Disability-adjusted life year (DALY) is a metric that combines both fatal and non-fatal health problems into a single number. It is the primary metric used by the World Health Organization to assess the global burden of disease, and the metrics for cancer were published in GLOBOCAN2008, which is a project to estimate the incidence, mortality, prevalence and DALY for major types of cancers, at national level, for 184 countries of the world. We abstracted the DALYs in Japan from the GLOBOCAN 2008 database (1). DALYs for cancer are calculated as the sum of the years of life lost (YLLs) due to premature mortality in the population and the years lost due to disability (YLDs) for cancer incident cases of the health condition. YLLs were calculated by multiplying the number of cancer-specific deaths at a given age with the standard life expectancy for that age group. YLDs were derived as the product of the number of cancer incidence, the average duration of the disability and disability weightings for the condition. Disability weights represent value preferences that scale a condition or state from 0 (complete health) to 1 (death).

Figure 1 shows the estimated age-adjusted DALY rate per 100,000 population lost from cancer in 2008, after adjustment for the population size and age for males, and Fig. 2 shows these data for females.

An estimated 3.0 million healthy life years for males and 2.3 million healthy life years for females were lost because of cancer in Japan in 2008 (data not shown). DALYs for males were ~30% more than those for females.

For males, lung, stomach and colorectal cancers were the main contributors to total DALYs, accounting for 20, 16 and 14%, respectively, of the total DALYs from cancer. In addition to estimates of DALYs, we focused on the ratio of the estimated YLLs and YLDs. The YLD-to-DALY proportion was 11% for all cancer sites combined. This ratio was high for cancers of the testis (46%), prostate (38%) and Hodgkin’s lymphoma (33%).

For females, breast, colorectal and stomach cancers were the main contributors to total DALYs, accounting for 22, 12 and 11%, respectively, of the total DALYs from cancer. The YLD-to-DALY proportion was 17% for all cancer sites combined, which was higher than for males. This ratio was high for cancers of the corpus uteri (41%), breast (34%), cervix uteri (29%) and thyroid (25%).

DALY is one of the indices for assessing overall burden of disease; here we focused on cancer, and it is considered burden caused by both mortality (YLLs) and prevalence (YLDs).

Loss of health-life-span in cancer with high DALYs such as lung, stomach and colorectal was accounted for in high mortality. About one-third of the losses caused by breast cancer for females were from prevalence and not from death. Cancers that were relatively high in YLDs, such as testis, prostate and uterus, were thought to have a longer treatment period even if it is not the cause of death.
Note: Data were downloaded from the IARC CANCER Mondial Statistical Information System (http://www-dep.iarc.fr/). Responsibility for this presentation and interpretation lies with the authors of this article.

Figure 2. Estimated disability-adjusted life years (DALYs/100,000) (Japan, females).

Reference