International Agency for Research on Cancer

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IARC Handbooks of Cancer Prevention Volume 20B: Effects of alcohol policies on reducing alcoholic beverage consumption

Questions and Answers (Q&A)

A Working Group of international experts was convened by the International Agency for Research on Cancer (IARC) to review and assess all available evidence on the potential for alcohol policy interventions related to tax and price, availability, and marketing, as well as coordinated multiple alcohol policy interventions, to reduce consumption of alcoholic beverages at the population level.

A summary of the findings has been published as a Special Report in *The New England Journal of Medicine*.[1] The findings will be published in full in Volume 20B of the *IARC Handbooks of Cancer Prevention*.

1. What are the *IARC Handbooks of Cancer Prevention*?

The *IARC Handbooks of Cancer Prevention* series is published by IARC. The *IARC Handbooks* provide definitive evaluations about which interventions or strategies can prevent cancer or detect cancer at an early stage. To produce these evaluations, IARC convenes a Working Group of international interdisciplinary experts who collect all the relevant studies published to date, review the data, and determine how sure we can be that such interventions can reduce the risk of cancer or mortality from cancer.

2. What are the key take-home messages from this publication?

On the basis of the evidence reviewed, the Working Group concluded that the following alcohol policy interventions lead to a reduction in alcohol consumption: interventions that increase taxes, minimum prices, or minimum alcohol purchase or drinking age; interventions that reduce alcohol outlet density, or days or hours of sale; strong bans on alcohol marketing; total bans on alcohol sales; and government monopolies or other coordinated multiple alcohol policy interventions.

[1] Gapstur SM, Mariosa D, Neamtiu L, Nethan ST, Rehm J, Huckle T, et al. (2025). The IARC perspective on the effects of policies on reducing alcohol consumption. *N Engl J Med*. Published online 30 April 2025. https://doi.org/10.1056/NEJMsr2413289

3. Why did the *IARC Handbooks* programme evaluate the evidence on the effects of alcohol policies on reducing alcoholic beverage consumption?

In 2007–2011, the *IARC Handbooks* produced a series of volumes on tobacco control, including evaluations of the effectiveness of tax and price policies and of smoke-free policies in reducing the prevalence of tobacco smoking. Although the *IARC Monographs* programme first classified alcoholic beverages as *carcinogenic to humans* (Group 1) several decades ago (in 1987), no similar evaluations had been performed for alcoholic beverages.

Consistent with the principles and procedures described in the *IARC Handbooks of Cancer Prevention* Preamble for Primary Prevention, the *IARC Handbooks* programme developed a two-part volume (Volumes 20A and 20B) on primary prevention of alcohol-related cancers. Volume 20A evaluated the evidence that reduction or cessation of alcoholic beverage consumption can reduce cancer risk, and Volume 20B evaluated the evidence that alcohol policies can reduce alcoholic beverage consumption, thus making the link from policy intervention to cancer outcome.

In Volume 20A, the Working Group concluded that there is *sufficient evidence* that, compared with continuing consumption, reduction or cessation of alcoholic beverage consumption reduces the risk of oral cancer and oesophageal cancer, and *sufficient evidence* from mechanistic studies that cessation of alcohol consumption reduces alcohol-related carcinogenesis. For Volume 20B, the Working Group (co-authors of the Special Report in *The New England Journal of Medicine*) reviewed and qualitatively evaluated the strength of the evidence on the potential for selected alcohol policy interventions related to tax and price, availability, and marketing, as well as coordinated multiple alcohol policy interventions to reduce alcohol consumption.

4. Why is consumption of alcoholic beverages carcinogenic?

Several mechanisms have been proposed to explain the carcinogenicity of consumption of alcoholic beverages. Most evidence comes from the metabolism of alcohol to acetaldehyde. Upon ingestion of a sip of alcohol, ethanol – the principal component of alcoholic beverages – is immediately transformed into acetaldehyde. Acetaldehyde is genotoxic and causes DNA damage, particularly in the upper aerodigestive tract, leading to carcinogenic mutations. In addition, acetaldehyde alters the composition of the gut microbiota, which leads to intestinal permeability. This, in turn, triggers inflammation, with the potential to increase the risk of cancer.

5. How did the *IARC Handbooks* select the interventions to evaluate?

The *IARC Handbooks* programme specifically selected population-level interventions because their implementation aims to reduce consumption at the national or subnational level, which has been shown to effectively reduce alcohol-attributable harms. The evidence on the effectiveness of health care-based interventions to reduce alcohol consumption was summarized but not evaluated, because these interventions target individuals and their potential population-level effects on consumption are not usually measured.

6. What is new in terms of the evaluations and conclusions in this volume of the *IARC Handbooks*?

The evaluations must be considered in the context of the framework on primary prevention described above. Whereas existing reviews typically report on all alcohol-related harms, this comprehensive review of the available literature provides evidence-based evaluations of policies specifically in relation to their potential to reduce alcohol consumption. Through this two-part process, the *IARC Handbooks* bring together the necessary evidence to conclude that alcohol policies can have an impact on the global cancer burden.

7. What was included in the evaluations for each intervention?

All except one of the interventions reviewed showed *sufficient evidence* of an effect in reducing alcohol consumption. The included studies were of many different designs and were conducted mostly in high-income countries. The number of studies on which each evaluation was based varied from 3–4 studies to 12–15 studies.

To assess taxes, only studies that adjusted for affordability by income or employment status were included, to ensure that the effect of taxes on alcohol consumption reflects the true net effect by accounting for the affordability pathway. Although the Working Group did not conduct an evaluation of the pass-through effect, the experts reviewed the pertinent literature and confirmed that a substantial proportion of the tax is consistently passed through to prices.

Availability restrictions exist in many different forms. They include restrictions on outlet density, outlet location, hours of sale, days of sale, minimum alcohol purchase or drinking age, total bans on alcohol sales, partial bans on alcohol sales, multiple availability restrictions, and monopolies. After reviewing the literature, the Working Group conducted evaluations for the following four policies: minimum alcohol purchase or drinking age; interventions that reduce alcohol outlet density, or days or hours of sale; and total bans on alcohol sales. Monopolies were evaluated together with other coordinated multiple alcohol policy interventions.

The Working Group did not identify any studies on complete alcohol marketing bans, which was defined as a ban in all major media types (print, broadcast, or outdoor) for all alcoholic beverage types. Instead, the evaluation pertains to strong alcohol marketing bans, defined as a ban on alcohol marketing in at least one major media type for all alcoholic beverage types.

8. What were the limitations of this evaluation?

Several issues relevant to the evaluations must be considered.

First, the studies of alcohol availability interventions and marketing bans are almost entirely based on data collected before the expansion of digital marketing and online purchasing, and their relevance to related interventions in the current digital era may have limits.

Second, most studies were conducted in high-income countries, and the effectiveness of some interventions may differ in other settings.

Third, the evaluations focused on the effectiveness of alcohol policy interventions; examining their potential unintended consequences might inform feasibility in specific contexts but should not detract from the proven public health benefits.

Finally, to be more effective, any policy must be enacted, implemented, and enforced, which requires the involvement of many different governmental and nongovernmental sectors.

9. How does this evaluation support the World Health Organization Global Strategy to Reduce the Harmful Use of Alcohol?

These findings add to the available evidence on the potential for alcohol policy interventions to reduce the alcohol-attributable cancer burden. Furthermore, they support the recommended actions stated in the most recent World Health Organization Global Alcohol Action Plan 2022–2030, which includes the SAFER initiative, and emphasize high-impact strategies and interventions to reduce alcohol-related harm worldwide.

10. How should the results of this evaluation be used?

These evaluations will help policy-makers make informed decisions to put in place efficient alcohol policies.

11. What methodology was used to obtain these results?

The *IARC Handbooks* evaluations follow a rigorous and transparent process:
Step 1: Identify which interventions to review and evaluate.
Step 2: Identify the relevant literature.
Step 3: Screen and select the informative studies.
Step 4: Extract the data, and write study summaries.
Step 5: Evaluate the quality of each study.
Step 6: Perform peer review, by Working Group members and IARC scientists.
Step 7: Synthesize the results and the quality of the studies.
Step 8: Interpret the results, and evaluate the strength of the evidence.

The Working Group reviews and assesses all informative original studies, and pooled analyses or meta-analyses of studies. The scientific literature is reviewed and evaluated according to strict criteria as defined in the Preamble to the *IARC Handbooks*.

12. How does the *IARC Handbooks* classification system work?

There are three evaluation schemes for the *IARC Handbooks*: two schemes for primary prevention and one scheme for secondary prevention.

The Working Group for *IARC Handbooks* Volume 20B used the evaluation scheme for primary prevention when assessing an intermediate outcome. For this scheme, only epidemiological evidence is reviewed, and it is evaluated as providing *sufficient evidence*, *limited evidence*, or *inadequate evidence* that the intervention has an effect on the intermediate outcome, or *evidence suggesting lack of effect* on the intermediate outcome. More details are provided in the Preamble to the *IARC Handbooks*.

13. When will *IARC Handbooks of Cancer Prevention* Volume 20B be available?

The detailed assessments will be published as Volume 20B of the *IARC Handbooks of Cancer Prevention*. The goal is to publish the full volume online by October 2025.

14. Why are these evaluations important for public health globally?

Worldwide, in 2020 an estimated 741 300 new cancer cases (4.1% of all new cancer cases) were attributable to alcohol consumption (6.1% among men and 2.0% among women). In 2010, the Sixty-third World Health Assembly endorsed the Global Strategy to Reduce the Harmful Use of Alcohol (Resolution WHA63.13), and recently the World Health Organization stated that “no safe amount of alcohol consumption for cancers and health can be established”.

Alcohol consumption is a major public health concern, and increasing knowledge about the potential benefits of reduction or cessation of alcohol consumption and how to achieve such reduction will help reduce the burden of alcohol-related harms.

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The International Agency for Research on Cancer (IARC) is part of the World Health Organization. Its mission is to coordinate and conduct research on the causes of human cancer and the mechanisms of carcinogenesis, and to develop scientific strategies for cancer control. The Agency is involved in both epidemiological and laboratory research and disseminates scientific information through publications, meetings, courses, and fellowships. If you wish your name to be removed from our press release emailing list, please write to com@iarc.who.int.