

Part III

HOW WELL ARE WE PROMOTING HEALTHY CHILD DEVELOPMENT?

Part II showed that there have been some key improvements in the health of Australia's children, according to health status measures, such as mortality and morbidity. It also showed that some children experience poorer health outcomes than others in the population. The health of children and populations is influenced and determined by the interaction of many factors, such as human biology, lifestyle, socioeconomic and environmental factors, and health interventions. These factors help to explain and predict patterns in health, and account for why some have better or worse health than others. The consideration of these health determinants is key to the prevention of disease, illness and injury.

Part III focuses on 'protective factors', which promote the positive health and development of children. Protective health factors play an important role in the prevention of chronic and infectious disease

both in the short and long term, resulting in better health outcomes. Similarly, positive early learning experiences stimulate brain development and improve developmental and learning outcomes for children.

The aim of *Part III* is to provide a comprehensive picture on key indicators for healthy child development:

- breastfeeding
- dental health
- physical activity and nutrition
- early learning.

The factors that increase the risk of ill health in children, commonly termed 'risk factors', are discussed in *Part IV*.

The following table shows how children fare across the various indicators presented in *Part III*, and whether there has been any improvement over time.

Indicator		Value	Trend
Breastfeeding	Infants exclusively breastfed at 4 months of age	National data not available	..
	Children decay-free (2002)		
Dental health	at age 6 years	53%	~
	at age 12 years	58%	✓
	Mean number of decayed, missing or filled teeth (DMFT) at 12 years (2002)	1.0	~
Physical activity	Children aged 9–14 years (2007):		
	meeting the National Physical Activity Guidelines	74%	..
	not exceeding the screen time guidelines	33%	..
Early learning	Children aged < 1 year old who are read to by an adult on a regular basis	National data not available	..

Key: ✓ = favourable trend; ~ = no change or clear trend; .. = no trend data presented.

9 Breastfeeding

Breastfeeding promotes the healthy growth and development of infants and young children and is also associated with economic benefits.

No national data are currently available on 'exclusive' breastfeeding of infants up to 4 or 6 months of age.

Breastfeeding is the normal way to feed infants and is important in promoting the healthy growth and development of infants and young children. Infants are born with an immune system that is not fully developed and breastmilk (containing mothers' antibodies) provides the best nutritional start for infants, reducing the risk of morbidity and mortality from infectious diseases.

There is a large volume of research on the health benefits of breastfeeding in infancy and childhood, but it has been difficult to establish a causal relationship. There is convincing evidence that breastfeeding protects infants against infectious diseases, including gastrointestinal illness, respiratory tract infections and middle ear infections. Other possible benefits include a reduced risk of SIDS, Type 1 diabetes and some childhood cancers; however, further research is required. There is conflicting evidence as to whether breastfeeding has a protective effect against asthma and other allergies in childhood (Kramer et al. 2007). There is some evidence that having been breastfed may reduce the incidence of high cholesterol, high blood pressure, obesity and diabetes later in life, and improve cognitive development (Horta et al. 2007). More exclusive and longer periods of breastfeeding show the strongest associations between breastfeeding, lower rates of infant illnesses and better cognitive development.

The benefits of breastfeeding also extend to the mother. These include quicker recovery after childbirth, reduced risk of ovarian cancer and possible reduced risk of breast cancer, post-menopausal hip fractures, osteoporosis and maternal depression, although further research is required (Ip et al. 2007; Productivity Commission 2008). Evidence is also accumulating to show that breastfeeding improves mother–infant bonding and secure attachment between mother and child (Allen & Hector 2005).

Economically, the benefits of breastfeeding relate to health-care costs, productivity and household expenses. Where an infant is not breastfed or is weaned prematurely, a number of studies have found an increase in health-care costs for associated infant illnesses (for example, gastrointestinal illness) (Productivity Commission 2008). Productivity may be reduced as a result of parental absences from work due to infant illness (León-Cava et al. 2002).

Breastfeeding has been endorsed by the AHMC, CDSMC and the AESOC as a Children's Headline Indicator priority area (see *Part X* for further information).

RECOMMENDATIONS FOR BREASTFEEDING

The WHO recommends that all infants should be exclusively breastfed up to 6 months of age to achieve optimal growth, development and health (WHO 2002) (see Box 9.1 for breastfeeding definitions used in this chapter). Infants who are exclusively breastfed up to 6 months do not show any deficits in weight or length gain and thus there are no apparent risks associated with recommending exclusive breastfeeding for the first 6 months of life as a public health policy. The Australian Dietary Guidelines for Children and Adolescents (NHMRC 2003a) also recommend exclusive breastfeeding until around 6 months of age, and note that breastfeeding to 12 months and beyond has continuing value to both infant and mother. These recommendations are based on the nutritional, health, social and economic benefits of breastfeeding.

Box 9.1: Definitions of breastfeeding

'Exclusive breastfeeding' requires that the infant receive only breastmilk (including milk expressed or from a wet nurse), with the exception of oral rehydration solutions, drops or syrup (consisting of vitamins, minerals and medicines). This excludes non-human milk or formula.

'Predominant breastfeeding' requires that the infant receive breastmilk (including milk expressed or from a wet nurse) as the predominant source of nourishment. The infant may also receive water or water-based drinks, fruit juice, oral rehydration solutions, drops or syrup (consisting of vitamins, minerals and medicines), but not non-human milk or formula. Predominantly breastfed may also be referred to as 'fully breastfed' in some sources.

'Complementary breastfeeding' requires that the infant receive breastmilk (including milk expressed or from a wet nurse) and solid or semi-solid food. This means that the infant may receive any food or liquid, including non-human milk and formula, in addition to breastmilk. Complementary breastfeeding may also be referred to as 'partial breastfeeding' in some sources.

Source: WHO 2008a.

HOW MANY AUSTRALIAN BABIES ARE BREASTFED?

Difficulties in measurement arise in relation to the recommendation of exclusive breastfeeding to around 6 months of age, as solids are often introduced to the infant around this time. As such, issues around the age of infants in any sample need to be considered carefully in order to collect robust and policy relevant information on exclusive breastfeeding. For this reason, the age of 4 months has been specified for the Children's Headline Indicator until such a time as reliable national data can be collected on exclusive breastfeeding 'up to' 6 months of age (Vic DHS 2008). A further difficulty relates to maternal long-term recall of feeding practices.

Headline Indicator: Proportion of infants exclusively breastfed at 4 months of age

Currently, Australia has no reliable national data collection system to effectively monitor infant feeding practices, and the inconsistent use of definitions and terms makes it difficult to compare studies of breastfeeding rates (House of Representatives Standing Committee on Health and Ageing 2007; Webb et al. 2001). Information on breastfeeding is therefore patchy in Australia:

- Data on exclusive breastfeeding are currently available for New South Wales, Victoria, Queensland and Western Australia, but not at 4 months of age.
- National data are available at 4 months of age from the Growing up in Australia: the Longitudinal Study of Australian Children (LSAC). However, this is for predominantly (fully) breastfed infants, rather than exclusively breastfed.
- National data are available from the ABS 2004–05 National Health Survey, but this is for a combined measure of exclusive or complementary breastfeeding.

Information from these data sources are presented here, although none is currently suitable for reporting on the Children's Headline Indicator at the national level. The Australian Government is planning to conduct an Australian National Infant Feeding Survey in 2009.

Exclusively breastfed

Four Australian states have collected information on exclusive breastfeeding; however, none collected this information at 4 months of age. Due to different survey methods, the results between these states should not be directly compared.

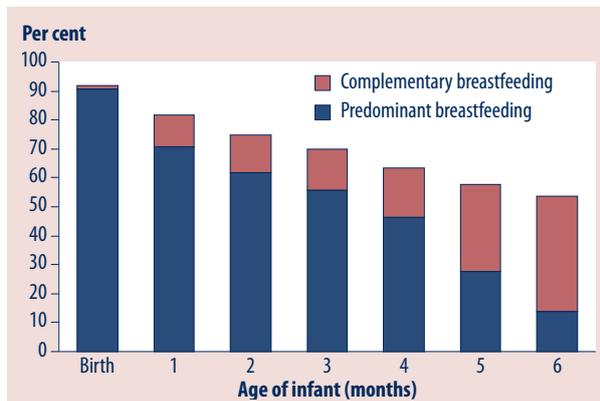
- In Queensland, according to the 2006–2007 Infant Nutrition Project, 38% of infants were exclusively breastfed at 2 months of age, declining to 10% at 5 months of age. This was based on mothers' 24-hour recall of infant-feeding practices (Queensland Health: Paul et al. 2007).
- Among Victorian children under 2 years in 2006, 48% were exclusively breastfed at 3 months of age, declining to 15% at 6 months of age (Vic DHS 2006).
- In New South Wales, 18% of children aged 0–4 years were exclusively breastfed at 6 months of age in 2005–06 (NSW Department of Health 2008).
- In Western Australia in 2006–07, 12% of children aged 0–4 years were exclusively breastfed for 6 months or more (Wood & Daly 2007).

Predominantly breastfed

The LSAC provides information on predominant breastfeeding for a cohort of 5,000 infants aged 0–1 year in 2004 (AIFS 2008; see *Appendix 2* for further information on the LSAC).

For this cohort, the proportion of infants predominantly breastfed decreased from 91% at birth to 46% at 4 months and 14% at 6 months of age (Figure 9.1). Notably, the proportion of predominantly breastfed infants dropped by 11 percentage points between birth and 1 week of age.

As the proportion of infants predominantly breastfed declined with age, the proportion of infants receiving complementary breastmilk increased. At 6 months of age, 40% of infants were complementary breastfed, compared with 11% at 1 month.



Source: Growing up in Australia: the Longitudinal Study of Australian Children, Waves 1 and 2 (birth cohort) (AIFS 2008).

Figure 9.1: Breastfeeding practices for children aged 0–1 years, by month of age, 2004

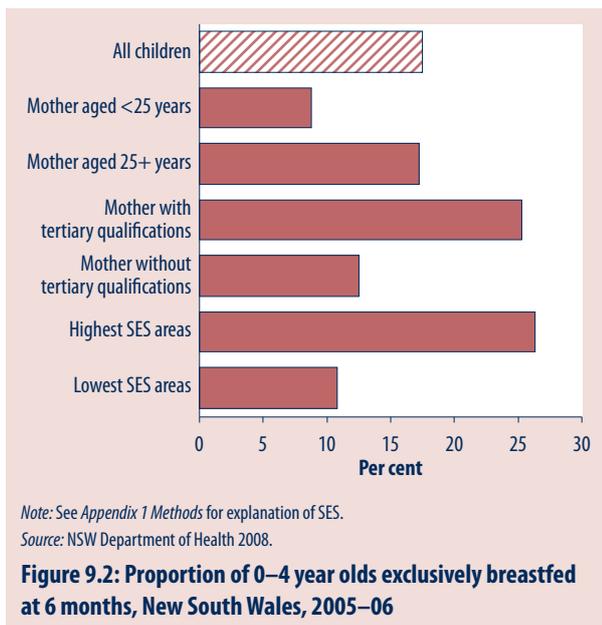
Exclusive or complementary breastfeeding

Nationally in 2004–05, an estimated 88% of children aged 0–3 years had been breastfed at some point. However, the proportion that are breastfed (either exclusive or complementary) decreases as the age of the infant increases. Of children aged 1 year in 2004–05, 86% were reported to have been breastfed at less than 1 month of age, but only 57% were still being breastfed at 4 months and only half (51%) at 6 months of age (AIHW analysis of ABS 2004–05 National Health Survey confidentialised unit record file).

Do rates of breastfeeding vary across population groups?

Currently, there are no national data available on exclusive breastfeeding for Indigenous infants or infants in remote or low socioeconomic status areas. National data on exclusive or complementary breastfeeding and state-based data for exclusive breastfeeding are presented here.

- Nationally, of Indigenous children aged 1 year in 2004–05 in non-remote areas, an estimated 80% were breastfed (either exclusive or complementary) at less than 1 month of age, dropping to 62% and 48% at 4 and 6 months of age, respectively. The corresponding proportions for non-Indigenous infants were 88%, 58% and 52% (AIHW analysis of ABS 2004–05 National Aboriginal and Torres Strait Islander Health Survey).
- With regard to exclusive breastfeeding, according to the 2000–2002 Western Australian Aboriginal Child Health Survey, over half (53%) of Indigenous infants aged less than 6 months were reported as being exclusively breastfed, dropping to 7% at age 6–11 months (Zubrick et al. 2004).
- According to the 2005–06 New South Wales Population Health Survey, exclusive breastfeeding of children at 6 months of age was statistically significantly lower for infants with mothers
 - without tertiary qualifications (13% compared with 25% for those with tertiary qualifications)
 - living in the lowest socioeconomic status (SES) areas (11% compared with 26% for those in the highest SES areas)
 - aged younger than 25 years (9% compared with 17% for mothers aged 25 years and over) (Figure 9.2) (NSW Department of Health 2008).



Employment and breastfeeding

There is some evidence that a mother's employment status and number of hours worked influences the initiation and duration of breastfeeding. Studies from the United Kingdom and the United States have found that mothers who plan on returning to work while their infant is relatively young are less likely to start breastfeeding than mothers who either do not return to work, or who plan on returning to work when the infant is older (Chatterji & Frick 2005; Hawkins et al. 2007; Noble & The ALSPAC Study Team 2001). It has also been found that mothers who initiate breastfeeding and return to work while the infant is young have a reduced duration of breastfeeding (Chatterji & Frick 2005).

Australian research, based on the LSAC, found that women not in paid employment were more likely to breastfeed their infant at 6 months of age than employed women (56% compared with 39% and 44% of mothers working full and part time, respectively). The lowest rates of breastfeeding at 6 months were among those where the mother resumed full-time employment before 3 months (42%) or between 3 and 6 months (39%) (Cooklin et al. 2008). Data from the LSAC also show that the type of employment may influence breastfeeding. Infants were more likely to be breastfed at 6 months of age if their mother was self-employed (58%), compared with permanent or casual employment (45% and 49%, respectively) (AIFS 2008).

10 Dental health

Good oral health in childhood contributes to better dental outcomes in adulthood—less decay and the loss of fewer natural teeth.

Indigenous children and children living in *Remote and very remote* areas or in low socioeconomic status areas experience significantly worse dental decay than other children (for 6 year olds, on average, twice as many decayed teeth).

Australian children generally experience good oral health. Good oral health throughout infancy and early childhood can have positive effects for both children and their parents—it enhances children’s confidence, self-esteem, appearance, chewing ability and social activities (Okunseri et al. 2005). It also contributes to better dental health in adulthood, resulting in less decay and reduced loss of natural teeth (AIHW 2005b). Conversely, oral diseases and disorders during childhood adversely affect children’s health and wellbeing. Untreated dental caries facilitate abscess formation, cellulitis and the systemic spread of disease. Poor dental health can lead to failure to thrive and school absences that can negatively affect school performance (Berg & Coniglio 2006). Poor nutrition or a diet high in sugar may place children at an increased risk of developing dental health problems such as gum disease and dental caries (ADA 2008).

Early preventive strategies, including parental counselling about diet (such as limiting dietary sugar intake), oral hygiene practices (such as regular flossing and brushing with fluoride toothpaste), appropriate use of fluorides and avoidance of transmission of bacteria from parents to children, all help to establish practices and behaviours for good oral health (Berg & Coniglio 2006).

The dental health of Australia’s children has improved substantially since the mid-1970s (AIHW 2005b). This trend can be attributed to a number of factors, including increased access to fluoridated toothpaste and drinking water, improved dental hygiene, and provision of clinical preventive services and ongoing monitoring through the School Dental Scheme. However, in recent years, there has been a slight increase in tooth decay among children, which may be related to changes in dietary patterns, including less drinking of fluoridated mains water and increased sugar consumption, and changes in school dental programs.

Dental health has been endorsed by the AHMC, CDSMC and the AESOC as a Children’s Headline Indicator priority area (see *Part X* for further information and state and territory data).

DENTAL HEALTH AMONG PRIMARY SCHOOL CHILDREN

The number of teeth decayed, missing or extracted due to decay, or with fillings is an indicator of oral disease in the population and an important indicator of dental health. The number of decayed, missing or filled teeth is expressed as a dmft (deciduous or ‘baby’ teeth) or DMFT (permanent teeth) score. Another indicator of dental health is the percentage of children who are decay-free.

The data source for this chapter is the 2002 Child Dental Health Survey, conducted by the AIHW Dental Statistics Research Unit (see *Appendix 2 Data sources*). This survey represents the only data routinely collected by all states and territories on child dental health. Data from the 2003–2004 survey was not available for this report (Armfield & Brennan in press).

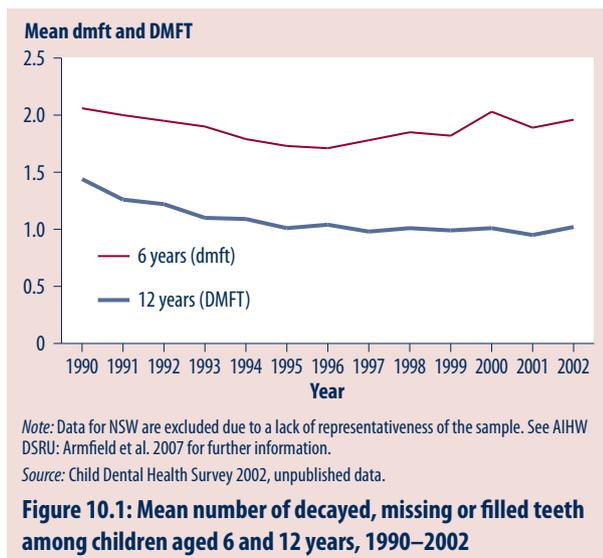
Children with decayed, missing or filled teeth

Headline Indicator: Mean number of decayed, missing or filled teeth (DMFT) among primary school children aged 12 years

- The mean number of decayed, missing or filled teeth for 6 year olds was 2.0 (dmft) and among 12 year olds was 1.0 (DMFT) in 2002 (AIHW DSRU: Armfield et al. 2007). This suggests that the mean number of teeth

with caries was twice as high in deciduous (baby) teeth as in permanent teeth. The mean number of teeth with caries was similar among boys and girls at both ages.

- Mean decay experience of children aged 6 and 12 years declined in the early to mid-1990s; however, since 1997 dental decay among 6 year olds has increased, while among 12 year olds it has remained relatively stable (Figure 10.1).



Children free from dental decay

Key national indicator: Proportion of children decay-free at age 6 years and at age 12 years

According to the 2002 Child Dental Health Survey:

- Over half of all children aged 6 and 12 years were decay-free in 2002 (53% and 58% respectively).
- The proportion of 6 year olds free from dental decay increased from 51% to 56% between 1991 and 1996, but has since declined to 53% in 2002, while among 12 year olds the proportion increased from 49% to 58% between 1991 and 2002.
- Boys were more likely than girls to be decay-free at age 12 (60% compared with 56%), while among 6 year olds the proportion was similar for boys and girls (52% and 53%, respectively).

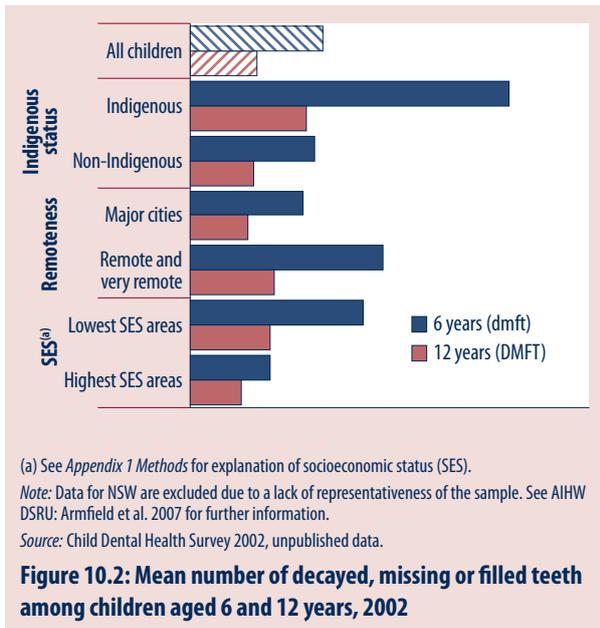
Does dental health vary across population groups?

While most Australian children experience good oral health, some groups of Australian children have poorer dental health, in particular Aboriginal and Torres Strait Islander children and children living outside major cities and in the most socioeconomically disadvantaged areas. These groups of the population are at an increased risk of poor dental health, as they are more likely to reside in areas where drinking water is not of optimal fluoride concentration, and the accessibility and affordability of dental health services are critical factors (AIHW DRSU: Jamieson et al. 2007). Poorer outcomes for these population groups are reflected in both the mean decayed, missing and filled teeth scores and the proportion of children decay-free.

According to the 2002 Child Dental Health Survey:

- On average, Indigenous children had more decayed, missing or filled teeth than their non-Indigenous counterparts, based on data from Victoria, Queensland, South Australia and the Northern Territory (2.6 and 1.8 times as many for 6 and 12 year olds, respectively) (Figure 10.2).
- Children aged 6 and 12 years living in *Remote and very remote* areas had, on average, 70% and 44% more teeth with dental caries than those living in *Major cities*.
- Children living in the lowest socioeconomic status (SES) areas experience worse dental decay than those in the highest SES areas (2 and 1.5 times as many decayed teeth for 6 and 12 year olds, respectively).

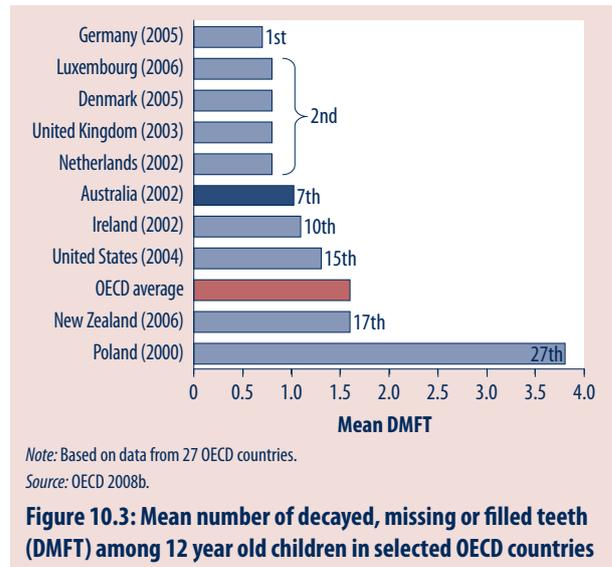
The proportion of children decay-free at age 6 years was much lower for Indigenous children (21% compared with 54% for non-Indigenous children); children living in *Remote and very remote* areas (39% compared with 57% for children in *Major cities*); and children living in the lowest SES areas (46% compared with 66% in the highest SES areas). While this pattern was also evident for children aged 12 years, the disparity between the population groups was not as great.



How do Australia's rates of child dental decay compare internationally?

Australia compares favourably with other OECD countries in the mean number of decayed, missing or filled teeth among 12 year olds. Australia ranked 7th out of 27 OECD countries in 2002, with a mean of one decayed, missing or filled permanent tooth (DMFT)—better than the OECD average of 1.6 (Figure 10.3). Mean decay experience was lowest in Germany (0.7) and also in Denmark, Luxembourg, Netherlands and the United Kingdom (all 0.8); and was highest in Poland (3.8).

Internationally, reductions in caries and other dental problems have been achieved through numerous public health measures such as community water fluoridation, along with changed living conditions, and improved disease management and oral hygiene (OECD 2008a).



Access to fluoridated water

Water fluoridation is an effective public health measure to prevent dental decay, and is an equitable way to achieve community-wide exposure to the caries prevention effects of fluoride. Fluoride can help to reduce half the number of cavities an individual will develop in their life, as it makes the enamel of the tooth more resistant to the acid attacks of plaque bacteria. It reduces dental disease, loss of teeth, time away from work or school, and anaesthesia-related risks associated with dental treatment (ADA 2001; US DHHS 1991). The prevalence of tooth decay is lower in areas where fluoride is naturally present in the water supply or where fluoride has been added (AIHW DSRU: Armfield et al. 2007).

Most children (over two-thirds) live in areas with access to fluoridated water, but there are some parts of Australia without fluoride in the public water supply. In Queensland, only 4.9% of children have access to optimum fluoride concentrations in the public water supply, compared with over 80% in most other jurisdictions (except for Victoria where the proportion is 74%) (Table 10.1). In 2007, the Queensland Government committed to providing more than 90% of Queenslanders with fluoridated water supply by 2012 (Qld DPC 2008).

Table 10.1: Proportion of children aged 0–14 years residing in areas with optimum^(a) fluoride concentration in the mains water, 2001

	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Australia
Per cent	89.2	73.5	4.9	88.9	80.6	94.1	100.0	80.8	68.4

(a) ≥ 0.7 parts per million (ppm) except Darwin, NT, where 0.6 ppm is considered optimal.
 Source: Armfield 2006.

11 Physical activity and nutrition

Regular physical activity and good nutrition reduces cardiovascular risk factors, such as overweight, high blood pressure and Type 2 diabetes, and improves the psychosocial wellbeing of children.

The majority (74%) of children aged 9–14 years met the physical activity guidelines; however, only one-third met the screen time guidelines. Very few children aged 4–13 years consumed the recommended serves of vegetables; 50–60% met the recommendations for fruit.

Physical activity and good nutrition have many benefits for children's health and wellbeing and are important in maintaining good health. Regular physical activity and good nutrition reduces cardiovascular risk in its own right and also improves levels of cardiovascular risk factors such as overweight, high blood pressure and Type 2 diabetes; protects against some forms of cancer; and strengthens the musculoskeletal system (AIHW 2008b; NHMRC 2003b; Okely et al. 2008). Physical activity also improves children's psychosocial wellbeing by reducing symptoms of depression, stress and anxiety, and through improvements in self-confidence, self-esteem, energy levels, sleep quality and ability to concentrate (Hills et al. 2007).

Physical activity can include any activity that requires children to expend energy, including sports, domestic duties or simply playing. A child's participation in physical activity is shaped by individual preferences, in combination with cultural and family influences, and can be affected by the presence of disease or disability. It can also be influenced by environmental factors such as climate and the availability of suitable spaces and other resources for exercise or play.

Good nutrition is important in supporting the rapid growth and development that occurs during childhood. As with physical activity, children's eating choices are shaped by individual preferences, as well as cultural and family influences. For young children, diet is largely determined by their parents; however, children take on greater responsibility for their own food choices as they grow older. It is therefore important to establish healthy eating patterns at young ages.

Physical activity and nutrition are critical factors in determining a person's body weight. If energy intake (via food and drink) is not balanced by energy expenditure (via activity and internal body functions) on a sustained basis, the excess food energy is stored as body fat. Physical inactivity and poor nutrition may be important contributors to the rising levels of obesity in the general population (AIHW 2008b; see also *Chapter 22 Overweight and obesity*).

PHYSICAL ACTIVITY AMONG AUSTRALIAN CHILDREN

In Australia, National Physical Activity Guidelines have been developed around the intensity, duration and frequency of physical activity that is necessary to obtain health benefits for children and youth. These guidelines recommend at least 60 minutes, and up to several hours, of moderate to vigorous physical activity (for example, a brisk walk or a game of netball or football), every day of the week for children aged 5–18 years (DoHA 2004). This is consistent with research showing that the health benefits of physical activity are often linked to the intensity at which an activity is performed (Ortega et al. 2008).

The guidelines also recommend that children not exceed more than 2 hours of non-educational screen time (for example, watching movies or playing computer games) per day. Evidence suggests that children who engage in more than 2 hours of screen time per day are more likely to be overweight; be less physically active; drink more sugary drinks; snack on foods high in sugar, salt and fat; and have fewer social interactions (CSIRO 2009).

The National Physical Activity Guidelines (including screen time guidelines) can be interpreted in a number of different ways, which results in a range of prevalence estimates depending on the method used (see Box 11.1). Each method has strengths and limitations; however, the ‘child x day’ method has been recommended as the preferred method, as it accounts for the characteristics of the randomly selected day (weather conditions, out-of-school activities) and compliance with the guidelines (Olds et al. 2007).

Box 11.1: Methods for calculating physical activity prevalence estimates from the 2007 Australian National Children’s Nutrition and Physical Activity Survey

All days method: Children are considered compliant if they met the guidelines on all 4 days.

Most days method: Children are considered compliant if they met the guidelines on at least 3 of the 4 days.

Four-day average method: Children are considered compliant to the moderate to vigorous physical activity guidelines if their activity, averaged over 4 days, was greater than or equal to 60 minutes per day; compliant to screen guidelines if their average daily screen time was less than or equal to 120 minutes per day; and compliant to both if both thresholds were met.

Child x day method: Prevalence was calculated as the probability that a randomly chosen child on a randomly chosen day would meet the guidelines. To calculate this prevalence estimate, it is simply a matter of calculating the proportion of all days that meet the guideline.

Source: Olds et al. 2007.

Key national indicator: Proportion of children meeting the National Physical Activity Guidelines and not exceeding the screen time guidelines

According to the 2007 Australian National Children’s Nutrition and Physical Activity Survey, among children aged 9–14 years, using the preferred ‘child x day’ method:

- The majority (74%) of children met the National Physical Activity Guidelines for moderate to vigorous physical activity (that is, at least 60 minutes of recommended activity) (Table 11.1).

- Only one-third of children met the guidelines for screen time use (that is, not exceeding 2 hours of non-educational screen time).
- Boys were more likely to meet the guidelines for physical activity, whereas girls were more likely to meet the guidelines for screen time.

Table 11.1: Children aged 9–14 years meeting National Physical Activity Guidelines, 2007 (per cent)

	Physical activity			Screen time ^(a)		
	Boys	Girls	Children	Boys	Girls	Children
All days method	43.7	29.9	37.0	4.9	8.5	6.7
Most days method	72.3	56.8	64.8	14.5	23.9	19.1
4 day average method	92.2	81.6	87.0	17.7	27.6	22.5
Child x day method	78.5	68.9	73.8	28.7	38.4	33.4

(a) For screen time, compliance with the National Physical Activity Guidelines was defined as less than 2 hours of any screen time outside school hours.

Note: See Box 11.1 for a definition of the methods used to interpret the guidelines.

Source: 2007 Australian National Children’s Nutrition and Physical Activity Survey, unpublished data.

NUTRITION AMONG AUSTRALIAN CHILDREN

The Dietary Guidelines for Children and Adolescents in Australia provide dietary recommendations for 4–18 year olds (NHMRC 2003b). Children and adolescents are encouraged to eat plenty of vegetables, legumes, fruit and cereals; to include lean meat, fish, poultry, milk, yoghurt, cheese and/or alternatives in their diet; and to drink plenty of water. A healthy diet should also be low in saturated fat and salt, and contain only moderate amounts of sugar. In regards to the consumption of fruit and vegetables, the Guidelines recommend the following:

- 4–7 years: 1 serve of fruit and 2 serves of vegetables
- 8–11 years: 1 serve of fruit and 3 serves of vegetables
- 12–18 years: 3 serves of fruit and 4 serves of vegetables.

Information on children meeting the guidelines are available from the 2007 Australian National Children’s Nutrition and Physical Activity Survey; however, this survey collected data for different age groups to those on which the guidelines are based. This meant that the guidelines were interpreted differently for reporting these age ranges (see DoHA 2008).

Table 11.2: Children aged 4–13 years meeting daily Dietary Guidelines, 2007 (per cent)

		4–8 years			9–13 years		
		Boys	Girls	Children	Boys	Girls	Children
Fruit	≥ 1–3 serves (excluding juice)	63	59	61	50	52	51
	≥ 1–3 serves (including juice)	95	92	93	89	91	90
Vegetables	≥ 2–4 serves (excluding potatoes)	4	1	3	2	2	2
	≥ 2–4 serves (including potatoes)	22	22	22	17	11	14

Source: 2007 Australian National Children's Nutrition and Physical Activity Survey (DoHA 2008).

According to the 2007 Australian National Children's Nutrition and Physical Activity Survey:

- Over 60% of children aged 4–8 years and around half of children aged 9–13 years met the recommendations for daily serves of fruit (excluding juice). This increased to 93% and 90% respectively with the inclusion of juice (Table 11.2).
- Only a very small proportion of children met the recommendations for daily serves of vegetables (excluding potatoes)—3% of 4–8 year olds and 2% 9–13 year olds. Even with the inclusion of potatoes, the proportions remained low (22% and 14%, respectively).

12 Early learning

The early years are important for the acquisition of a range of skills across all developmental domains, including the foundations for literacy. Shared book reading contributes to the development of literacy skills and is the most important activity for later success in reading.

No national data are available on infants being read to by an adult.

The years from birth to age five are a critical period of development, as learning that occurs during this time has a lasting impact on health, future learning and life success. Learning involves many aspects of a child's functioning, including language development, literacy acquisition, cognitive processes, emotional development, self-regulation and problem-solving skills (CCCH 2008b). Research shows that early brain development in the first years of life lays the foundation for critical connections in language development. Early literacy activities, such as reading, rhyming, singing and storytelling, within the first few years of life are therefore crucial in stimulating early brain development (CCCH 2008a; Ravi 2007).

The Australian Government has formed a consortium of early childhood experts to develop a national Early Years Learning Framework. The framework will describe the broad parameters, principles and outcomes required to support and enhance children's learning from birth to 5 years of age, as well as their transition to school. The framework will have specific emphasis on play-based learning, communication and language (including early literacy and numeracy) as well as personal, emotional and social development. The framework will be implemented in July 2009 (DEEWR 2008b).

THE IMPORTANCE OF SHARED READING

A child starts learning at birth, and the amount and quality of early language activities that children are exposed to is a key factor in early literacy success, particularly the development of the linguistic skills that are necessary for reading. Learning to read is a lengthy process that begins very early in children's development and affects wellbeing throughout life. If a child cannot read, their academic

achievement at school and vocational achievement upon leaving school can be adversely affected (Lyon 1999).

Strong predictors of children's early literacy success are parent's literacy and socioeconomic status, the number of books in the home and shared reading. In fact, studies have suggested that reading aloud to children is the single most important activity for building the knowledge required for eventual success in reading (Huebner & Meltzoff 2005).

The benefits of reading aloud to young children include the processing and acquisition of language and encouragement of phonological awareness; acquainting children with written language and the conventions of print; and providing opportunities for infants to begin to develop positive dispositions towards reading (CCCH & The Smith Family 2004; Klass et al. 2003; Makin 2006).

The frequency and length of reading sessions are important factors in language development. An evaluation of the Early Head Start program in the United States found that the frequency of reading to children was associated with children's vocabulary and cognitive ability at 14, 24 and 36 months of age, and also at later ages. Further, the more that mothers read to their children, the greater the gains—by age 3, children whose mothers had read to them daily during the preceding 2 years had significantly elevated language and cognitive scores (Raikes et al. 2006).

In recognition of the importance of developing early literacy skills, a number of book-based programs have been implemented in various countries to encourage early book reading to infants: Let's Read, Better Beginnings (Australia), Bookstart (UK), and Reach Out and Read (USA). These programs, which utilise a combination of book giveaways, parental guidance and baby story time sessions, have been found to have a positive effect on children (Vic DEECD 2006).

HOW MANY INFANTS ARE READ TO BY AN ADULT?

Key national indicator: Proportion of children aged < 1 year old who are read to by an adult on a regular basis

This indicator requires further consultation and research to identify and clarify the measurement components. Measurement difficulties arise in the use of the term 'regular'. Some studies have defined 'regular' as being read to at least 3 times per week; however, further specification is possible. For example, on at least 3 separate days or on 3 separate occasions, as children may be read to more than once per day. The effects of frequency and duration of book reading on child outcomes in terms of language development, literacy and early brain development in general have not been determined.

A further difficulty with the indicator surrounds the use of the term 'adult', which may exclude being read to by siblings. Parents may also report what they perceive to be socially desirable responses on reading to children, or may have difficulty accurately recalling how often they read to their child.

There are no national data available on infants read to by an adult; however, data for Victoria are available from the 2006 Victorian Child Health and Wellbeing Survey. This survey asked parents of children aged 6 months to 12 years how often they, or another family member, read to children from a book in the previous week (Vic DHS 2007a).

The survey found that for children in Victoria aged 6 months to less than one year in 2006:

- half were read to on 6 or 7 days in the preceding week
- around one-fifth each were read to on 1–2 days and 3–5 days
- almost one in ten (9%) were not read to at all in the preceding week, although this estimate should be interpreted with caution as it has a high relative standard error (between 25 and 50%).

Although no national data are available for infants, data are available for 2–3 year olds read to by a parent, or another adult family member, from the Growing up in Australia: the Longitudinal Study of Australian Children (LSAC).

According to the LSAC, more than half (58%) of 2–3 year olds were read to most days (6 or 7) in the preceding week. A further 22% and 13% of children were read to on 3–5 days and 1 or 2 days, respectively; 7% were not read to at all in the previous week. When asked how long their children were read to, the majority (61%) of parents reported that children were read to for 6–15 minutes per sitting. Very few children did not like being read to at all, or were read to for greater than 40 minutes (Figure 12.1).

