Global burden of cancer in 2020 attributable to alcohol consumption: a population-based study

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Purpose
The consumption of alcoholic beverages is causally linked to eight cancer sites, namely1:

- Oral cavity cancer
- Oropharyngeal cancer
- Laryngeal cancer
- Esophageal cancer
- Colon cancer
- Rectal cancer
- Liver cancer
- Breast cancer.

Together, these cancers contributed 6.3 million cases and 3.3 million deaths globally in 2020.2

Here we present global, regional and national estimates of alcohol-attributable cancer burden in 2020 and the contribution of moderate (<20 g alcohol per day), risky (20 to 60 g per day), and heavy (>60 g per day) drinking to the total alcohol-attributable cancer burden.

Methods

Data and sources:
- Alcohol consumption prevalence from 2010 (Global Information System on Alcohol and Health)3
- Cancer incidence by site, age and sex (GLOBOCAN 2020)4
- Relative risk (RRs) for the association with alcohol consumption per 10 grams increase in alcohol per day (WCRF Continuous Update Project).4

Population attributable fractions (PAFs) were calculated for each sex, country, and cancer site by combining the prevalence of current drinking (PCD) with the cancer RRs (RRCD) using the following formula:

\[ PAF = \frac{\int_0^{150} PCD(x)(RRCD(x) - 1)dx}{\int_0^{150} PCD(x)(RRCD(x) - 1)dx + 1} \]

Alcohol-attributable age-standardised incidence rates (ASIR) per 100,000 people were calculated using the age-, sex-, and country-specific number of alcohol-attributable cases in 2020.

Results

Globally, an estimated 725,000, or 4-0%, of all new cases of cancer in 2020 were attributable to alcohol consumption. Males accounted for three quarters (76%) of total alcohol-attributable cancer cases, while cancers of the oesophagus, liver, and breast contributed the most cases. (Figure 1)

ASIRs in males were highest in Central and Eastern Europe and Eastern Asia (Figure 2a). ASIRs in females were highest in Australia and New Zealand, Northern Europe, and Eastern Europe (Figure 2b). For both sexes, ASIRs were lowest in Northern Africa and Western Asia.

Conclusions

Alcohol consumption causes a substantial burden of cancer globally and there are large disparities between populations.

Drinking trends in European regions show an encouraging decrease in recent years, but significant increases in alcohol use are predicted in several other regions including Africa and Asia.

Effective interventions to increase awareness of the causal link between alcohol and cancer among the general population may spur decreases in alcohol use and should be explored further, while taxation policies have resulted in decreased population alcohol consumption in Central and Eastern Europe. These could be implemented in other world regions which do not yet have effective alcohol policies.

References
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