Invited Commentary: Is Alcohol a Risk Factor for Trauma and Chronic Disease Mortality? Narrowing the Gap Between Evidence and Action

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Alcohol has been linked with over 60 chronic diseases and types of trauma, and in developed countries alcohol consumption is ranked third in terms of disability-adjusted life years (of 26 risk factors considered). In this issue of the Journal, two papers from Finland and Canada provide new evidence of the negative effects of alcohol consumption on trauma and mortality. Herttua et al. (1) used data from a natural experiment involving an increase in access to alcohol and its links to mortality; they offer provocative findings on differential impacts by gender, age, and socioeconomic level. Taylor et al. (2) focused on lifetime risk of alcohol-related injury mortality, exploring the implications for high-risk drinking patterns. These authors offer agendas for future research on the differential impacts of policy changes according to demographic dimensions, and they highlight the need for a refined measurement of alcohol intake—since the amount of alcohol in a “standard drink” consumed by heavier drinkers is probably not the same as it is for other consumers. There is still a substantial gap between alcohol’s position as a significant contributor to mortality and disability and the implementation of effective interventions.

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Editor’s note: Herttua et al. declined to respond to this commentary. The response of Taylor et al. follows.

Two papers published in this issue of the Journal (1, 2) provide important new insights into the effects of alcohol consumption on chronic disease and trauma mortality. By implication, they highlight the gap between evidence of alcohol’s damage and the need for higher-profile, better-funded, and more potent interventions and policies.

While these relations have been known for many years (3, 4), it is during this past decade that the relative impact of alcohol on death, disease, and disability (disability-adjusted life years) has been shown to be not dissimilar to that of tobacco. In developed countries such as Canada, Finland, and the United States, alcohol drinking ranks third (at 9.2% of total disability-adjusted life years) of 26 health-related risk factors considered, behind tobacco use and high blood pressure and ahead of high low-density lipoprotein cholesterol, high body mass index, low fruit and vegetable intake, physical inactivity, and use of illicit drugs (5). Alcohol has been linked with over 60 diseases and types of trauma (6).

As Herttua et al. (1) indicate, an increase in access to alcohol, through a policy change, can have a measurable negative impact by stimulating a rise in alcohol-related mortality. Taylor et al. (2) signal that even at relatively low levels of consumption, absolute risk for alcohol is greater than risks for other dangers that currently receive more attention in public debate and discussion.

Herttua et al. (1) concluded that a decline in taxes on alcoholic beverages in Finland—which affected retail prices of alcohol—contributed to an increase in chronic disease mortality related to alcohol consumption, with not much impact on trauma, and had a greater effect among women, older adults, and persons of lower socioeconomic status. The relation between the real price of alcohol and damage from alcohol has been demonstrated in numerous studies (7, 8). Babor et al. (9) concluded that price/taxation policy was one of the most—if not the most—potent policy levers, given the strength of the evidence, the cross-cultural range of the studies, and the extent of the research. Herttua et al. provide...
results from a recent high-quality natural experiment, which allowed for an exploration of effects by social status, age, and gender and a comparison of effects by type of mortality.

The rationale for the decline in taxes in Finland was the lifting of personal import restrictions, which appears to have contributed to an increased volume of alcohol imports from places like Estonia. I would have welcomed a brief presentation of annual data on the per capita ethanol volume of official sales of alcohol in Finland for domestic consumption during the 5-year period under study, and also an estimate of population-level ethanol volume of personal imports during this period. As Herttua et al. indicate (1), the tax reduction was probably the main factor in the changes in mortality they present, but it seems that they have not ruled out the possibly modest contribution of imports for personal consumption or controlled for changes in real price during the period under study.

During the study time period, the increase in trauma mortality was modest compared with that from chronic disease, and there was substantial variation in impact by age. In addition, as is indicated in Herttua et al.’s tables (1), the percent change in mortality was greater among women than among men, although there is little discussion of results by gender in the article. It appears that further research is warranted on the effects of policy changes and changes in drinking behavior and drinking patterns among women, youth, and young adults.

In this study, alcohol-related mortality was organized into two groups: acute and chronic. Since alcohol may be a more potent contributing cause to some types of mortality than others, future work might explore an approach where mortality data were “weighted” according to the strength of the epidemiologically accessed relation with alcohol.

The policy implications of this paper are clear and in line with previous research (9). Reducing access to alcohol is likely to reduce alcohol-related damage, including alcohol-related mortality. However, in the European context, where there is substantial international pressure to increase access combined with an erosion of long-standing controls on alcohol, it is particularly challenging to implement these prevention measures.

In their paper, Taylor et al. (2) break new ground by offering estimates of population-level absolute risks of alcohol-related trauma mortality in Canada. They imply that risks of alcohol consumption above modest amounts or occasions are greater than risks for other behaviors or contexts that receive substantially greater attention in the media and among policy-makers.

As Taylor et al. indicate (2), future work would benefit from the development of more accurate estimates of numbers of drinking occasions and amounts consumed per occasion. An operational definition of a “standard drink” is not likely to be accurate for all types of drinkers and may also vary by age and gender. For example, emerging data from an ongoing US-based study indicate that heavy drinkers tend to pour larger drinks (or have larger drinks poured for them) (10). Furthermore, regular customers, who are likely to be heavier drinkers, are likely to receive more liberal servings of poured drinks in licensed establishments (10). It is feasible that in countries or regions where most alcohol consumption involves self-service or informal provision in private settings, there will be greater deviation from a conventional standard drink volume, especially among heavier drinkers.

A theme of Taylor et al.’s paper is that high-risk drinking is fairly common behavior. This can be illustrated by a 2007 survey of Ontario students in grades 7–12 (11): Overall, 61.2% reported drinking in the past 12 months before the survey (representing 616,300 students in Ontario), 26.3% (n = 262,400) reported consuming 5 or more drinks on a single occasion at least once in the 4 weeks before the survey, and 18.6% (n = 193,000) scored 8 or more on the Alcohol Use Disorder Identification Test (12), which is considered to represent hazardous or harmful drinking.

This paper has important implications for specifying the content of low risk levels and the text of risk reduction guidelines for alcohol consumption. It may be tempting to conclude that population-level risks of alcohol-related trauma will be reduced through the promotion of such guidelines. However, rigorous investigations of the impact of national or regional guidelines remain to be undertaken. Low-risk drinking guidelines have been developed and promoted in many countries and are currently under review in Australia and Canada. One can imagine a multiyear experiment in which matching jurisdictions are randomly assigned to “no special intervention,” “low-risk guidelines promotion,” and “low-risk guidelines plus community-based prevention.” However, governments do not typically take this type of social experimental approach to alcohol policy-making—with significant exceptions in the Nordic countries (13).

In the absence of convincing evidence that low-risk drinking guidelines have any impact and the political will to facilitate the type of experiment noted above, we are left with extrapolating from studies in which information dissemination and education are the primary prevention tools. Warning labels on alcoholic beverage containers introduced in the United States in 1988 have been shown to be among the most popular alcohol policy interventions (14), and public support has been growing for a number of years since their implementation (15). There is evidence of an impact on perceptions, attitudes, and behavioral intentions (16), but beyond that the impact of these labels on drinking behavior, high-risk drinking, and drinking-related problems remains to be demonstrated (9).

Similarly, school-based programs designed to educate youth about the risks of alcohol drinking continue to have great popularity, and effects on attitudes, intentions, and perceptions have been noted (17). However, the effects of such programs on drinking behavior, high-risk drinking, and drinking-related problems are either not evident or short-lived (18–20).

Warning labels are required on every alcoholic beverage container in the United States; thus, potentially, occasional drinkers will see them at least once, and heavy drinkers will see them regularly. Evaluations of school-based alcohol education programs are based on persons who participated in them. In both cases, there is an absence of evidence of effects on behavior. Given these circumstances, can we expect that low-risk drinking guidelines, even if they were printed on every bottle or can of alcohol, would have any measurable impact?

Nevertheless, there are several justifications for the creation of drinking guidelines. The public has the right to know...
the content of products that are being sold and the risks associated with their use—especially with governments’ involvement in licensing and retailing in control states in the United States and via liquor boards in Canadian and Finnish jurisdictions. Secondly, guidelines are potentially a useful complement of interventions shown to be effective, such as server interventions in package stores or licensed premises (21), controls on overall access to alcohol (increase in real price, ceiling on density) (9, 22), and community-based prevention (23). Third, they can be an important political resource in raising the profile of alcohol by pointing to the risks associated with its use and pointing to levels of consumption that, while not necessarily safe, are less risky.

Drinking guidelines also serve as markers for tracking and documenting social behavior and as a tool for policy advocates or policy managers. In Ontario, the current low-risk drinking guidelines stipulate no more than 2 standard drinks (13.6 g of ethanol) per day and no more than 9 standard drinks per week for women and no more than 14 standard drinks per week for men (24). Between 2003 and 2005, there was a significant increase in the percentage of persons drinking above this level, from 21% to 25%, and the level is particularly elevated (38%) among younger adults aged 18–29 years (25). The percentage of adults aged 18 years or more who report consuming 5 or more drinks per occasion at least weekly has also increased and was 11% in 2005 (25). Overall alcohol sales in Ontario have risen from 7.1 L of absolute alcohol per person aged 15 years or more to 7.9 L per person since 1996 (26, 27).

Have these developments stimulated markedly greater activities among policy-makers at the national and provincial levels? An optimistic conclusion is “not yet.” Alcohol policy advocates may have to wait some time for an alcohol strategy that promotes the most effective population-level interventions combined with resources that are required to achieve a marked reduction in alcohol-related damage (9, 28).

Alcohol is a substantial risk factor for trauma and chronic disease mortality, as these papers show (1, 2), and evidence of its contribution is growing (29, 30). However, the inadequate responses to date in developed countries such as Canada would suggest that in policy-making circles, its perceived risk is much lower than is the actually the case (5). This is illustrated by the new data presented in these two papers (1, 2).

Recent findings from the United Kingdom (31–34) provide a timely public health warning of how inadequate policies can stimulate increased damage from alcohol. These experiences also offer a positive lesson showing the willingness of the medical community and other sectors to mobilize in order to address the fallout from misguided policies (31–34). The recent experiences in both Canada and Finland (1, 2) offer agendas for further research and additional empirical support for more effective population-level interventions.

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