Cancer Deaths Take More Than 4 Million Potential Years of Life

Study finds that deaths from cancer accounted for more than 4 million potential years of life lost in 2017

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Deaths from cancer accounted for more than 4 million potential years of life lost in 2017, according to a study published in Cancer Epidemiology, Biomarkers & Prevention, a journal of the American Association for Cancer Research. While the cancer types with the highest death rates per capita accounted for the greatest number of years lost, cancers that typically occur at younger ages bore a disproportionate share of the burden.

“Potential years of life lost (PYLL) is an estimate of the average years a person would have lived if he or she had not died prematurely. Given that cancer is the leading cause of death in those younger than 80 years old, it is important to study the effect of cancer death rates among younger people,” said the study’s lead author, Minkyo Song, MD, PhD, a research fellow at the National Cancer institute, part of the National Institutes of Health.

In 2017, there were 599,099 cancer deaths in the United States, according to death certificate data from the National Center for Health Statistics. In this study, Song and colleagues used national mortality data from the U.S. National Center for Health Statistics, coupled with a commonly used definition of PYLL as the number of years lost prior to age 75, to quantify how many years of life were prematurely lost. They calculated that 4,280,128 years of life were prematurely lost due to cancer in 2017.

For the most part, PYLL mirrored overall U.S. cancer mortality trends. For example, lung cancer, the cancer type that causes the largest number of deaths, accounted for approximately 24.3 percent of U.S. cancer deaths and 20.8 percent of PYLL. Colon/rectum cancer accounted for 8.8 percent of deaths and 9.6 percent of PYLL. Pancreatic cancer accounted for 7.3 percent of deaths and 6.6 percent of PYLL, while breast cancer accounted for 7.1 percent of deaths and 9.4 percent of PYLL.

One exception to this pattern was prostate cancer, which causes about 5.1 percent of U.S. cancer deaths but only 2 percent of PYLL. “Many of the deaths caused by this cancer occurred at older ages, resulting in fewer PYLL,” Song noted.

Another metric, PYLL per death, provided a useful tool to measure the burden from several rare cancers that typically affect younger people, Song said. For example, testicular cancer accounted for 0.1 percent of cancer deaths in 2017, and 0.3 percent of PYLL. Bone cancer accounted for 0.3 percent of deaths, but 0.7 percent of PYLL. Although these cancers did not contribute dramatically to overall cancer mortality, they caused the highest numbers of life years lost per death: Testicular cancer had the highest PYLL per death, with an average of 34 years lost, followed by bone cancer, with an average of 26.4 years lost, and endocrine cancers including thymus cancer, with an average of 25.2 years lost.

The total number of PYLL increased slightly from 1990, despite an overall decrease in cancer deaths. In 1990, there were 4,262,397 PYLL, compared with the 4,280,128 recorded in 2017. During this time, overall cancer mortality dropped from 214.9 per 100,000 in 1990 to 152.7 per 100,000 in 2017. The researchers found that the increase in PYLL was due to the growth of the U.S. population.

The study also showed that ethnic and racial minority groups account for a disproportionate share of the burden of premature cancer death. In 2017, 78 percent of all cancer deaths occurred in non-Hispanic whites, but only 70 percent of PYLL occurred in this group. By contrast, Hispanics accounted for 7 percent of cancer deaths and 10 percent of PYLL, while Blacks accounted for 12 percent of cancer deaths and 15 percent of PYLL.

Overall, Song said, “PYLL is a useful ‘complementary measure’ to cancer mortality rates. Together, they provide a more detailed picture of the social and economic toll of cancer. PYLL can be used to estimate the impact of cancer death in younger populations. This metric highlights the enormous loss of life due to certain cancers that occur at younger ages, even if they occur infrequently.”

As a limitation, the researchers noted that the study relied on the cause of death reported on death certificates, which are subject to error. They also pointed out that other studies have used different definitions of PYLL, contributing to some differences across the body of research on this topic.

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