(b) Rate for Indigenous persons divided by the rate for non-Indigenous persons.

(c) Per 100,000 population aged less than one year.

(d) Includes deaths for which no cause of death was recorded.

Source: AIHW, *National Mortality Database*

**CHILD MORTALITY**

In the period 1999–2003, the death rate for Aboriginal and Torres Strait Islander children aged 1–14 years in Western Australia, South Australia, Queensland and the Northern Territory was more than twice that of non-Indigenous children in these jurisdictions (table 6.15).

External causes (such as transport accidents, assault and intentional self-harm) were the leading causes of death of Aboriginal and Torres Strait Islander children. Aboriginal and Torres Strait Islander children died from infectious and parasitic diseases, diseases of the respiratory system and circulatory diseases at around four to five times the rate of non-Indigenous children.



### 6.15 CAUSES OF DEATH FOR CHILDREN AGED 1–14 YEARS, by Indigenous status—1999–2003(a)

	INDIGENOUS		NON-INDIGENOUS		Rate ratio(b)
	no.	rate(c)	no.	rate(c)	
External causes (V01–Y98)	91	18.5	481	7.3	2.5
Diseases of the nervous system (G00–G99)	20	4.1	106	1.6	2.5
Neoplasms (C00–D48)	14	2.8	185	2.8	1.0
Infectious and parasitic diseases (A00–B99)	13	2.6	35	0.5	5.0
Congenital malformations (Q00–Q99)	13	2.6	74	1.1	2.4
Diseases of the circulatory system (I00–I99)	12	2.4	42	0.6	3.8
Diseases of the respiratory system (J00–J99)	10	2.0	31	0.5	4.3
Symptoms, signs and abnormal findings (R00–R99)	10	2.0	38	0.6	3.5
All other causes	9	1.8	73	1.1	1.7
<b>Total</b>	<b>192</b>	<b>39.0</b>	<b>1 065</b>	<b>16.1</b>	<b>2.4</b>

(a) Data from Queensland, South Australia, Western Australia and the Northern Territory. Based on state/territory of usual residence, year of occurrence of death for 1999–2002 and year of registration of death for 2003. Excludes a total of 37 deaths for which Indigenous status was not stated.

(b) Rate for Indigenous persons divided by the rate for non-Indigenous persons.

(c) Per 100,000 population aged 1–14 years.

Source: AIHW, National Mortality Database.

#### SUMMARY

Indigenous mothers are more likely to have their babies at younger ages than other mothers. The average age of Indigenous mothers who gave birth in 2003 was 25 years, compared with an average age of 31 years for all Australian mothers. For the period 2000–02, 78% of Indigenous mothers who gave birth were aged under 30 years, compared with 49% of non-Indigenous mothers. In 2003, the TFR for Indigenous women was estimated to be 2.15 babies, compared with 1.76 babies for the total Australian population.

Among the risk factors for poor perinatal and child health outcomes are alcohol use, tobacco use and other drug use during pregnancy. The WAACHS reported that during pregnancy, an estimated 49% of mothers of Aboriginal children in Western Australia had smoked, 23% had consumed alcohol, and 9% had used marijuana.

Babies weighing less than 2,500 grams at birth are classified as being of low birthweight. Babies with an Indigenous mother were twice as likely to be of low birthweight (13% of births) as babies with a non-Indigenous mother (6%). The perinatal mortality rate for babies with an Indigenous mother in Queensland, South Australia, Western Australia and the Northern Territory was about twice that for babies with a non-Indigenous mother.

Breastfeeding and effective vaccination have many positive effects on the survival chances, growth, development and health of infants. In 2001, a high proportion of Indigenous mothers living in remote areas (95%) and non-remote areas (83%) had breastfed their children. In 2003, Aboriginal and Torres Strait Islander children had lower vaccination coverage than other children at 12 months of age (82% compared with 91%), but by two years of age, they had comparable vaccination coverage (91%).

In 2003–04, Indigenous infants were more likely to be hospitalised than other infants, while Indigenous and other children aged 1–14 years were hospitalised at similar rates. In the period 1999–2003, the mortality rate for Indigenous infants in Western Australia, South Australia, Queensland and the Northern Territory was almost three times that for

SUMMARY *continued*

non-Indigenous infants. The death rate of Aboriginal and Torres Strait Islander children aged 1–14 years was more than twice that of non-Indigenous children of the same age in these jurisdictions.