Nearly Half of Cancer Deaths Are Due to Modifiable Risk Factors

Plus: Study shows that cutting down on alcohol consumption can reduce cancer risk.

September 1, 2022 By Liz Highleyman

Nearly half of worldwide cancer deaths are linked to modifiable risk factors, such as smoking, alcohol consumption and obesity, according to new study findings published in The Lancet. The good news is that quitting smoking and reducing alcohol consumption can lower cancer risk.

While some risk factors can't be controlled—such as age, genetics and family history— modifiable risk factors play a major role in the development of cancer.

The Global Burden of Diseases, Injuries, and Risk Factors Study (GBD) provides an annual picture of the causes of disease, disability and death worldwide. GBD collaborators used the study results to better understand how potentially modifiable risk factors affect cancer outcomes. The analysis included data on 23 cancer types and 34 risk factors in more than 200 countries.

The researchers estimated the cancer burden attributable to behavioral, environmental, occupational and metabolic risk factors, looking at cancer deaths and disability-adjusted life-years (DALYs) in 2019 and the change in these measures between 2010 and 2019. DALYs combine years of life lost due to death and years of healthy life lost due to disability; one DALY represents the loss of one year of full health.

In 2019, the modifiable risk factors included in this analysis accounted for 4.45 million cancer deaths (44%) and 105 million DALYs (42%) for both sexes combined. Deaths attributable to these risk factors made up 51% of all cancer deaths among men and 36% among women. Overall, risk-attributable cancer deaths rose by 20% from 2010 to 2019.

Worldwide, the leading risk factors for both sexes combined were smoking, alcohol use and a high body mass index (one measure of obesity). Smoking was the biggest risk factor for both men and women, linked to 34% and 11% of all cancer DALYs, respectively. But metabolic risk factors, such as diet and obesity, showed the greatest increase, rising by 35%.

After smoking, alcohol use, dietary risks and air pollution were the next three leading risk factors for men. For women, the other leading factors were "unsafe sex," dietary risks, high BMI and high blood sugar. The researchers did not elaborate on the role of "unsafe sex," but some sexually

transmitted infections—including human papillomavirus (HPV), hepatitis B and C, and HIV—can cause or raise the risk for various cancers. Cervical cancer, a leading cause of cancer death in low-income countries, is preventable with screening and HPV vaccines.

“These findings highlight that a substantial proportion of cancer burden globally has potential for prevention through interventions aimed at reducing exposure to known cancer risk factors, but also that a large proportion of cancer burden might not be avoidable through control of the risk factors currently estimated,” the study authors wrote. “Thus, cancer risk reduction efforts must be coupled with comprehensive cancer control strategies that include efforts to support early diagnosis and effective treatment.”

Alcohol and Cancer Risk

It is well known that smoking is a leading cause of cancer, and public health agencies, clinicians and community advocates work diligently to encourage people to quit. A recent study by the American Cancer Society found that nearly one third of all cancer deaths in the United States were attributable to smoking.

But the role of alcohol as a cause of cancer is less widely recognized and addressed.

Jung Eun Yoo, MD, PhD, of Seoul National University in Korea, and colleagues looked at the association between changes in alcohol consumption and the development of all cancers and cancers known to be linked to alcohol (head and neck, esophagus, larynx, colorectal, liver and female breast cancer).

This population-based cohort study included more than 4.5 million adults ages 40 or older covered by the Korean National Health Insurance Service. The average age was about 54 and both sexes were equally represented.

Cohort members participated in a national health screening in both 2009 and 2011 and had available data on their drinking behavior. Alcohol consumption was categorized as none, mild (less than 15 grams per day), moderate (15 to 29.9 grams) or heavy (more than 30 grams). Between 2009 and 2011, 27% of mild drinkers, 10% of moderate drinkers and 9% of heavy drinkers quit.

The researchers found that people who increased their alcohol consumption over time had a higher risk for alcohol-related cancers and all cancers compared with those who continued to drink the same amount. But those who reduced their alcohol consumption lowered their cancer risk.

“Results of this study showed that increased alcohol consumption was associated with higher risks for alcohol-related and all cancers, whereas sustained quitting and reduced drinking were associated with lower risks of alcohol-related and all cancers,” the study authors concluded. “Alcohol cessation and reduction should be reinforced for the prevention of cancer.”

Overall, the cancer incidence rate was 7.7 per 1,000 person-years during a median 6.4 years of follow-up. At each drinking level, those who went up a step saw an increased risk. People who

changed from nondrinking to mild alcohol consumption had a 3% higher risk, rising to 10% higher for new moderate drinkers and 34% higher for new heavy drinkers compared with those who continued to abstain.

Conversely, people who reduced their alcohol consumption from heavy to moderate saw a 9% reduction in alcohol-related cancers and a 4% decline in all cancers. Those who dropped down to mild consumption saw an 8% decline in both alcohol-related and all cancers.

Mild drinkers who quit had a 4% lower risk of alcohol-related cancers than those who maintained the same drinking level. Moderate and heavy drinkers saw a short-term rise in cancer risk soon after quitting, but among those who participated in the screening again in 2013, this effect disappeared if they continued to abstain. The researchers suggested this might be due to the "sick quitter phenomenon," in which people stop drinking after they become ill.

Importantly, when the researchers analyzed the results by sex, they found that the link between changes in alcohol consumption and cancer risk were not statistically significant for women. However, they noted that a too few changed their alcohol consumption to show a meaningful association.

Another limitation is that the study looked at just two assessments done two years apart, and the researchers did not have information about participants' alcohol use earlier in life. What's more, they didn't analyze other behaviors that might have changed along with reduced alcohol consumption—some people, for example, quit smoking and drinking at the same time.

Nonetheless, some experts say these findings confirm that drinking less alcohol can lower cancer risk.

"This is another great example of how changing behavior could significantly decrease cancer deaths," William Dahut, MD, chief scientific officer of the American Cancer Society, told CNN. "The most striking findings is the impact on cancer deaths with changes in alcohol consumption. Individuals should be strongly counseled that they can dramatically decrease their cancer risk if alcohol consumption is moderated."

Click here to read the Global Burden of Disease study in The Lancet.
Click here to read the alcohol study in JAMA Network Open.
Click here to learn more about cancer prevention.
