

REDUCTION OR CESSATION OF ALCOHOLIC BEVERAGE CONSUMPTION

VOLUME 20A

This publication represents the views and expert opinions of an IARC Working Group on the Evaluation of Cancer-Preventive Interventions, which met in Lyon, 22–26 May 2023

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IARC HANDBOOKS OF
CANCER PREVENTION

GENERAL REMARKS

In 1987, the *IARC Monographs* programme first classified alcoholic beverages as carcinogenic to humans (Group 1), on the basis of *sufficient evidence* of causality for cancers of the oral cavity, pharynx, larynx, oesophagus, and liver in humans ([IARC, 1988](#)). Subsequent reviews and evaluations of the evidence for *IARC Monographs* Volumes 96 and 100E ([IARC, 2010, 2012](#)) and for the World Cancer Research Fund/American Institute for Cancer Research Continuous Update Project ([WCRE, 2023](#)) reaffirmed that alcohol consumption causes the above-mentioned five types of cancer – specifying that the evidence was *sufficient* for squamous cell carcinoma of the oesophagus and hepatocellular carcinoma of the liver – and extended the list to include cancers of the colorectum and of the female breast.

The causal effects of alcoholic beverage consumption on cancer risk do not differ by beverage type ([IARC 2010, 2012; WCRE, 2023](#)). Also, for cancers of the oral cavity, pharynx, larynx, oesophagus, and breast, risk increases for any amount of consumption ([WCRE, 2023](#)).

The World Health Organization (WHO) reports that alcohol consumption contributes to more than 200 diseases, injuries, and other health conditions, and estimates that about 3 million deaths annually (5.3% of all deaths worldwide) are attributable to harmful use of alcohol ([WHO, 2022](#)). Regarding cancer, it was estimated that in

2020, 4.1% of all new cancer cases globally were attributable to alcohol consumption ([Rumgay et al., 2021](#)).

Rationale for *IARC Handbooks* Volumes 20A and 20B on alcohol control

Promoting reduction or cessation of alcoholic beverage consumption could have a substantial impact on reducing alcohol-related morbidity and mortality. In 2010, the Sixty-third World Health Assembly endorsed the Global Strategy to Reduce the Harmful Use of Alcohol (Resolution WHA63.13) ([WHO, 2010](#)). This strategy includes 10 recommended target areas for population-level policies and individual-level interventions.

Alcohol control policies or other interventions to reduce alcohol-related cancer risk have not been evaluated before by the *IARC Handbooks* programme. Following a request by and in collaboration with the WHO Regional Office for Europe, the *IARC Handbooks* programme undertook to prepare two volumes on alcohol control to address this knowledge gap. The analytical framework for the review and evaluation of the evidence that alcohol control policies reduce cancer incidence or mortality follows Scenario 2, as described in the Preamble to the

IARC Handbooks for Primary Prevention ([IARC, 2019](#)). Scenario 2 involves a two-step process. In Step 1, the effect of a specified intervention on an intermediate outcome (e.g. exposure to a risk factor) is evaluated. In Step 2, the effect of the change in the intermediate outcome (e.g. decrease in exposure to the risk factor) on cancer incidence in humans is evaluated ([Fig. 1A](#)). The Preamble further stipulates that if Step 2 has not yet been established from authoritative sources, then Step 2 should be conducted first.

Accordingly, *IARC Handbooks Volume 20A* provides the review and evaluation of the epidemiological and mechanistic evidence that reduction or cessation of alcoholic beverage consumption reduces the risk of each of the seven alcohol-related cancer types (Step 2) ([Fig. 1B](#)). *IARC Handbooks Volume 20B* will provide the review and evaluation of the available evidence that selected population-level alcohol control policies lead to a reduction or cessation of alcoholic beverage consumption.

Considerations on *IARC Handbooks Volume 20A*

The primary goal of *IARC Handbooks Volume 20A* is to provide a critical appraisal of the human epidemiological and mechanistic evidence on reduction or cessation of alcoholic beverage consumption in relation to the risk of the seven alcohol-related cancer types.

In reviewing the literature, the Working Group noted that the terms used to characterize drinking status (e.g. lifetime abstinence, recent abstinence, current drinking), the amount of consumption (e.g. light, moderate, heavy), and the amount of pure alcohol (i.e. ethanol) in a single alcoholic drink have been defined differently among different studies, in different settings, and between men and women, and have changed over time. In a recent WHO report, drinking

status was categorized as abstinence over the lifetime, abstinence in the previous 12 months (i.e. former drinking), and current consumption. The amount of alcohol consumed was categorized as moderate (≤ 2 drinks per day), risky (3–6 drinks per day), and heavy (> 6 drinks per day), where a single drink contains 10 g of pure alcohol ([WHO, 2020](#)). However, because of the variability among studies reviewed, these terms are specifically defined in each section and, when appropriate, for each study.

Similarly, when reviewing the epidemiological evidence, the Working Group identified numerous methodological concerns. These concerns were carefully considered and are described and discussed in detail in Section 2.1. Section 3 provides, for the first time, a review and evaluation of the available evidence on biological mechanisms of cessation of alcoholic beverage consumption. This evidence comes largely from studies conducted among individuals with alcohol use disorders who are in treatment and have become abstinent. Although the biological effects of alcohol cessation in this group may differ from the effects of cessation among individuals who drink lower amounts, these studies inform our understanding of the effects of alcohol cessation on alcohol-related carcinogenesis.

The Working Group did not quantify the extent of risk reduction due to reduction or cessation of alcoholic beverage consumption, overall or for any strata of amount of alcohol originally consumed. Nor did the Working Group quantify the time course of cessation necessary to observe a reduction in cancer risk.

Fig. 1 (A) The IARC Handbooks analytical framework for review of the evidence for primary prevention; (B) IARC Handbooks Volumes 20A and 20B.

A

Scenario 2: A two-step evaluative framework from which, for scientific reasons, the level of evidence that an intervention prevents cancer is established by way of an intermediate outcome.



Intermediate outcome = decreased exposure to a risk factor or increased exposure to a preventive factor

Step 1: The effect of a specified intervention on an intermediate outcome, such as exposure to a particular risk factor or preventive factor for cancer in humans, is evaluated.

Step 2: The effect of the change in the intermediate outcome (decrease in exposure to the risk factor or increase in exposure to the preventive factor) on cancer incidence in humans is evaluated.

B



Alcoholic beverage consumption guidelines for cancer prevention

Current alcohol consumption guidelines and recommendations from public health agencies have relied on evidence from studies that assessed alcohol consumption in relation to disease risk. Some guidelines and recommendations are specific for cancer prevention. For example, the European Code Against Cancer states “If you drink alcohol of any type, limit your intake. Not

drinking alcohol is better for cancer prevention” (Schüz et al., 2015), the World Cancer Research Fund guideline for the United Kingdom states “To reduce your cancer risk as much as possible, we recommend not drinking alcohol at all. If you do choose to drink alcohol, follow national guidelines. In the UK, the guideline is to drink no more than 14 units a week, spread over at least three days for both men and women” (WCRE, 2024), and the American Cancer Society’s guideline for diet and physical activity for cancer prevention states “It is best not to drink alcohol. People who choose to drink alcohol should limit their intake

to not more than 2 drinks per day for men and 1 drink per day for women” (Rock et al., 2020). To reduce all alcohol-related harm, the WHO position, issued in 2023, is that no amount of alcohol consumption is safe, even low intakes (Anderson et al., 2023; WHO, 2023).

Public awareness that consumption of alcoholic beverages causes cancer

Public awareness that alcohol consumption is an established cause of cancer is limited, although the extent of such awareness varies globally. In some countries, less than 50% of the population report alcohol consumption as a risk factor for cancer (Scheideler and Klein, 2018). In one survey of people in the USA, only one third reported believing that alcohol was a risk factor for cancer (Kiviniemi et al., 2021).

Overall, *IARC Handbooks* Volume 20A is an important contribution to the understanding of the impact of reduction and cessation of alcohol consumption on reducing cancer risk. It extends the existing evidence base for alcohol consumption guidelines for cancer prevention by establishing that reduction or cessation of alcohol consumption plays a role in cancer prevention. In addition, it has the potential to influence public health organizations’ communication strategies focused on increasing awareness of the link between alcohol consumption and cancer risk by highlighting the benefits of alcohol reduction and cessation in reversing alcohol-related cancer risk.

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