

## Burden of disability in Western Australia

Peter Somerford, Judy Katzenellenbogen and Jim Codde, Epidemiology Branch, Department of Health, Perth, Western Australia

**Introduction** The relative contribution of various health problems to the overall burden of disease in the community can be calculated using the burden of disease methodology by combining information on mortality and non-fatal outcomes into a summary measure called the Disability Adjusted Life Year (DALY)<sup>1</sup>. Disability in this context refers to a state of reduced health due to having a disease or condition. The impact of illness and disability, weighted by the severity, can be used to estimate the equivalent of “healthy years” of life lost (YLD).

Using this approach, this study extends earlier work that calculated the years of life lost (YLL) due to premature death<sup>2</sup> by estimating the number of healthy years of life lost due to disability in Western Australia in the year 2000. Collectively, these studies enabled the total disease burden (DALYs) for the WA population to be quantified.<sup>3</sup>

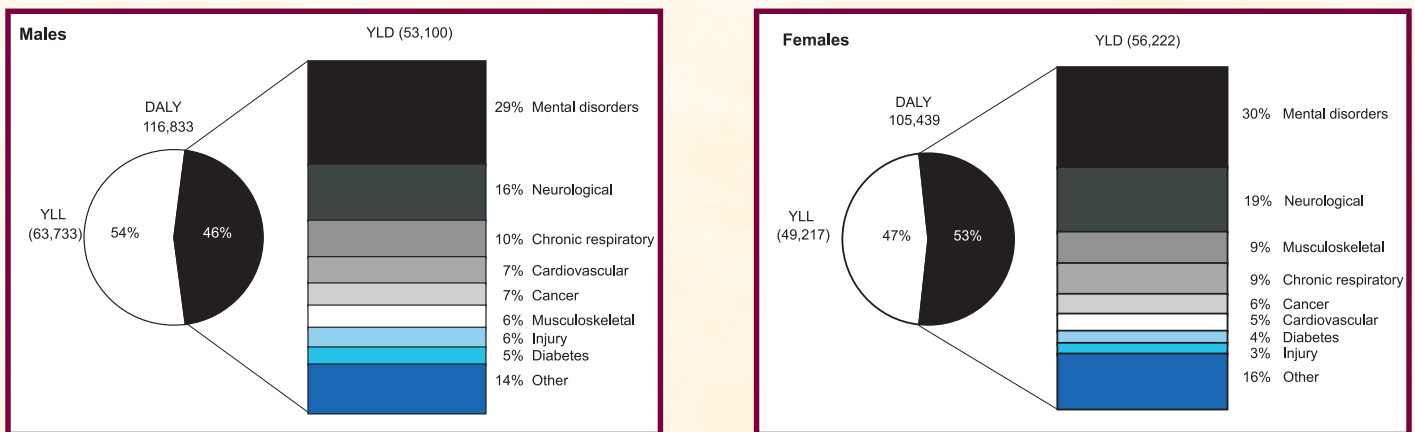
### Disability burden

In 2000, disability was responsible for 53% of total disease burden for females and 46% of total disease

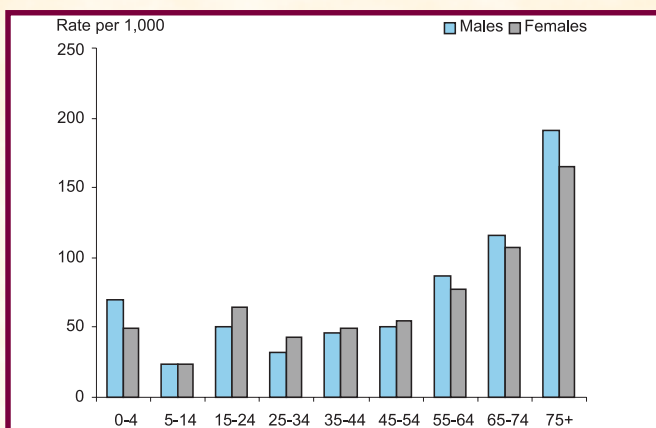
burden among males (Figure 1) and resulted in 53,100 years of healthy life lost due to disability among males and 56,222 among females. A large proportion of the disability burden among males (46%) and females (49%) was accounted for by mental disorders and neurological conditions. In contrast to years of life lost for which cardiovascular, cancer and injuries account for 75% of the total mortality burden<sup>2</sup> these conditions only account for 20% of the disability burden among males and 14% among females.

Despite the similar absolute level of disability burden for males and females, the distribution across broad disease groupings varies between the genders. The disability burden was higher among females than males for mental disorders, neurological and sense organ disorders and musculoskeletal conditions. The male disability burden was higher than the female disability burden for cancer, cardiovascular and chronic respiratory conditions, injury and diabetes.

**Figure 1: The proportion of DALYs due to disability by major disease groups and gender**



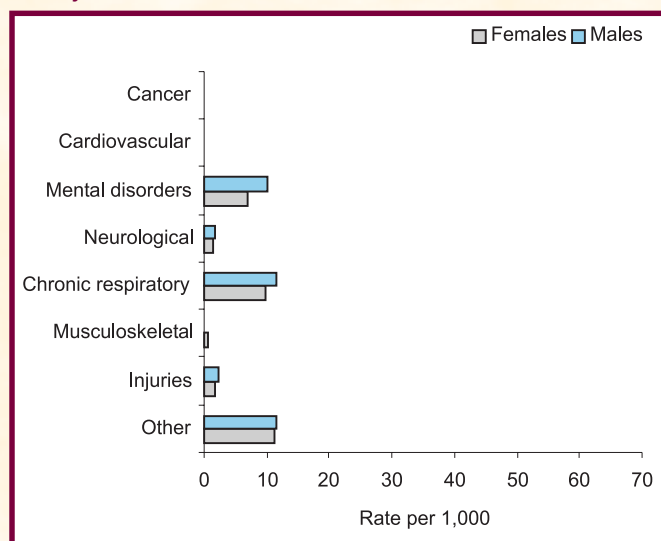
**Figure 2: Age-specific rate of YLDs by gender**



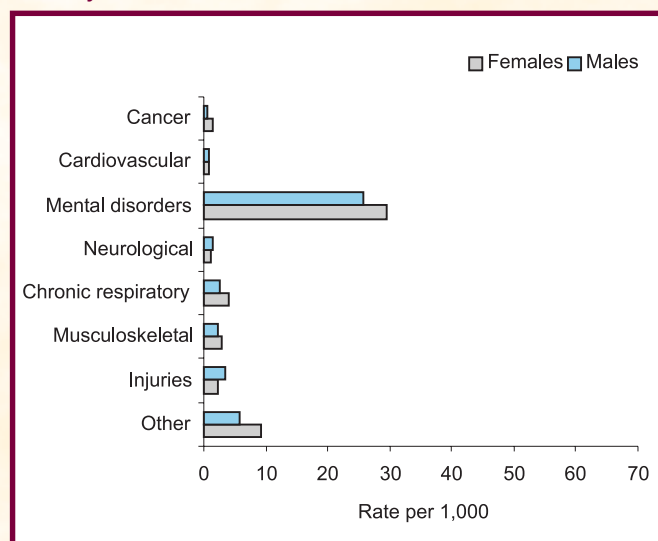
As expected, the disability burden for both genders increased with age (Figure 2). Peaks in the overall trend occur in early childhood and early adulthood. Although the total disability burden was higher for females due to greater longevity, the age-specific disability rate was higher in males aged 0–4 years and 55 years and over.

Figure 3: Age-specific disability burden by gender and broad disease category

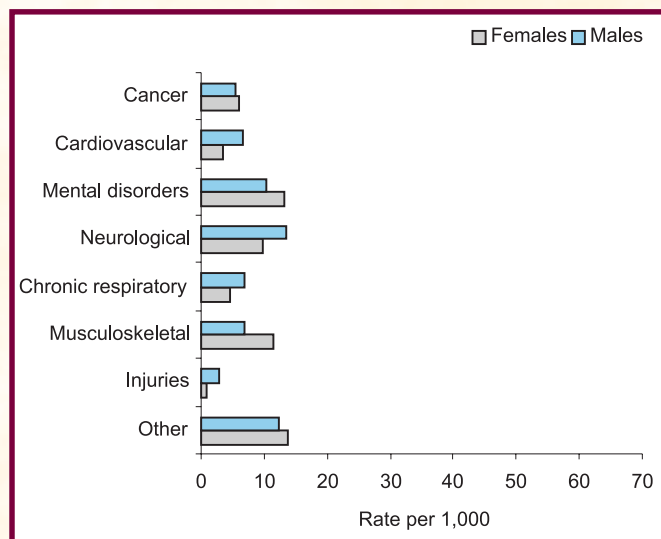
0 - 14 years



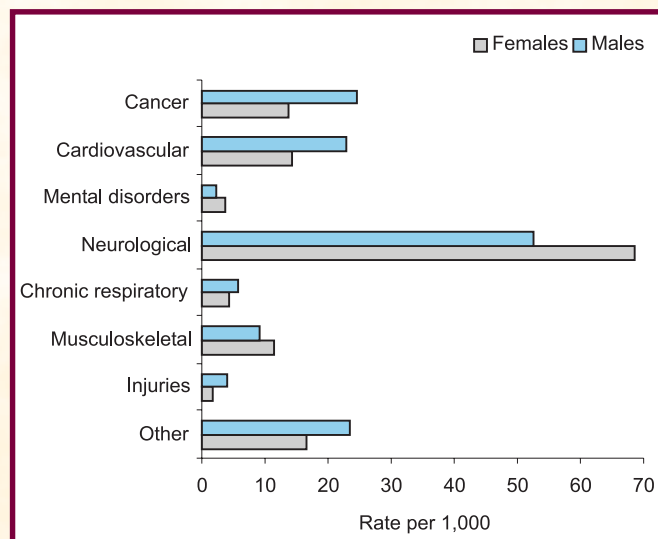
15 - 44 years



45 - 64 years



65 years and older



During childhood the major conditions contributing to disability burden were mental disorders (attention-deficit hyperactivity disorder, autism and Asperger’s syndrome), chronic respiratory conditions (asthma), neonatal conditions (birth trauma and low birth weight) and congenital anomalies. Mental disorders account for the majority of the disability burden from the ages 15 to 44 years, with a higher mental health burden among females

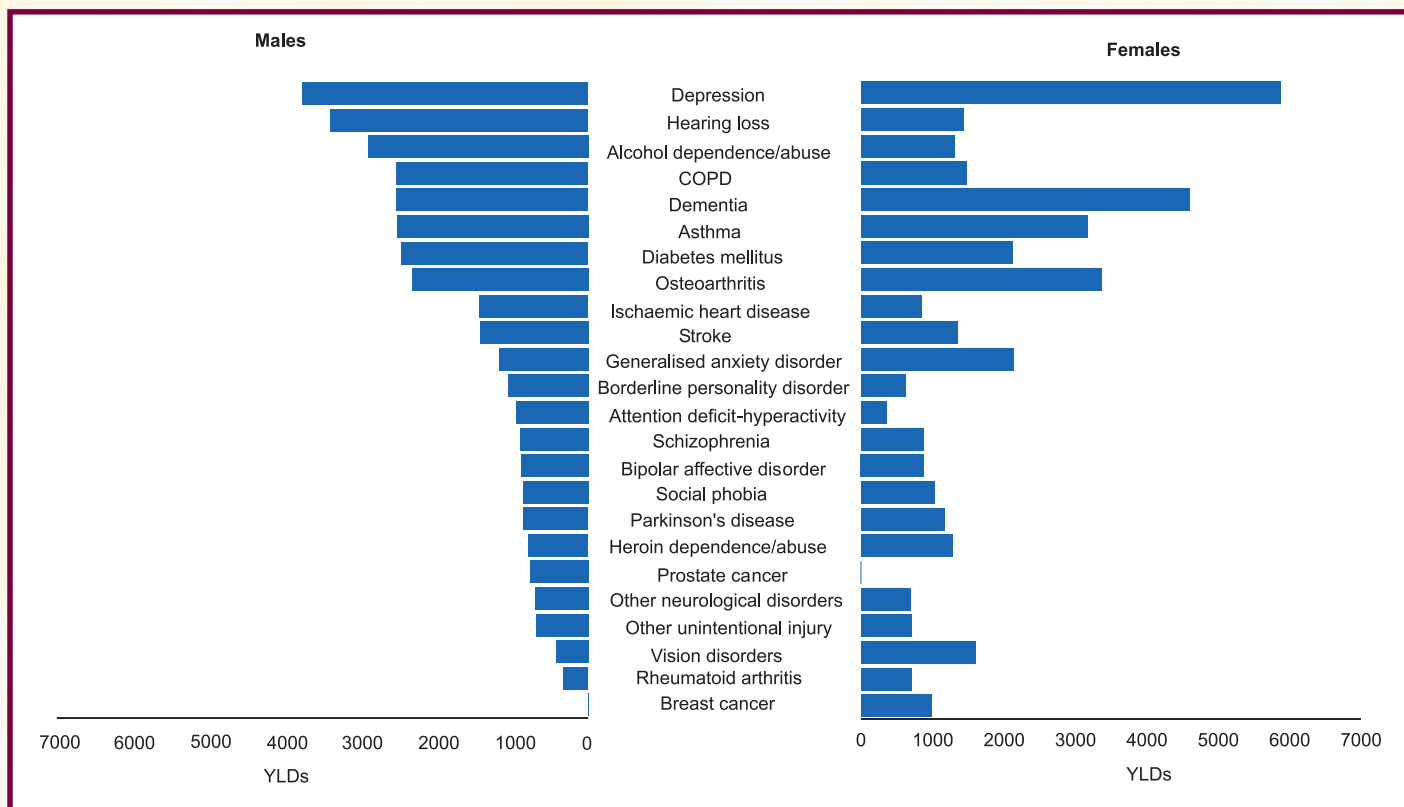
than males. As age increases so does the proportion of disability burden contributed by cancer, cardiovascular and neurological disorders such as dementia, hearing and vision. The disability burden of neurological disorders was greatest among females, whilst disability burden due to cancer and cardiovascular disease was greatest among males (Figure 3).

**Key findings: broad disease categories by age group**

- Disability accounts for almost half of WA’s total disease burden.
- Mental, neurological and sense organ disorders are responsible for about half of this disability burden.
- While disability rates generally increase with age, higher rates were also observed in the 0–4 year-old and 15–24 year-old age groups.
- The majority of the disability burden between the ages of 15 and 44 was accounted for by mental disorders.
- After the age of 45 years the disability burden for neurological and sense organ disorders, cancers and cardiovascular diseases dominate.
- Among the oldest age group neurological disorders, including dementia, accounted for the largest proportion of disability.



Figure 4: Leading specific causes of disability burden by gender



Of the leading 20 specific causes for each gender, mental disorders accounted for nine among males and six among females (Figure 4). Depression contributes more of the total disability burden than any other cause among both males and females, with a greater burden among females than males. In relation to total burden, only the mortality burden contributed by ischaemic heart disease (7.9%) was greater than the disability burden contributed by

depression (4.3%). Other conditions contributing large amounts of disability burden but little mortality burden were asthma, osteoarthritis, hearing loss and alcohol abuse and dependence. Among males, hearing loss and alcohol dependence and abuse were the second and third leading causes of disability burden. Dementia and osteoarthritis were the next two leading causes, after depression among females.

**Key findings: specific disease causes**

- Depression was the leading cause of disability burden in WA in 2000. Other major contributors to disability burden were dementia, hearing loss, osteoarthritis, asthma and alcohol abuse and dependence.
- Mental health and neurological disorders were among the leading specific causes of disability for both sexes.

**Implications**

- As the burden of disease summary measure, the DALY, consists of both a mortality and disability component, it should be recognised that interventions that aim to reduce the disability burden of a disease will improve the quality of life may also reduce disease burden by reducing the mortality rate.
- Reductions in disability burden can be brought about through policies that address primary prevention, early diagnosis, treatment, rehabilitation, palliative and aged care and/or support service provision.
- With an ageing population, conditions currently associated with the elderly such as dementia can be expected to place an increasing burden on the health system and social support services.
- This age-related change in disease prevalence has important work force implications for the delivery of health care.



### Method

Estimations of YLDs for a comprehensive range of specific diseases and injury causes have been published for Australia based on age and gender-specific incidence, duration and severity weights for each disease stage or sequelae.<sup>1</sup> As comparable WA data were not available, the current study used synthetic estimates of WA YLD data derived from the Australian study (synthetic YLDs) rather than from disease modelling estimates based on uniquely WA data.

Estimation of synthetic YLDs for the year 2000 was based on two methods. First, for those conditions with high mortality, YLDs for WA were extrapolated from the Australian Burden of Disease Study and from YLLs previously derived for WA.<sup>2</sup> Second, the rates of Australian YLDs in 1996 of conditions with low mortality were applied to the WA population for the year 2000. These approaches are described in detail in a supplementary technical report.<sup>4</sup>

### References

1. Mathers C, Vos T and Stevenson C. The burden of disease and injury in Australia. AIHW Cat No PHE 17. Canberra: Australian Institute of Health and Welfare, 1999.
2. Katzenellenbogen JM, Somerford P and Serafino S. WA Burden of Disease Study: Mortality 2000. Department of Health, Perth, Western Australia, 2003.
3. Somerford P, Katzenellenbogen JM and Codde JP. Burden of disease in Western Australia: An Overview. WA Burden of Disease Study, Bulletin No. 1. Department of Health, Perth, Western Australia, 2004.
4. Somerford P, Katzenellenbogen J. Western Australian Burden of Disease Study. Disability-Adjusted Life Years: Technical overview. Department of Health, Perth, Western Australia, 2004. ([www.health.wa.gov.au/publications/BoD\\_Technical](http://www.health.wa.gov.au/publications/BoD_Technical)).

