Cardiovascular disease has long been the leading cause of death in developed countries. In the Asia/Pacific region it has become increasingly prevalent in recent decades, and now accounts for about one third of all deaths. Cardiovascular disease covers a range of diseases related to the circulatory system, including ischaemic heart disease (known as IHD, or heart attack) and cerebrovascular disease (or stroke). Together, IHD and stroke comprise three quarters of all cardiovascular deaths in the 20 Asian countries included here.

Estimates for the year 2008 indicate high levels of death from cardiovascular disease, exceeding 400 deaths per 100 000 population in Pakistan, the Lao PDR and Fiji (Figure 1.5.1). This is in contrast to a group of developed countries (Japan, Australia, the Republic of Korea, Singapore, New Zealand) where death rates were below 150 per 100 000 population. Mortality rates from cardiovascular disease are, on average, 70% higher in Asian countries than in OECD countries (294 *versus* 170 deaths per 100 000 population).

The types of cardiovascular diseases that are fatal to persons in the region differ across countries. In countries such as China, the Republic of Korea, Mongolia, Viet Nam and Thailand, morbidity and mortality from stroke is greater than from ischaemic heart disease (Figure 1.5.2). In European and North American countries, but also in Singapore, Pakistan, Bangladesh and Malaysia, the opposite is true (Ueshima *et al*., 2008).

This can largely be explained by differences in levels of risk factors for cardiovascular disease across countries. In most Asian countries, cholesterol levels tend to be lower than most OECD countries, but up to two-thirds of cardiovascular disease can be attributed to hypertension, reinforcing the importance of blood-pressure lowering strategies. High blood pressure often accompanies high salt intake, whereas low cholesterol levels are associated with lower fat intake. In China, average daily salt intake for men in 2002 was 12 grams per day, and in Thailand 11 grams among adults, both higher than WHO's recommendation of 5g or less (Herd *et al*., 2010; WHO, 2011c).

Rates of cardiovascular disease increase with age (Figure 1.5.3). Among younger age groups (0-29 years), rates are higher in Southeast Asian countries, but rates of mortality among middle- and older-aged persons are higher in European countries. Mortality rates are lower at all ages in Western Pacific region countries.

Cardiovascular disease affects younger age-groups in the Asia/Pacific region than in their counterparts in OECD countries. Cardiovascular mortality in India in the 30-59 years age-group is twice than that in the United States. More than half of cardiovascular deaths in India occur below the age of 70 years compared with 23% in established market economies (WHO, 2011c).

As the proportion of aged persons increases in the Asia/Pacific region, up to half of the world's cardiovascular burden can be expected to occur in the area (Sasayama, 2008). Increases in total cholesterol and blood pressure, along with smoking, overweight/obesity and diabetes highlight the need for management of risk factors to forestall an epidemic of cardiovascular disease.

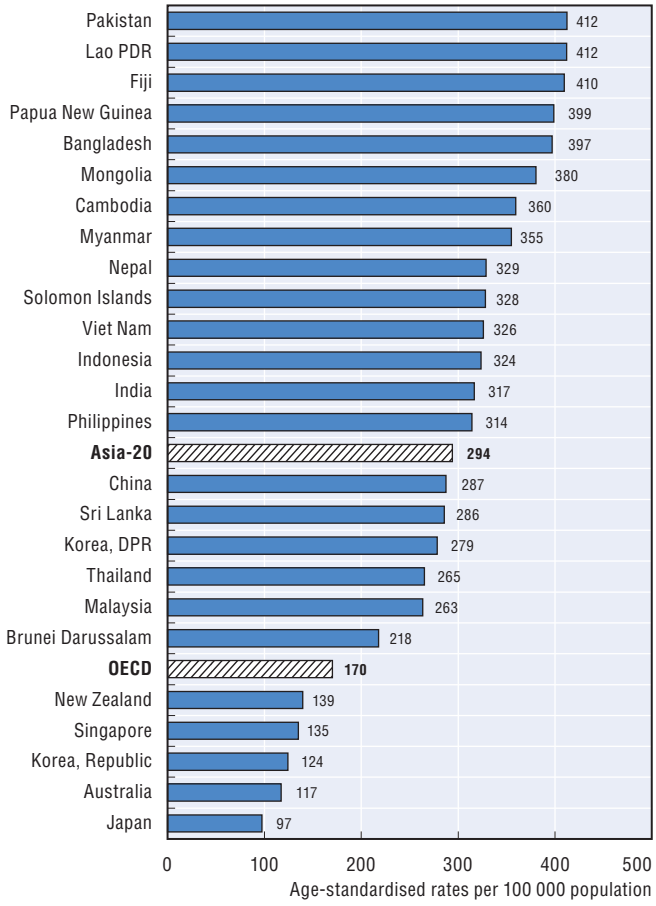
### Definition and comparability

Mortality rates are calculated by dividing annual numbers of deaths by mid-year population estimates. Rates have been age-standardised to the World Standard Population to remove variations arising from differences in age structures across countries.

Complete vital registration systems do not exist in many developing countries, and about one-third of countries in the region do not have recent data (WHO, 2008a). Misclassification of causes of death is also an issue. A general assessment of the coverage, completeness and reliability of causes of death data has been published by WHO (Mathers *et al*., 2005).

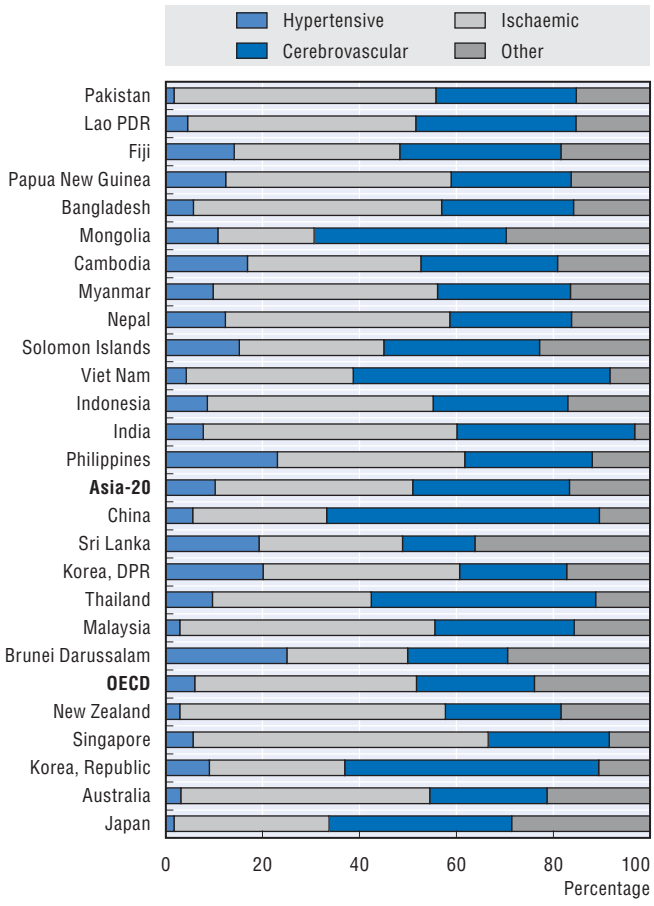
The WHO Global Burden of Disease project draws on a wide range of data sources to quantify global and regional effects of diseases, injuries and risk factors on population health. The latest assessment of GBD is for 2008.

### 1.5.1. Cardiovascular disease, estimated mortality rates, 2008



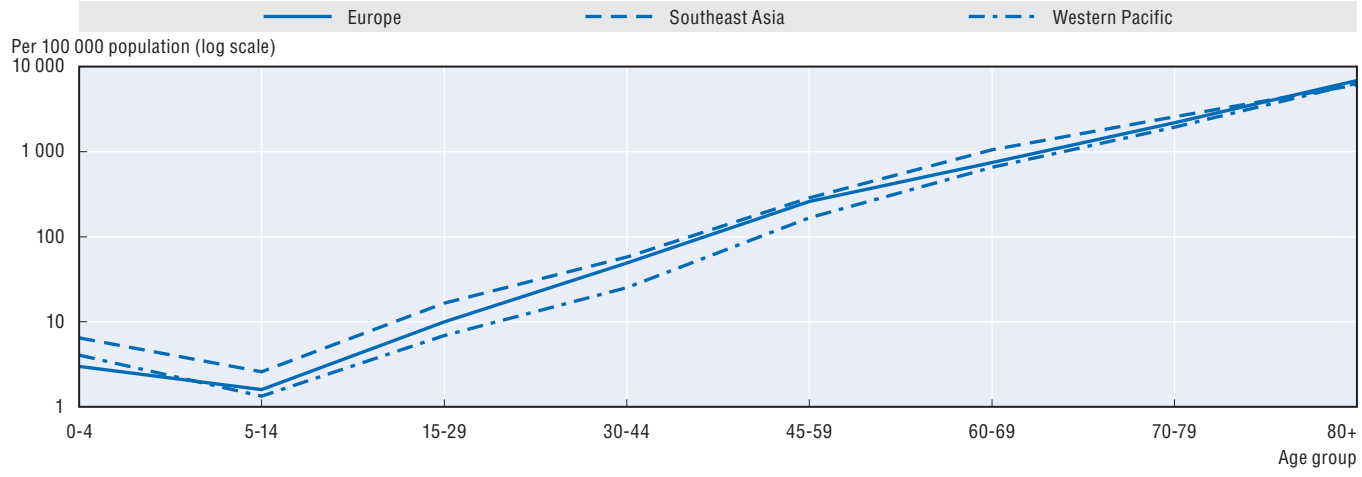

*Source:* WHO Global Burden of Disease, 2011.

### 1.5.2. Proportions of cardiovascular disease deaths, 2008




*Source:* WHO Global Burden of Disease, 2011.

### 1.5.3. Cardiovascular disease, age-specific mortality rates by region, 2008




*Source:* WHO Global Burden of Disease, 2011.

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