

6. Burden of disease

In the previous chapters, levels of mortality, morbidity and disability in children, as well as those associated with specific health conditions, were examined. Mortality attributable to a particular condition is a simple measure, which is routinely used in causes of death statistics. Until very recently, mortality rates in general, and infant mortality rates in particular, were used as proxy measures or indices of population health. It was generally agreed that a high infant mortality rate was an indicator of poor health, a high rate of illness and poor conditions of birth.

The problems associated with using mortality to measure population health are twofold. Not only does it ignore the impact of morbidity, but it also focuses policy towards reducing mortality only, rather than also looking at other health outcomes. As diseases vary in the extent to which they can cause either death or disability, mortality measures underestimate health outcomes that are severely disabling but do not result in death. A summary measure of population health that is based on mortality alone is not adequate to describe the impact of these health conditions. It is therefore important to use summary measures which can encompass mortality, morbidity and disability, and can therefore more appropriately influence the development of health strategies and health priorities, resource allocation and research. For these reasons there has been an interest at the international level in developing a single measure of the whole population's health that accounts for both mortality and morbidity attributable to disease.

The AIHW burden of disease and injury study provides a measure of the years of healthy life lost due to illness (AIHW: Mathers et al. 1999). This study combined information on the impact of premature death and non-fatal health outcomes for any particular disease or health condition, to produce a summary measure of population health known as the disability-adjusted life year (DALY). One DALY is one year of healthy life lost due to illness. DALYs are calculated as the sum of years lost due to premature mortality (YLL) and the equivalent years of healthy life lost due to poor health and disability (YLD).¹ The measure uses a severity weight for each health condition ranging from 0 to 1, where a health condition with a severity weight of 0 has no adverse impact, while one with a weight of 1 is equivalent to death.

There have been a number of criticisms of the original World Health Organization global burden of disease study, which may also apply to the AIHW burden of disease and injury study. One of the main criticisms is the appropriateness of applying disease severity weights derived from overseas research to people affected with disability in other countries, such as when Dutch severity weights were used in the AIHW study. The influence of societal and environment factors, such as the existence of assistance devices and the person's goals and expectations, has a great impact on hardship and therefore on quality of life. When disability is measured, the same disease condition can be either more or less severe, depending on these factors and the extent of discrimination (Reidpath et al. 2001). Another fundamental criticism is the lack of acceptability of the DALY concept to some groups of people with a disability with regard to differences in value between a healthy life and a life with a disability.

1. YLL are calculated for each life due to death as the difference between the age at death and the average life expectancy of a person of the same age as the person who died. YLD are calculated for a given condition by estimating the number of new cases of that condition in a specified time. For each condition the YLD is derived from the average duration of the condition and severity weights that quantify the equivalent of loss of healthy living with this condition.

This section provides an overview of the burden of disease due to illness and conditions affecting Australian children, using the summary measure DALYs. This information comes from the AIHW report on the burden of disease and injury in Australia (AIHW: Mathers et al. 1999). The classification of the diseases and conditions used in the AIHW burden of disease study is based on the International Classification of Diseases, 9th Revision (ICD-9).

The burden of mortality (YLL)

In 1996, Australians of all ages lost 1,348,233 years of life (YLL) due to premature mortality. The mortality burden for children aged 0–14 years made up 5% of the total mortality burden, with YLL for boys 39,642 (5% of the male mortality burden), and YLL for girls 28,808 (5% of the female mortality burden). This represented 19.7 YLL per 1,000 boys, 15.1 YLL per 1,000 girls, and 17.5 YLL per 1,000 children.

Table 6.1: Mortality burden (YLL) in children aged 0–14 years, 1996

Disease category	Males	Females	Children	Contribution to total burden (per cent of child YLL)
Conditions originating in the perinatal period	11,928	9,498	21,426	31.3
Congenital anomalies (malformations)	7,681	6,106	13,787	20.1
Injuries	7,518	4,087	11,605	17.0
Ill-defined conditions	3,731	2,819	6,550	9.6
Neoplasms	2,666	2,008	4,674	6.8
Nervous system and sense organ disorders	2,005	1,051	3,056	4.5
Infectious and parasitic diseases	1,093	558	1,651	2.4
Acute and chronic respiratory diseases	1,184	1,083	2,267	3.3
Endocrine and metabolic disorders	607	832	1,439	2.1
Cardiovascular disease	688	524	1,212	1.8
Diseases of the digestive system	360	94	454	0.7
Musculoskeletal diseases	—	91	91	0.1
Genitourinary diseases	31	58	89	0.1
Mental disorders	59	—	59	0.1
Skin diseases	—	—	—	—
Oral health	—	—	—	—
Nutritional deficiencies	—	—	—	—
Maternal conditions	..	—	—	—
All causes	39,642	28,808	68,450	100.0
YLL per 1,000 children	19.7	15.1	17.5	..

.. Not applicable.

Source: AIHW: Mathers et al. 1999.

- For children aged 0–14 years in 1996, conditions originating in the perinatal period were responsible for more years of life lost than any other cause (31.3% of the child mortality burden), with conditions originating in the perinatal period and congenital anomalies together responsible for 51.4% of the child mortality burden.
- Injuries were responsible for 17.0% of the child mortality burden.

The burden of disability (YLD)

In 1996, Australians of all ages lost 1,162,041 healthy years of life because of disability (YLD). The disability burden for children aged 0–14 years made up 13% of the total disability burden, with YLD in boys 81,157 (14% of the male disability burden), and in girls 63,754 (11% of the female disability burden). This represented 40.5 YLD per 1,000 boys, 33.5 YLD per 1,000 girls, and 37.1 YLD per 1,000 children.

Table 6.2: Disability burden (YLD) in children aged 0–14 years, 1996

Disease category	Males	Females	Children	Contribution to total burden (per cent of child YLD)
Acute and chronic respiratory diseases	26,752	21,590	48,342	33.4
Mental disorders	20,808	13,114	33,922	23.4
Congenital anomalies (malformations)	7,542	6,093	13,635	9.4
Injuries	7,611	4,553	12,164	8.4
Conditions originating in the perinatal period	4,674	4,341	9,015	6.2
Nervous system and sense organ disorders	3,342	2,702	6,044	4.2
Infectious and parasitic diseases	2,028	2,054	4,082	2.8
Nutritional deficiencies	1,864	1,852	3,716	2.6
Endocrine and metabolic disorders	2,403	2,168	4,571	3.2
Musculoskeletal diseases	862	1,419	2,281	1.6
Skin diseases	765	1,064	1,829	1.3
Diseases of the digestive system	838	533	1,371	0.9
Cardiovascular disease	511	561	1,072	0.7
Oral health	499	473	972	0.7
Neoplasms	401	311	712	0.5
Genitourinary diseases	152	236	388	0.3
Ill-defined conditions	105	231	336	0.2
Maternal conditions	..	9	9	<.1
All causes	81,157	63,754	144,911	100.0
YLD per 1,000 children	40.5	33.5	37.1	..

.. Not applicable.

Source: AIHW: Mathers et al. 1999.

- Respiratory diseases (including asthma) were responsible in 1996 for more years of healthy life lost due to disability than any other cause (48,342 YLD, or 33.4% of the child disability burden).
- Mental disorders were also responsible for a high proportion of the child disability burden (23.4%).
- Congenital anomalies and injuries were responsible for 9.4% and 8.4% of the child disability burden, respectively.

Total burden of disease (DALYs)

In 1996, Australians lost 2,510,274 healthy years of life due to premature mortality or disability (DALYs). The burden of disease among children aged 0–14 accounted for 9% of the total burden of disease, with DALYs for boys 120,707 (9% of the male disease burden) and for girls 92,562 (8% of the female disease burden). This represented DALYs of 60.2 per 1,000 boys, 48.6 per 1,000 girls, and 54.5 per 1,000 children.

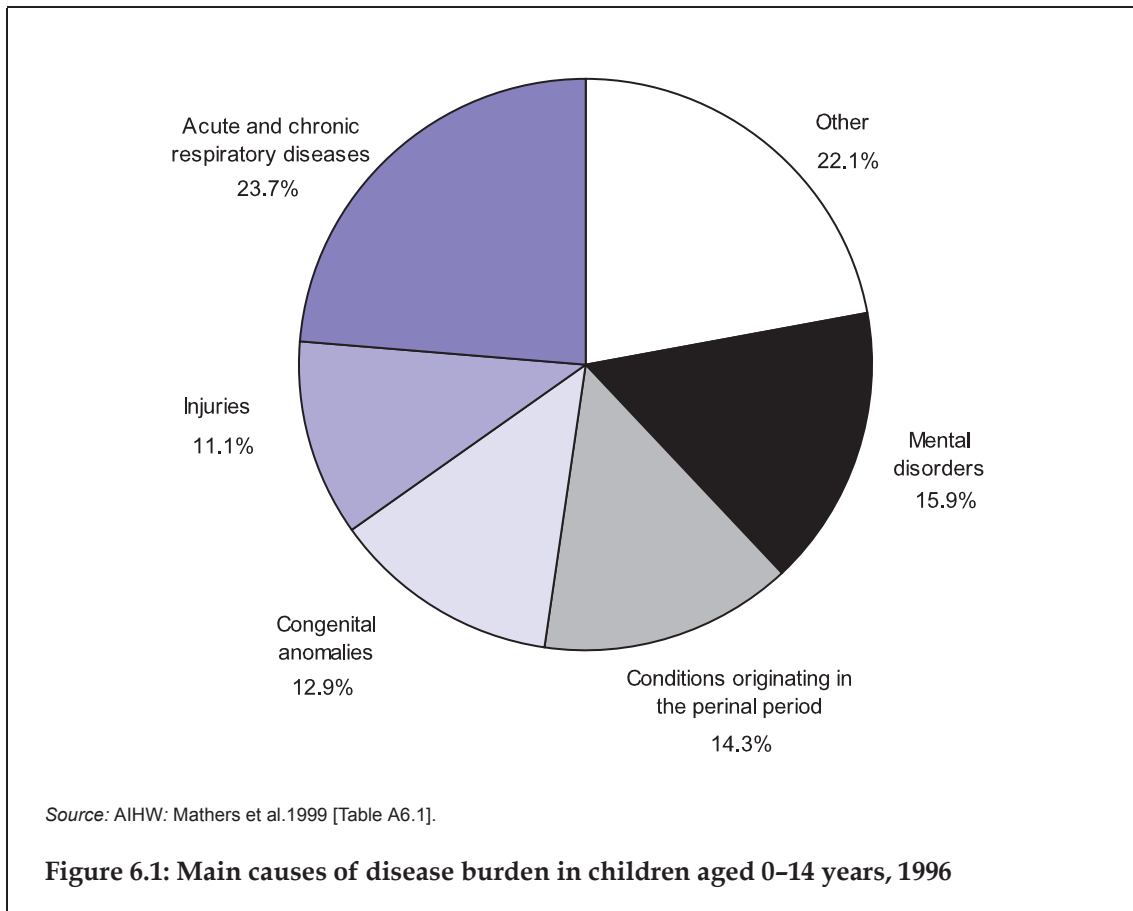
Table 6.3: Total burden of disease (DALYs) in children aged 0–14 years, 1996

Disease category	Males	Females	Persons	Per cent of total children
Acute and chronic respiratory diseases	27,935	22,673	50,608	23.7
Mental disorders	20,868	13,114	33,982	15.9
Conditions originating in the perinatal period	16,602	13,838	30,440	14.3
Congenital anomalies (malformations)	15,223	12,199	27,422	12.9
Injuries	15,129	8,640	23,769	11.1
Nervous system and sense organ disorders	5,347	3,753	9,100	4.3
Ill-defined conditions	3,836	3,051	6,887	3.2
Infectious and parasitic diseases	3,122	3,062	6,184	2.9
Neoplasms	3,067	2,318	5,385	2.5
Endocrine and metabolic disorders	3,010	3,000	6,010	2.8
Nutritional deficiencies	1,864	1,852	3,716	1.7
Musculoskeletal diseases	862	1,511	2,373	1.1
Cardiovascular disease	1,198	1,085	2,283	1.1
Skin diseases	765	1,064	1,829	0.9
Diseases of the digestive system	1,198	627	1,825	0.9
Oral health	499	473	972	0.5
Genitourinary diseases	182	294	476	0.2
Maternal conditions	..	9	9	<.05
All causes	120,707	92,562	213,269	100.0
DALYs per 1,000 children	60.2	48.6	54.5	..

.. Not applicable.

Source: AIHW: Mathers et al. 1999.

A graphical representation of the leading causes of disease burden in children aged 0–14 years is presented in Figure 6.1.



- In 1996, acute and chronic respiratory diseases were responsible for the highest proportion of disease burden among children, accounting for 24% of the total burden.
- Mental disorders were also responsible for a high proportion of the disease burden, accounting for 16%.
- Conditions associated with infancy (conditions originating in the perinatal period and congenital anomalies) feature prominently in the leading causes of disease burden, accounting for 27%.

Table 6.4: Leading specific causes of disease burden (DALYs) in children aged 0–14 years, 1996

Disease	Males	Females	Persons	Per cent of total
1. Asthma	21,663	17,219	38,882	18.2
2. Low birthweight	6,892	6,075	12,967	6.1
3. Attention-deficit hyperactivity disorder	9,369	3,590	12,959	6.1
4. Birth trauma and asphyxia	4,524	3,589	8,113	3.8
5. Other chromosomal disorders	4,140	3,376	7,516	3.5
6. Congenital heart disease	3,911	3,263	7,174	3.4
7. Sudden infant death syndrome (SIDS)	3,731	2,819	6,550	3.1
8. Other congenital anomalies (malformations)	3,765	2,646	6,411	3.0
9. Depression	2,961	3,361	6,322	3.0
10. Other neonatal causes	3,458	2,805	6,263	2.9

Source: AIHW: Mathers et al. 1999.

- Asthma was the leading specific cause of disease burden for Australian children in 1996, accounting for 18.2% of their total disease burden.
- This was followed by low birthweight and attention-deficit hyperactivity disorder (each 6.1%).