

Non-Communicable Diseases Watch

December 2021



Alcohol Drinking and Cancer Risks

Key Messages

- ※ The International Agency for Research on Cancer of the World Health Organization has classified alcohol as a Group 1 carcinogen (cancer-causing to humans), the same grouping as tobacco smoke, asbestos and ionising radiation.
- ※ Alcohol consumption causes cancers of the oral cavity, pharynx, larynx, oesophagus, liver, colorectum, and female breast via various possible biological mechanisms.
- ※ When it comes to cancer risk, there is NO safe level for alcohol consumption – the cancer risk starts to increase even with low levels of alcohol consumption. The higher the level of alcohol consumption or the longer the period of time consuming alcoholic beverages, the greater the risk of alcohol-associated cancers.
- ※ While beer, wine, rice wine and spirits can increase the risk of cancer, alcohol and tobacco would significantly enhance each other's effect on the risk of cancer.
- ※ To reinforce public awareness of the fact that alcohol causes cancer, the Department of Health (DH) is launching a publicity campaign for risk communication. DH will continue working in close partnership with other government bureaux and departments as well as community partners to enhance public education and build up public awareness about alcohol-related harm.



Alcohol Drinking and Cancer Risks

Alcohol consumption is a causal factor in more than 200 diseases and injury conditions, including some cancers.¹ In fact, the International Agency for Research on Cancer of the World Health Organization (WHO) has classified alcohol as a Group 1 carcinogen (cancer-causing to humans), the same grouping as tobacco smoke, asbestos and ionising radiation.^{2, 3} Alcohol consumption causes cancers of the oral cavity, pharynx, larynx, oesophagus, liver, colorectum, and female breast.^{2, 3}

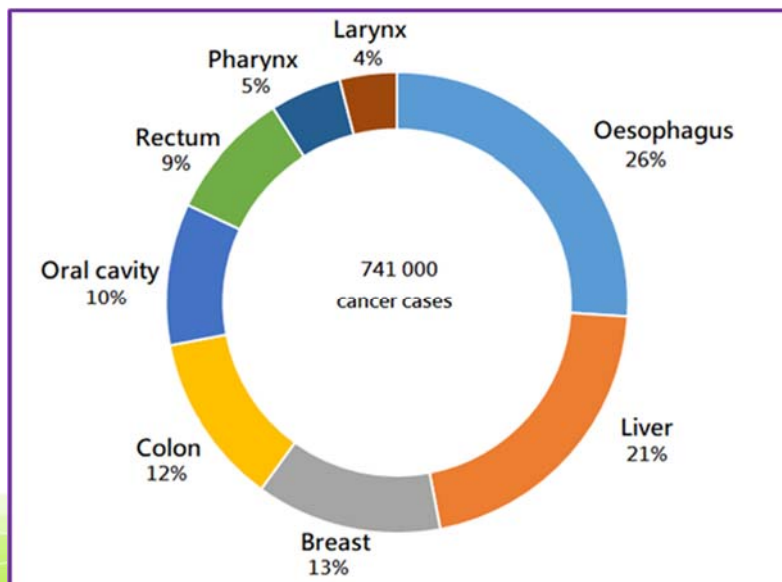
In 2020, an estimated 741 300 new cancer cases were attributable to alcohol consumption globally.⁴ By cancer types, cancers of the oesophagus (26%), liver (21%) and breast (13%) contributed the most cases (Figure 1).⁵ While risky and heavy drinking (more than 20 grams or 2 alcoholic drinks per day) contributed 86.1% of the total alcohol-attributed cases (or 638 200 cases), light to moderate drinking (up to 20 grams or 2 alcohol drinks per day) accounted for 13.9% (or 103 100) new cancer cases worldwide.^{4, 5}

Possible Mechanisms Underlying Alcohol's Effect on Cancer Risk Increment

Alcohol can increase the risk of cancer initiation and development via various possible biological mechanisms —

- Alcoholic beverages contain ethanol and it is metabolized to acetaldehyde. It can cause irreversible damage to deoxyribonucleic acid (DNA) and give rise to cancer.^{2, 6}
- Chronic alcohol consumption can increase oxidative stress (i.e. imbalance between free radicals and antioxidants in the body) that damages DNA and contributes to cancer initiation.^{6, 7} Alcohol consumption (especially in large amounts) can affect the immunity system, reducing the immune responses to inhibit cancer development.^{8, 9}
- Alcohol can impair the body's ability to break down and absorb essential nutrients, such as folate, carotenoids and other vitamins (including A, C and E) that normally play a role in protecting against cancer. Such deficiencies can increase the risk of cancer initiation and development.⁶

Figure 1: Proportion of alcohol-attributed new cancer cases in 2020 globally by cancer site



Source: International Agency for Research on Cancer.

- Chronic alcohol consumption can lead to thinning of the mucous membranes of the gastrointestinal tract, allowing carcinogens to pass through, penetrate and damage the underlying tissues more easily.¹⁰ In addition, alcohol can affect the function of salivary glands. Reduced saliva flow can impair the efficiency for clearing carcinogens present in the mouth, thereby increasing the risk of oral cancer.^{10, 11}
- Alcohol can act as a solvent, enhancing the penetration of external carcinogens (such as tobacco smoke) and initiating cancer development.^{7, 11, 12}
- Regular or excessive alcohol consumption damages the liver (the main organ for metabolising alcohol), leading to liver inflammation, scarring (fibrosis) and eventually cirrhosis that would greatly increase the risk of liver cancer.⁷
- Excessive alcohol consumption can upset the balance of bacterial colonies in the gut and weaken gut barrier function, thus increasing the susceptibility to inflammatory bowel disease that can increase the risk of colorectal cancer.⁷
- Alcohol can increase circulating levels of estrogen, which is a risk factor for breast cancer.^{6, 7}
- Alcoholic beverages are extremely calorific (with 7 kcal per gram of alcohol, second highest next to fat) that can contribute to unhealthy weight gain, and being overweight or obese is known to increase the risks of obesity-related cancers (including cancers of the mouth, pharynx and larynx, oesophagus, stomach, pancreas, liver, colon and breast).¹³

Cancer Risk According to Alcohol Consumption Pattern

Pattern of alcohol consumption, such as how much or how drinkers consume alcoholic beverages, can affect their risk of cancer.

Amount of Alcohol Consumed

When it comes to cancer risk, there is NO safe level for alcohol consumption – the cancer risk starts to increase even with low levels of alcohol consumption.¹⁴ The higher the level of alcohol consumption, the greater the risk of alcohol-associated cancers.¹⁵ Compared with non-drinkers, a population-based cohort study in Korea with over 11.7 million individuals aged 40 years or older found that mild drinkers (104 grams or less per week), moderate drinkers (105–209 grams per week) and heavy drinkers (210 grams or more per week) had 4%, 14% and 28% increased risk of gastrointestinal cancer respectively.¹⁶

Types of Alcoholic Beverages

All types of alcoholic beverages, including beer, wine (red or white), rice wine and spirits (such as brandy, whisky, gin, rum, vodka, tequila, etc.), can increase the risk of cancer.^{2, 3} However, beverages with a high alcohol content by volume tend to be more harmful.

Duration of Alcohol Consumption

The longer the period of time drinkers consume alcoholic beverages, the greater the risk of cancer development.¹⁷ When consumption ceases, however, cancer risk associated with alcohol is likely to gradually attenuate. Depending on the total amount of alcohol consumption, studies suggest that substantial cancer risk reduction could be seen in 5–10 years after cessation of alcohol drinking. Risk of cancer may further be reduced to that of a never-drinker after long-term cessation from alcohol drinking.¹⁸⁻²⁰ Thus, it is never too late to stop drinking, and the sooner the better.

Combining Alcohol Consumption and Smoking

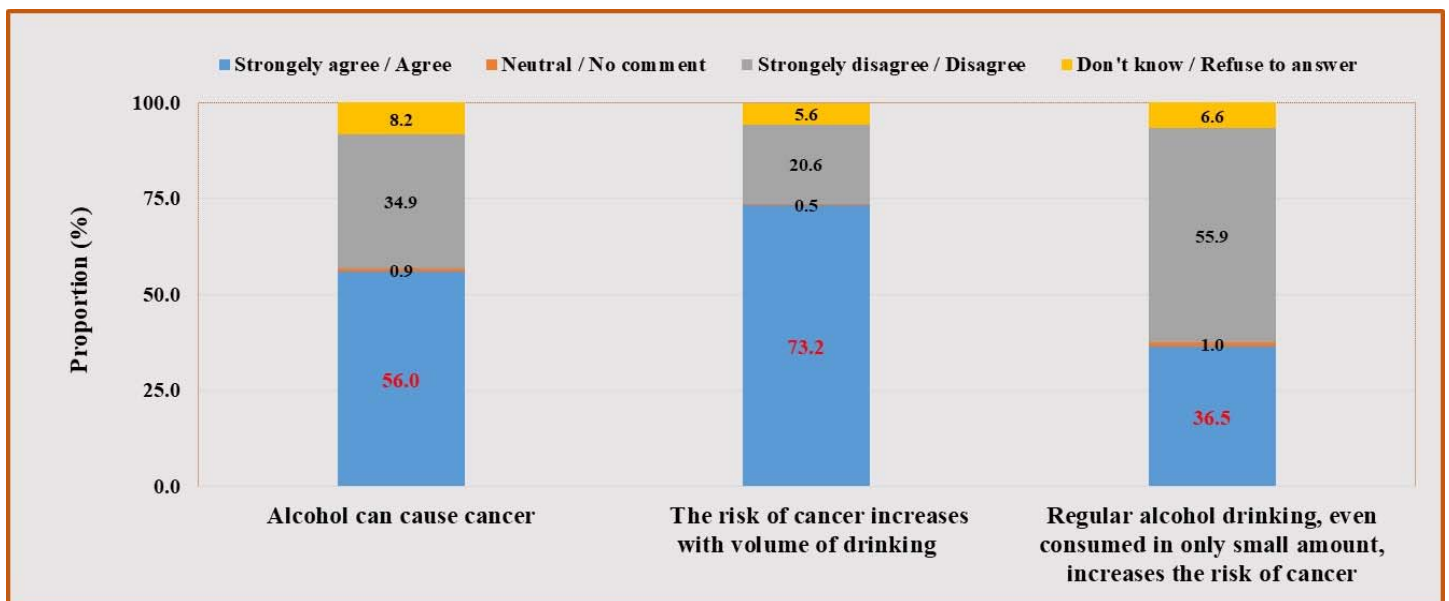
Alcohol and tobacco would significantly enhance each other’s effect on the risk of cancer.¹⁷ People who either consumed alcohol or smoked was associated with 20–30% increased risk of oesophageal cancer compared with nonusers, while dual consumption was studied to be associated with approximately 3-fold risk for oesophageal cancer.²¹ Compared with abstainers, people who consumed alcohol and smoked (tobacco or smokeless tobacco) were reported to be about 5 times the risk as likely to develop oral cancer.²²

Awareness of the Link between Alcohol and Cancer

A review of studies examining awareness of alcohol-cancer link among laypersons in 16 countries found that at least half or more of the population in many countries did not consider alcohol to be a risk factor for cancer.²³

In Hong Kong, a telephone survey was conducted by the Department of Health (DH) in 2015 on 2 507 adults aged 18–64 about their knowledge, attitudes and practices pertaining to alcohol consumption. Results showed that 56.0% and 73.2% of the respondents agreed to the correct statements “alcohol can cause cancer” and “the risk of cancer increases with volume of drinking”, respectively. However, only less than two-fifths (36.5%) of the respondents agreed to the correct statement “regular alcohol drinking, even consumed in only small amount, increases the risk of cancer” (Figure 3).²⁴ Clearly there is room for improvement on enhancing public understanding of the cancer-causing nature of alcohol.

Figure 3: Knowledge about cancer-causing effect of alcohol among adults aged 18–64 in Hong Kong



Source: Knowledge, Attitudes and Practices (KAP) Study Pertaining to Alcohol Consumption among Adults in Hong Kong 2015, Department of Health.

Reduce Harmful Use of Alcohol

Alcohol is a modifiable causal risk factor for cancer, and thus refraining from alcohol use is one of the best cancer prevention methods. To reinforce public awareness of the fact that alcohol causes cancer, DH is launching a publicity campaign for risk communication (Box 1). DH will continue working in close partnership with other government bureaux and departments as well as community partners to enhance public education and build up public awareness about alcohol-related harm. DH also urges drinkers to appraise their drinking habits and appreciate the benefits of stopping alcohol consumption. They can answer the Alcohol and Health Questionnaire at www.change4health.gov.hk/en/alcohol_aware/questionnaire/index.html. Such simple, self-administered electronic questionnaire helps assess the drinkers' alcohol use and potential health effects. For professional help, please consult your family doctor. For more information about alcohol and health, members of the public can also visit the Change for Health Website of DH at www.change4health.gov.hk.

Box 1: "Alcohol causes Cancer" Poster



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Non-Communicable Diseases (NCD) WATCH is dedicated to promote public's awareness of and disseminate health information about non-communicable diseases and related issues, and the importance of their prevention and control. It is also an indication of our commitments in responsive risk communication and to address the growing non-communicable disease threats to the health of our community. The Editorial Board welcomes your views and comments. Please send all comments and/or questions to so_dp3@dh.gov.hk.

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